APPENDIX G
GEOLOGICAL ASSESSMENT
(MERCATOR GEOLOGICAL SERVICES, 2024)

Environmental Assessment Registration Document:
New Annan Quarry Expansion
East New Annan, Colchester County
Nova Scotia

New Annan Quarry Project

Colchester County, Nova Scotia

Updated Geological Assessment

Prepared For:

Dexter Construction Company Limited

Prepared By:

Mercator Geological Services Limited

September 24th, 2024

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 Scope of Assessment

Mercator Geological Services Limited (Mercator) was retained by Dexter Construction Company Limited (Dexter) to carry out an assessment of bedrock uranium potential in the immediate area of its New Annan Quarry, PID 20098935 (Project Area) located in Colchester County, Nova Scotia (Figures 1-1 and 1-2). Operations to date by Dexter at this site have consisted of excavation, processing and shipment of surficial gravel materials. The company is now planning to expand operations to include quarrying and processing of bedrock felsic volcanic material of the Early Carboniferous Byers Brook Formation for construction aggregate. The focus of Mercator's investigation was to determine whether a significant risk exists for occurrence of uranium mineralization in the area being considered for quarrying. Dexter began Environmental Assessment (EA) work in late 2023 to cover expansion of the operation to include quarrying of bedrock and plans to register the project with an Environmental Assessment Registration Document under the Environment Act (1994-95, c. 1, s. 1) in late 2024.

The Mercator assessment program began with a desktop compilation and interpretation exercise of historical data available for the Project Area and results were reported to Dexter in a memorandum dated April 10th, 2024. A site visit by Mercator was subsequently carried on May 5th and drill core from three holes drilled on the property was reviewed on June 11th. Results of all programs completed to date are compiled in the current report to support a "best information" uranium potential assessment and geological interpretation for the planned quarry area. Compilation program text presented below is taken with minor modification from the April 10th memorandum.

1.2 Summary of Conclusions and Recommendations

No bedrock uranium occurrences have been defined to date in the Project Area and no obvious indicators of significant risk of uranium presence in the proposed quarrying area were identified during the current study. However, based on review and interpretation of publicly available information for this study, the Early Carboniferous Byers Brook Formation in the Project Area is deemed prospective for occurrence of uranium mineralization. As this rock will be quarried in the Project Area, systematic monitoring of such potential as quarry approval and production progresses is necessary. Mercator's recommendations for monitoring are as follows:

1. It is recommended that prior to blasting, newly stripped bedrock areas west of the current gravel pit be checked for anomalous radioactivity levels using a hand-held scintillometer or spectrometer. Similar checking of broken rock should be carried out after each blast and periodically during crushing for the operational life of the quarry.
2. If results of the radioactivity are found to be more than 10 times regional background levels, representative samples should be analyzed for uranium at a certified geochemical laboratory licenced to do so. These surveys and others specific to uranium monitoring and action protocols may be required by the Province of Nova Scotia under the Industrial Approval for the Project, and

it is recommended that those set out under the current Environmental Approval for Dexter's Pioneer Drive Quarry at Lower Vaughan, Hants County, be considered for application at the New Annan Quarry.

3. Regarding aggregate quality, attention should be paid to any changes in bedrock lithology in areas being prepared for production, since aggregate quality could be detrimentally impacted by lithology changes.

Figure 1-1: Regional property location map

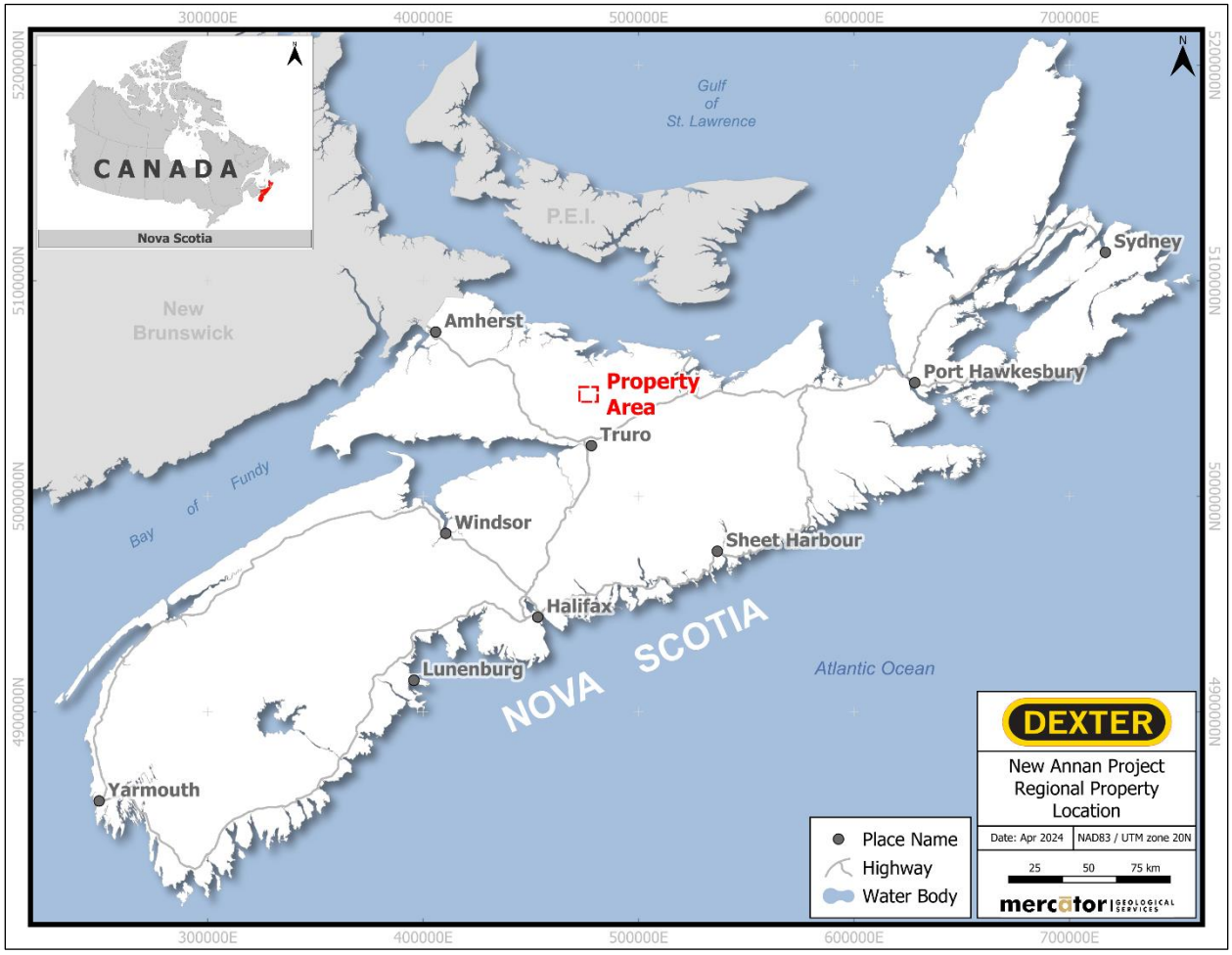
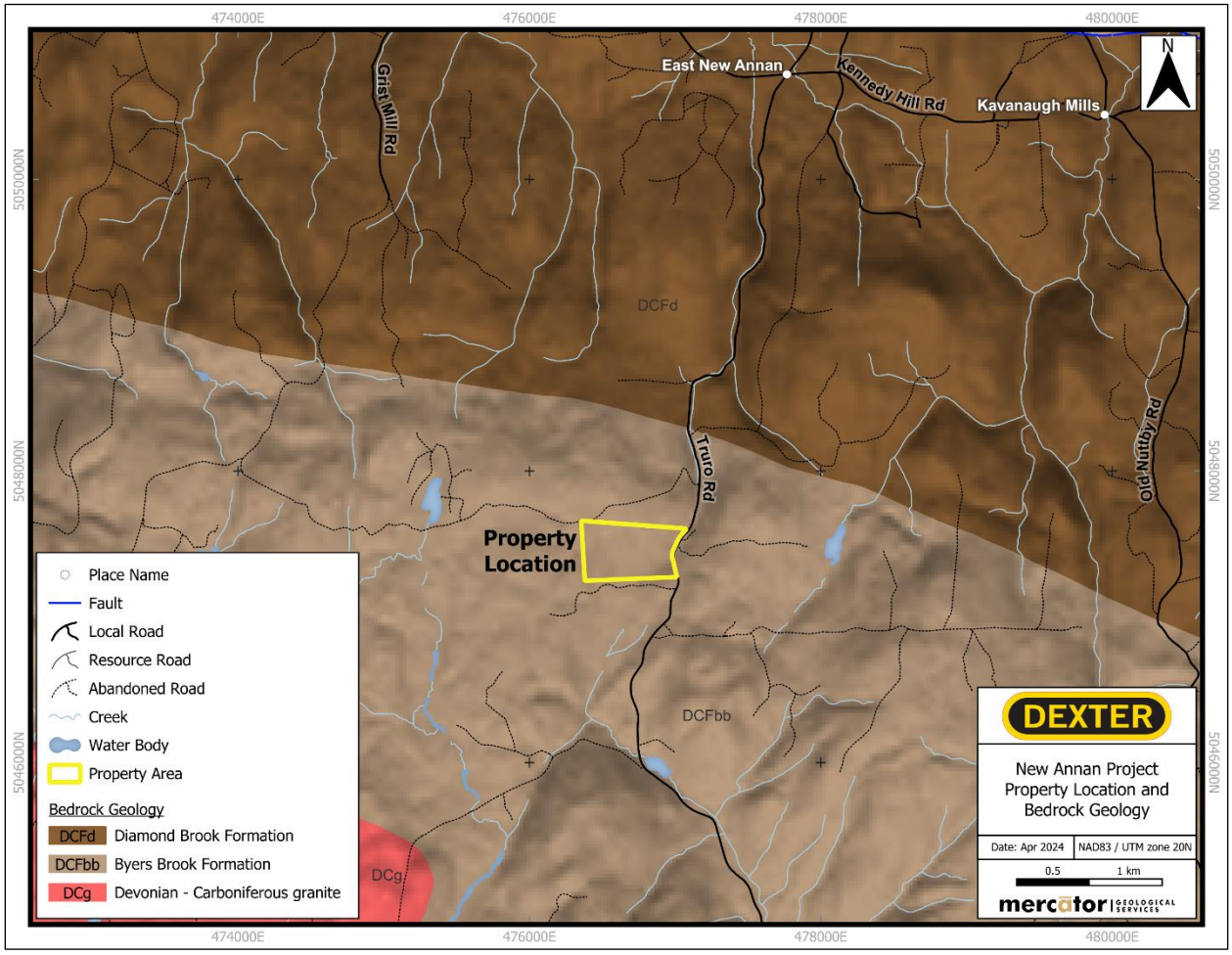


Figure 1-2: Detailed property location and bedrock geology map (NSDNRR geology base)



2.0 GEOLOGY OF QUARRY AREA

The Project is situated entirely within the Byers Brook Formation, which is one of two formations comprising the broader Fountain Lake Group. The Fountain Lake Group (FLG) is Early Carboniferous to Late Devonian in age and dominated by a bimodal (felsic/mafic) volcanic suite, plus associated epiclastic sedimentary rocks. The FLG has been mapped within the Cobequid Highlands along an east-west extent of approximately 50 km, with greatest spatial representation in the central and eastern Highland areas. The other formation within the FLG is the Diamond Brook Formation, which is composed of basalt flows and minor rhyolite (Pe-Piper and Piper, 2002). The Diamond Brook Formation is approximately 1.5 km thick and conformably overlies the Byers Brook Formation via gradational contact. The contact between these formations is located less than 1 km north of the Project (Figure 2-1). Mapping by exploration interests adjacent to the Project Area has further refined local stratigraphy (Figure 2-2).

The Byers Brook Formation is a generally east-west (110-120 az.) striking and steeply dipping (70° N) sequence composed of felsic pyroclastic rocks, lesser felsic (rhyolitic) and mafic flows, and minor interbedded sedimentary rocks, forming a sequence several kilometers thick (Pe-Piper and Piper, 2002). It is evident that two discrete volcanic cycles are present in this formation and separated by a conglomerate/siltstone marker horizon (Gower, 1988). Within each cycle, felsic pyroclastic rocks dominate initially, and then grade into a dominantly bimodal assemblage of rhyolite and basalt towards the top of the sequence. All units are commonly cut by diabase and composite dykes (Gower, 1988). The extrusive rocks typically exhibit strong alkali metasomatism, except for the late subvolcanic rhyolite and composite dykes, which remain unaltered. U-Pb zircon dating of a rhyolite flow near the top of the formation provided a late Devonian age of 358 Ma (Dunning et al., 2002).

The base of the first volcanic cycle is intruded by the Hart Lake-Byers Lake Granite, a pink hornblende granite ranging from granophyric to medium grained in texture (Gower, 1988). The granite has an early Carboniferous Rb/Sr whole-rock age of 339 +/- 4 Ma and is interpreted to be a sub-volcanic intrusive system associated with the FLG.

Figure 2-1*:* Geological map of the eastern Cobequid Highlands (NSDNRR geology base)

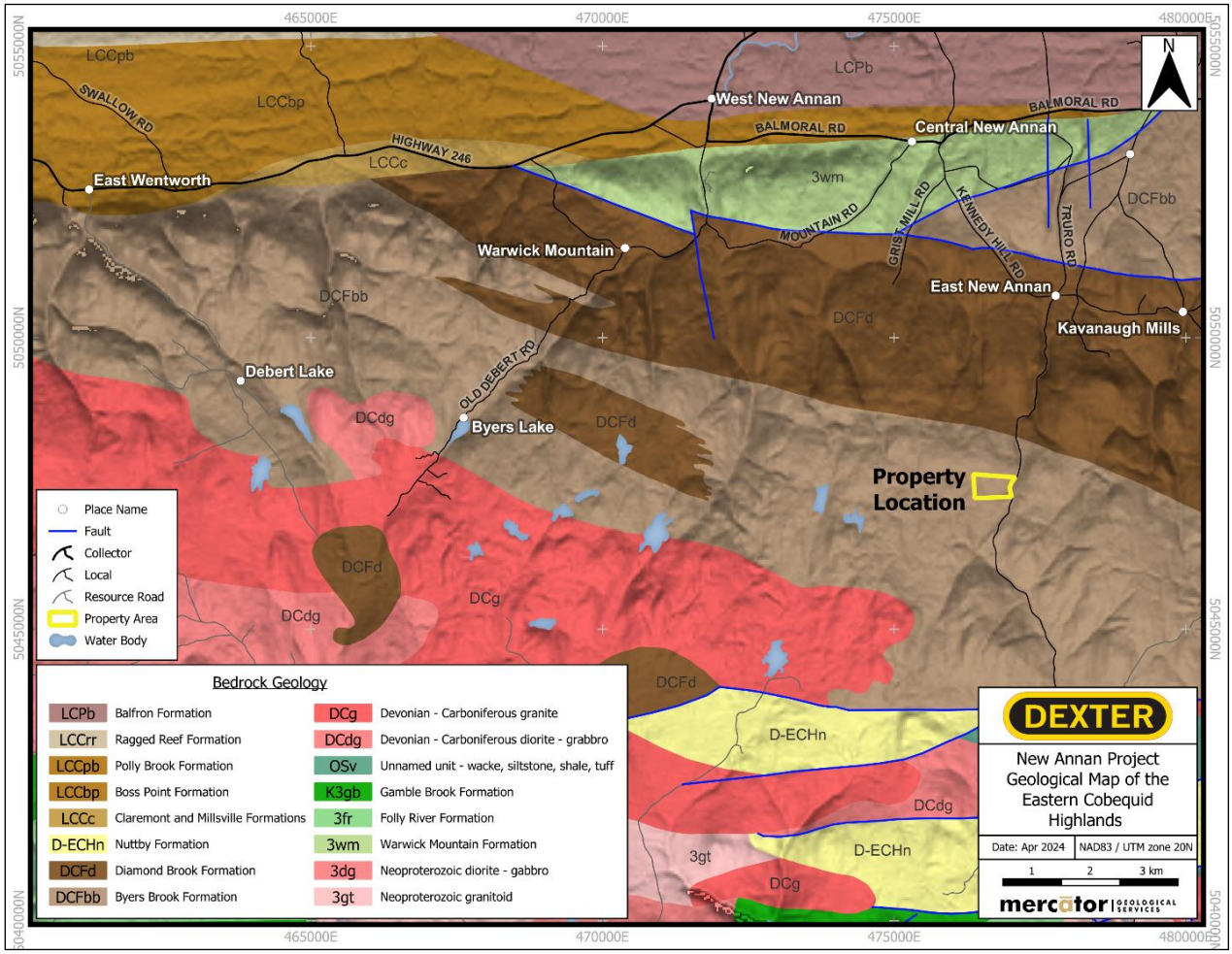
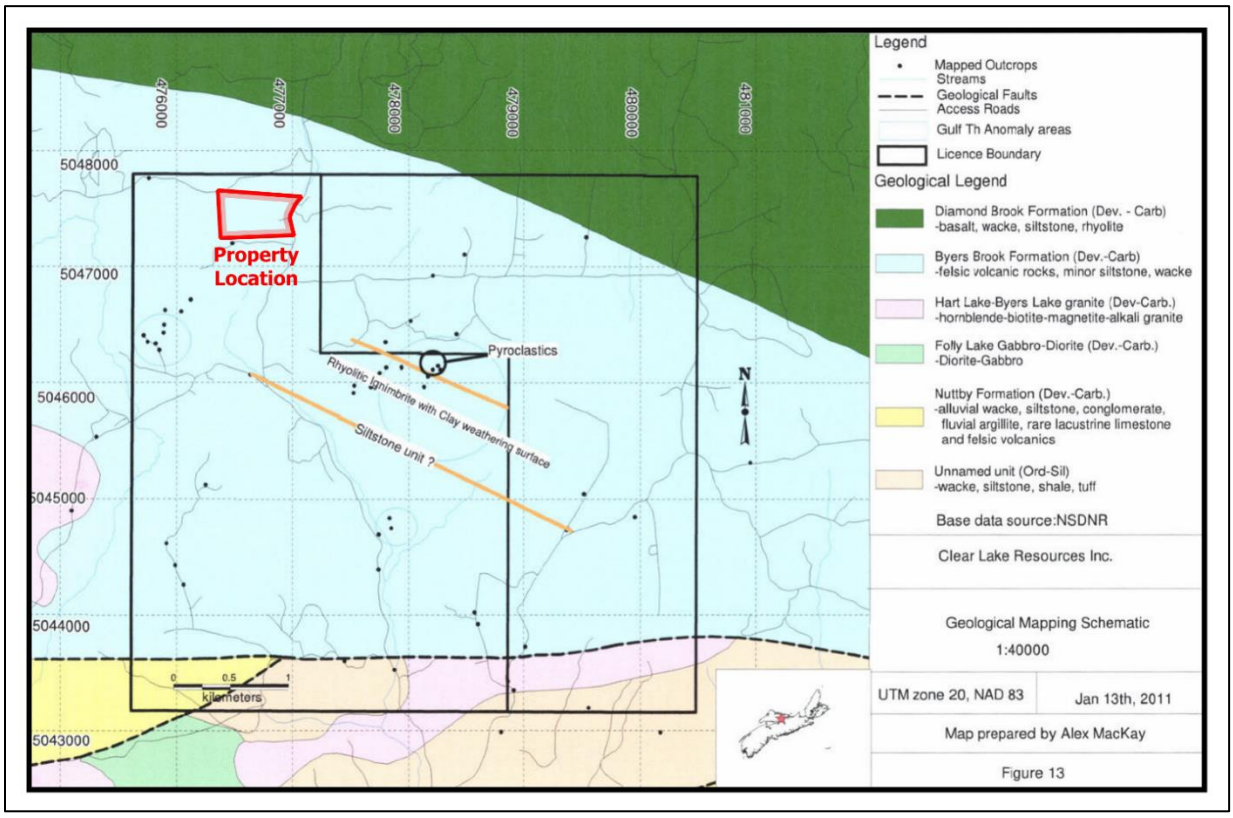


Figure 2-2: Clear Lake Resources exploration mapping (Modified after AR_ME_2010-24 12)



3.0 STYLES OF URANIUM MINERALIZATION IN BYERS BROOK FORMATION

According to Gower (1988), the largest and highest-grade uranium mineralization within the Byers Brook Formation was discovered and explored by Gulf and occurs within breccia zones located within and adjacent to rhyolite/dome flow complexes. These areas were likely subjected to high thermal gradients caused by the later injection of composite and rhyolitic dykes and created a site for large hydrothermal systems. Pervasive alkali metasomatism occurred as a result and leached and concentrated uranium, which had become liberated during the devitrification of the volcanic pile, into more permeable structures.

Two specific localities hosting uranium mineralization within the Byers Brook Formation were identified by Gower in the Debert Lake area, approximately 10 km west of the Project Area, after studying drill holes produced by Gulf, these being the "J Zone" and the "DF-Zone" (Figure 3-1). Descriptive notes for each zone are presented below.

1) **J-Zone:** Stratigraphic units are composed of crystal-lithic tuff, basalt flows, rhyolite, and the marker conglomerate. What is known as the "J-ignimbrite" is deposited above the marker conglomerate/siltstone and has higher background uranium (21 ppm) than other ignimbrites in the area (5-7 ppm). Two distinct types of alteration are associated with uranium mineralization in the J-zone: K-metasomatism and albitization of the host rocks. Uranium occurs in fractures, as disseminations in the albitized rhyolites, or less commonly in strongly brecciated zones. Uranium concentrations in mineralized albites and K-altered rocks within the J-Zone have reached up to 763 ppm (Gower, 1988).

2) **DF-Zone:** A large rhyolite dome and flow complex situated below (south of) the conglomerate/siltstone marker marks the host sequence and may be an eruptive center. This zone hosts the most significant uranium mineralization identified within the Byers Brook Formation. Uranium occurrences are found almost entirely within brecciated and strongly fractured rhyolite flows, with the uranium specifically surrounding breccia fragments as disseminations and veinlets. Minor concentrations of uranium are found within fractures or along bedding laminae in the siltstones. All mineralized zones are strongly hematite altered to a brick-red color and presence of the uranium mineral pitchblende, a dull medallic grey to black colored mineral, has been confirmed (Figure 3-2). Uranium concentrations in mineralized rhyolites within the DF-Zone reach up to 3971 ppm (Gower, 1988).

Mineralized rhyolites were found to have increased F, Cu, Zn, Mo, Rb, Zr, Ag, Pb, Al_2O_3, TiO_2, K_2O, MgO, and P_2O_5 relative to unmineralized rhyolites. K-metasomatism is associated with most occurrences of uranium mineralization within the Byers Brook Formation (Gower, 1988). Prospecting efforts by Gulf field crews identified radiometric anomalies and uranium mineralization in both boulders and bedrock in various other locations of the eastern Cobequid Highlands but these were not investigated as thoroughly as the J Zone and DF Zone.

After the Gulf uranium exploration period, gold and Rare Earth Element (REE) exploration potential within Byers Brook Formation volcanics and associated sub-volcanic intrusions was aggressively assessed by others. Gulf had originally identified anomalous REE levels in some areas of relative thorium enrichment within the volcanic sequence, but did not pursue focused REE assessment.

Figure 3-1: Location of Gulf's J Zone and DF Zone uranium prospects relative to the Project Area (NSDNRR geology base)

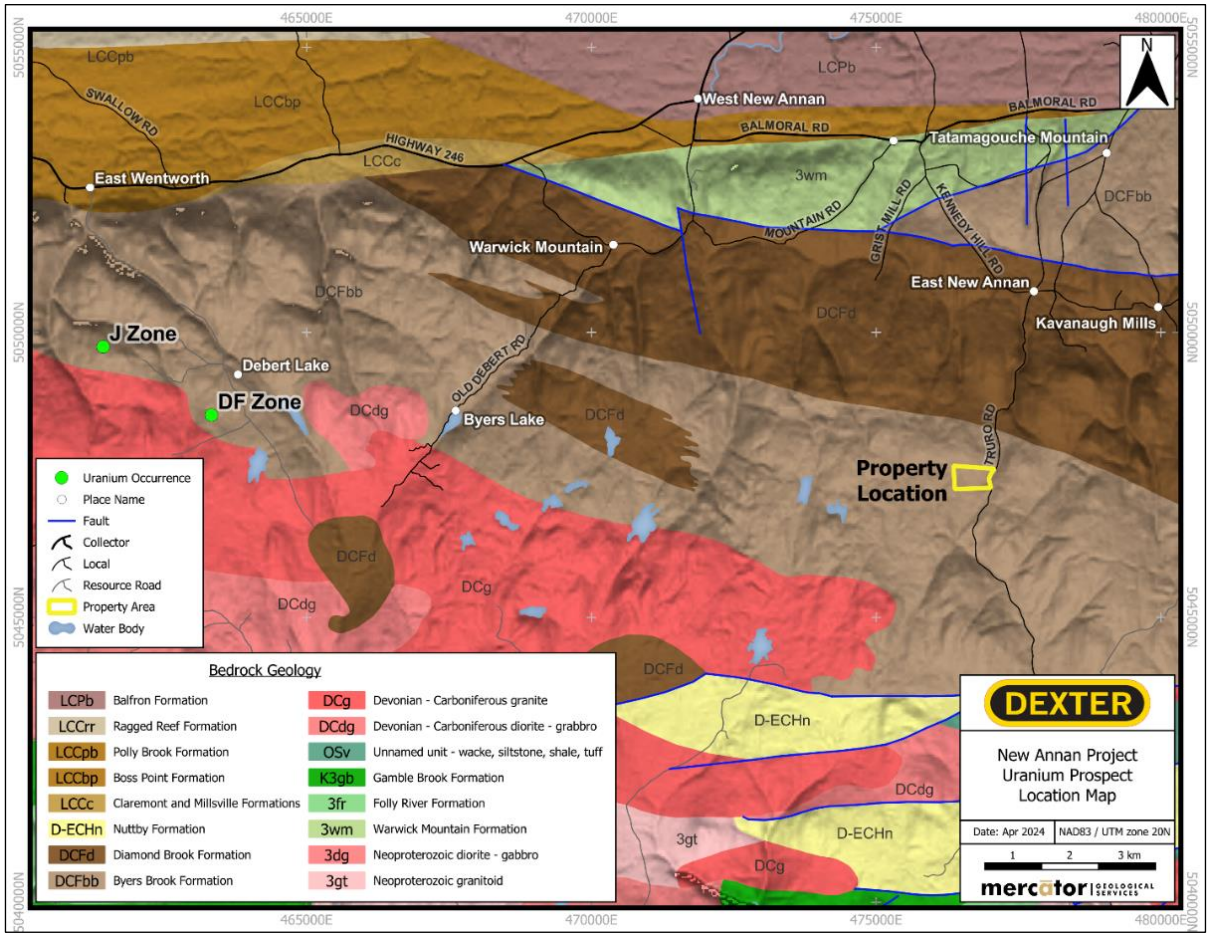


Figure 3-2: Drill core samples of brecciated rhyolite with dull metallic grey to black pitchblende (uranium ore mineralization) from Gulf Minerals DDH DF-32 (Taken from Gower, 1988)

4.0 RELEVANT HISTORICAL EXPLORATION

4.1 Introduction

Historical exploration programs with greatest relevance to the Project Area and current scope of investigation are those carried out by Gulf during the 1976 through 1981 period, Tripple Uranium Resources Inc. (Tripple Uranium) in the 2007 – 2010 period, and by Clear Lake Resources Inc. (Clear Lake) since 2010. In 1981 the government of Nova Scotia announced a moratorium on exploration and mining of uranium within Nova Scotia and all work by Gulf ceased at that time. Post-1981, work conducted in the Project Area switched to activities focused on potential for occurrence of gold and REEs in the FLG and certain adjacent older sequences. Brief descriptions of exploration results reported for the general vicinity of the Project Area by the three firms mentioned are presented below.

4.2 Gulf Minerals Canada Limited

Extensive work in the Cobequid Highlands was conducted by Gulf between 1976 and 1981. Programs covered the entire spatial extent of the highlands and resulted in discovery of significant bedrock uranium mineralization hosted by felsic volcanics of the FLG. As mentioned earlier in section 3.0, the area of greatest uranium success is located approximately 10 km west of the Project Area, between Byers Lake and Hart Lake, and centered in the Debert Lake area. Work was focused on uranium exploration within the same rock formation as found on the Dexter property, this being the Byers Brook Formation. Most of the work specifically focused along a zone where the rocks of the Byers Brook Formation are intruded by the felsic plutonic rocks of the Hart Lake-Byers Lake Pluton. This is a granite complex with alkalic geochemical affinity that is interpreted to be co-magmatic with FLG volcanics.

Gulf exploration programs included regional and detailed scale geological mapping, airborne and ground-based magnetometer, electromagnetic and radiometric surveying, soil geochemistry programs, trenching, and both core and reverse circulation drilling. The greatest intensity of investigation was carried out in the Debert Lake area noted above, but airborne geophysical surveys were completed over the Project Area as well as regional scale geological mapping, prospecting, and soil geochemistry programs. These programs did not identify any significant uranium mineralization within or immediately adjacent to the Project Area. Prospecting and mapping by Gulf approximately 1 km southwest and west of the Dexter property identified several discrete areas of elevated radiometric responses that sampling showed to be attributable to elevated bedrock thorium levels. Elevated uranium values were not recorded at these locations (Gulf, 1980).

Gulf airborne magnetometer and radiometric survey results show that the western half of the Project Area is characterized by higher background magnetic field and equivalent Uranium (eq. U) responses than seen in the eastern half of the area that underlies Dexter's current gravel extraction operation. Potassium (K) and thorium (Th) channel background trends mimic those of eq. U and broadly coincide with the elevated airborne magnetometer survey total magnetic field trend. This may reflect a change in bedrock geology between the east and west halves of the Project Area.

Based on bedrock and drill core observations by Mercator and Dexter staff in 2024, the combined airborne survey responses are interpreted as indicating presence under the western half of the property of a magnetite-bearing felsic volcanic (rhyolite) unit with distinctive relative background levels of uranium, thorium, and potassium. The area of low radiometric response in the eastern portion of the Project Area coincides with the thick gravel and sand deposit currently being exploited by Dexter, which may be masking radiometric responses of immediately underlying bedrock. Alternatively, displacement of bedrock units by a north-south trending fault that passes under the gravel deposit area may account for the change in background responses.

Later airborne surveying by Tripple Uranium that is discussed below clearly represents the trends outlined in the older Gulf surveys. These important trends are highlighted in the Tripple Uranium discussion presented below in section 4.3.

Referenced information for the Gulf era work programs appears in Gulf Minerals (1977, 1978, 1979, 1980, 1981).

4.3 Tripple Uranium Resources Inc.

In 2007, Tripple Uranium became interested in the potential for precious-minerals (Au and Ag) plus Sn, W, Mo, Zn, and high field strength and rare earth element (Th, Zr, Nb, Hf, and Zr) mineralization within brecciated, granophyric granite that had been intersected within one of Gulf Minerals drillholes. The company subsequently conducted airborne magnetic and radiometric geophysical surveys in a grid consisting of approximately 4470.1 line-kms. Individual uranium, thorium and potassium radiometric channel grids were produced from the data. The New Annan Quarry area is included within the area of

the geophysical surveys. In combination with those of later ground spectrometer surveying by Clear Lake Resources, airborne survey results provide valuable insight into bedrock geology of the Project Area.

Total field and calculated vertical gradient results define a distinct magnetic domain that trends east-southeast through the Project Area, with a centrally located break that trends north-northeast within the Project Area, crossing the current Dexter operation pit (Figure 4-1). Well defined higher responses shown on equivalent uranium (eq. U) equivalent thorium (eq. Th) and potassium (K) channel airborne survey maps coincide with higher topographic elevations seen in the western half of the Project Area, west of the north-south vertical gradient trend break (Figures 4-2 through 4-4). As mentioned earlier under the Gulf discussion, a distinct low response trend occurs in all radiometric maps over the eastern portion of the Project Area and extends further to the south and east. This trend may reflect a corresponding marked change in underlying bedrock sequences or be due to masking of bedrock radiometric responses by thick overburden (gravel deposits) present along the north-south valley that is followed by the Truro Road in this area. The current Dexter pit is exploiting these thick gravels.

Referenced information for the Tripple Uranium era work programs appears in Tripple Uranium (2012).

Figure 4-1: Tripple Uranium calculated vertical gradient magnetics map (ME 2008-051) and Clear Lake Resources spectrometer data (ME 2011-136) in the Project Area – white arrow identifies trend of break discussed in text

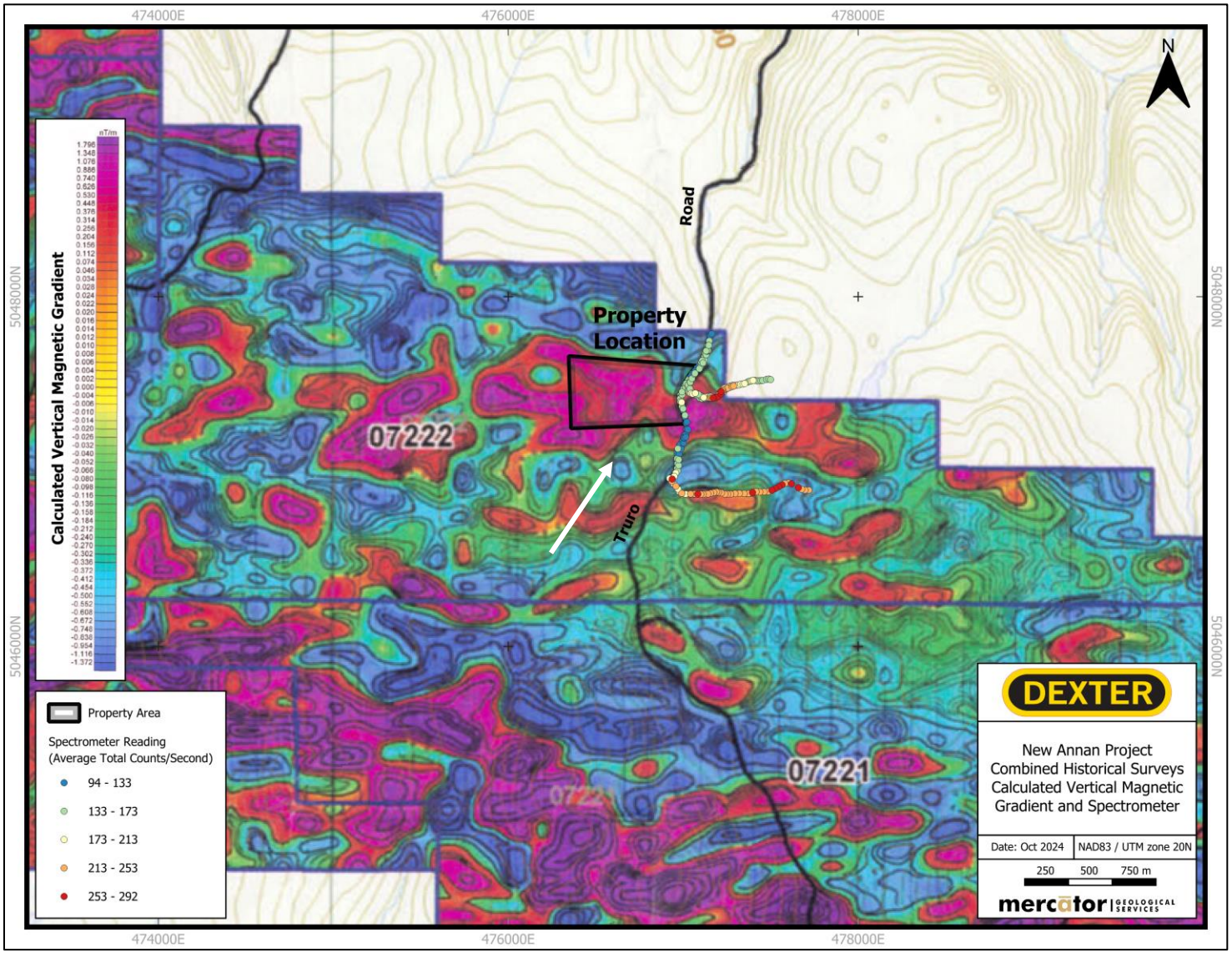


Figure 4-2: Tripple Uranium equivalent uranium map (ME 2008-051) and Clear Lake Resources spectrometer data (ME 2011-136) in Project Area – white arrow identifies trend break discussed in text

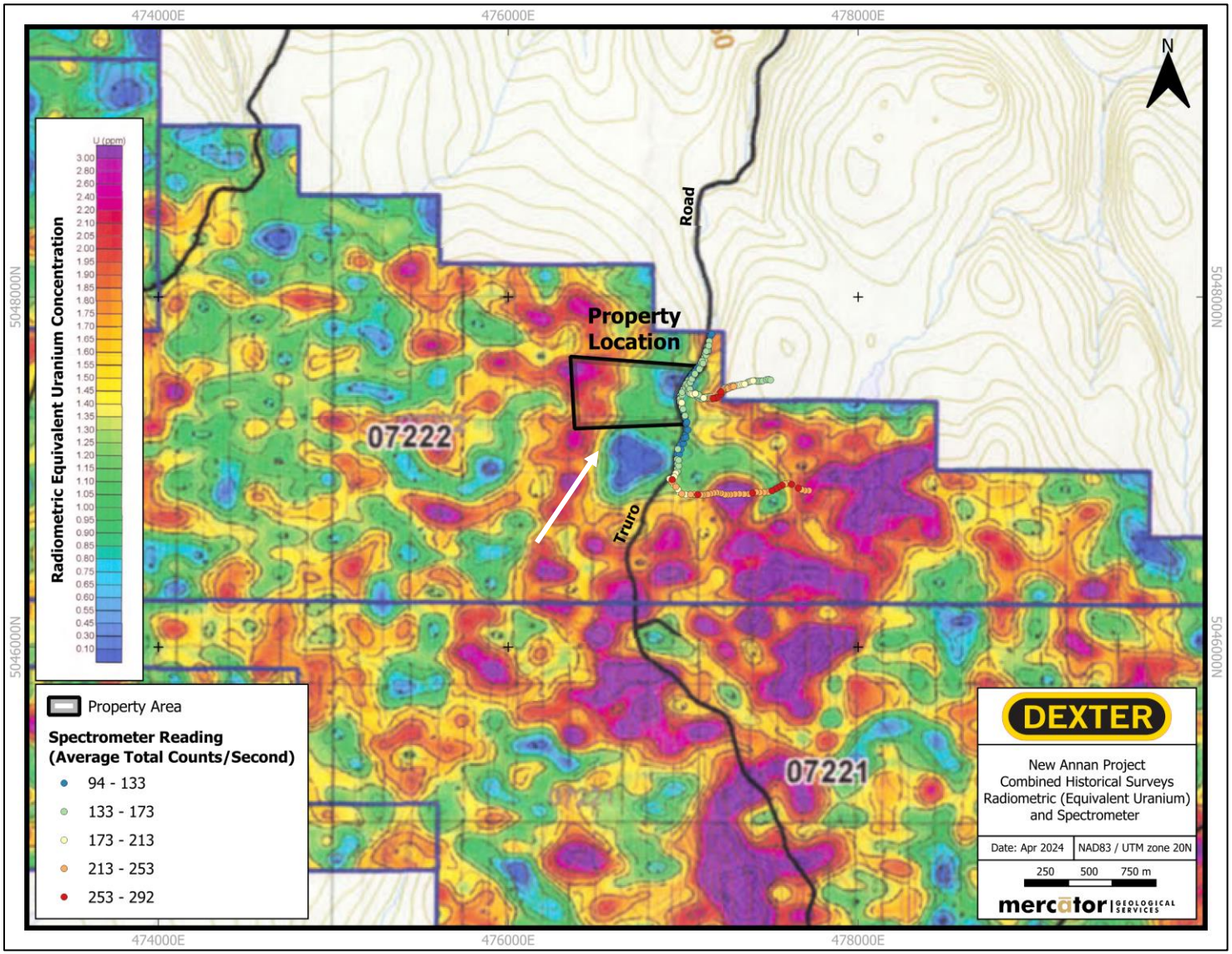


Figure 4-3: Tripple Uranium equivalent thorium map (ME 2008-051) and Clear Lake Resources spectrometer data (ME 2011-136) in Project Area – white arrow identifies trend break discussed in text

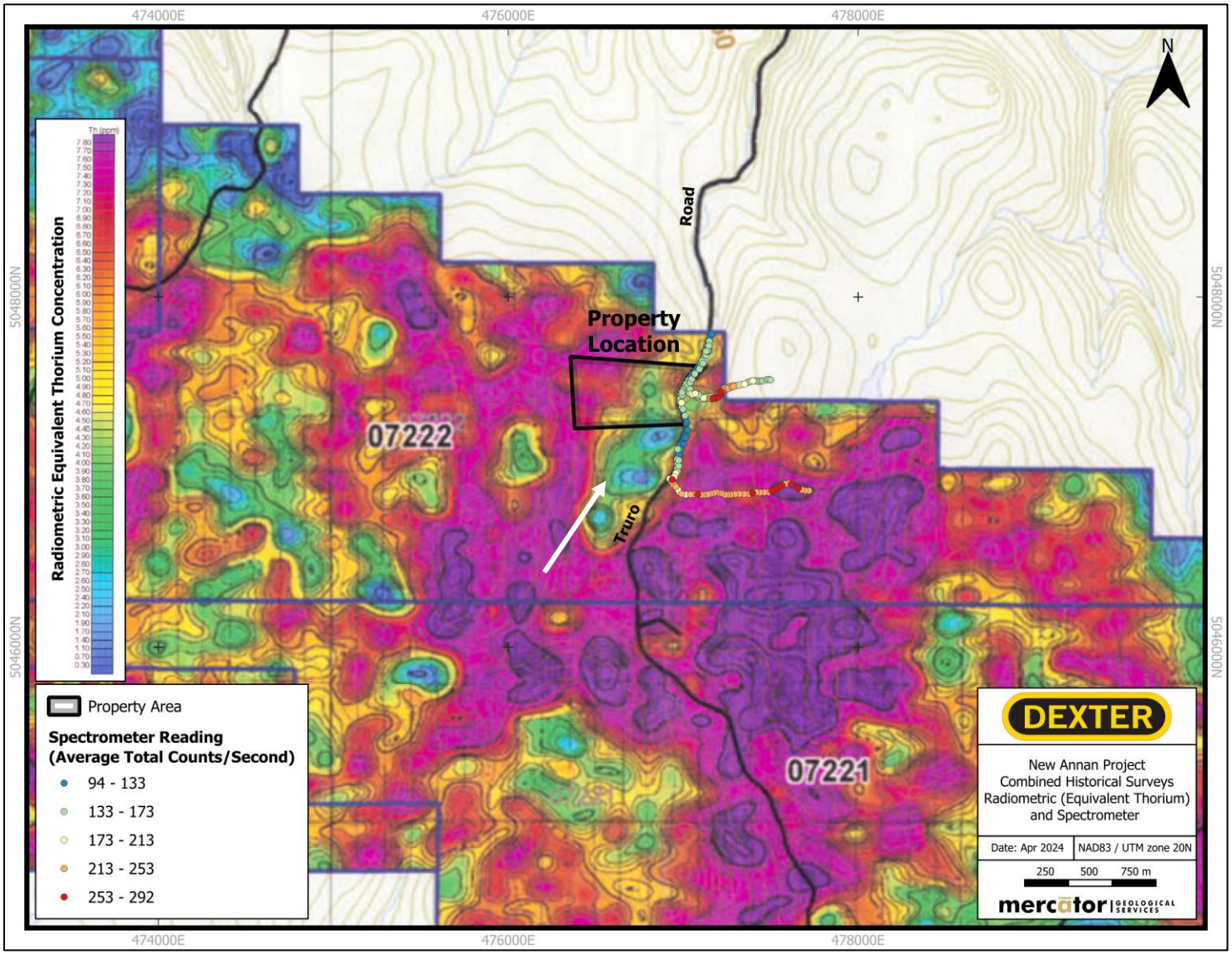
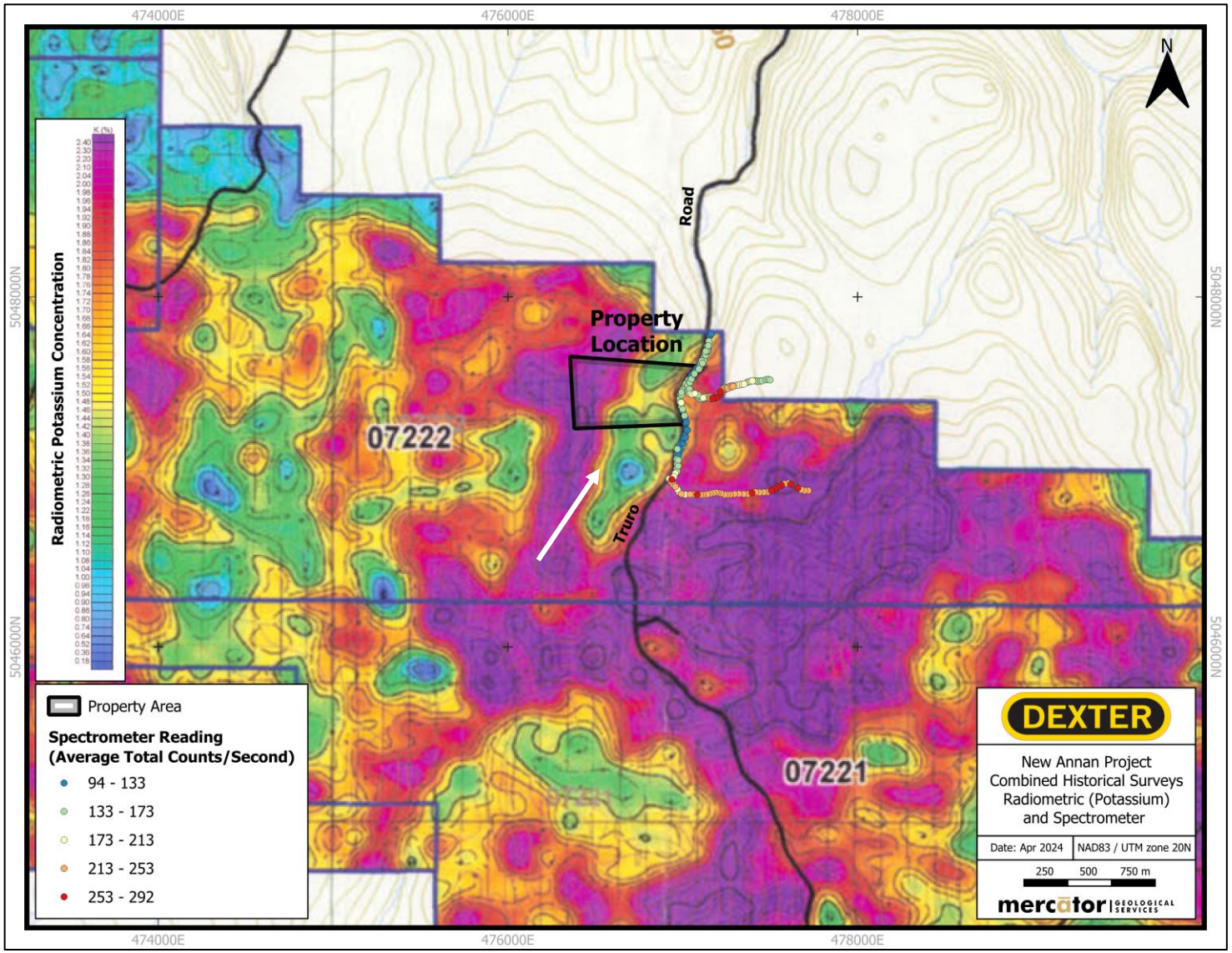


Figure 4-4: Tripple Uranium potassium channel map (ME 2008-051) and Clear Lake Resources spectrometer data (ME 2011-136) in Project Area – white arrow identifies trend break discussed in text



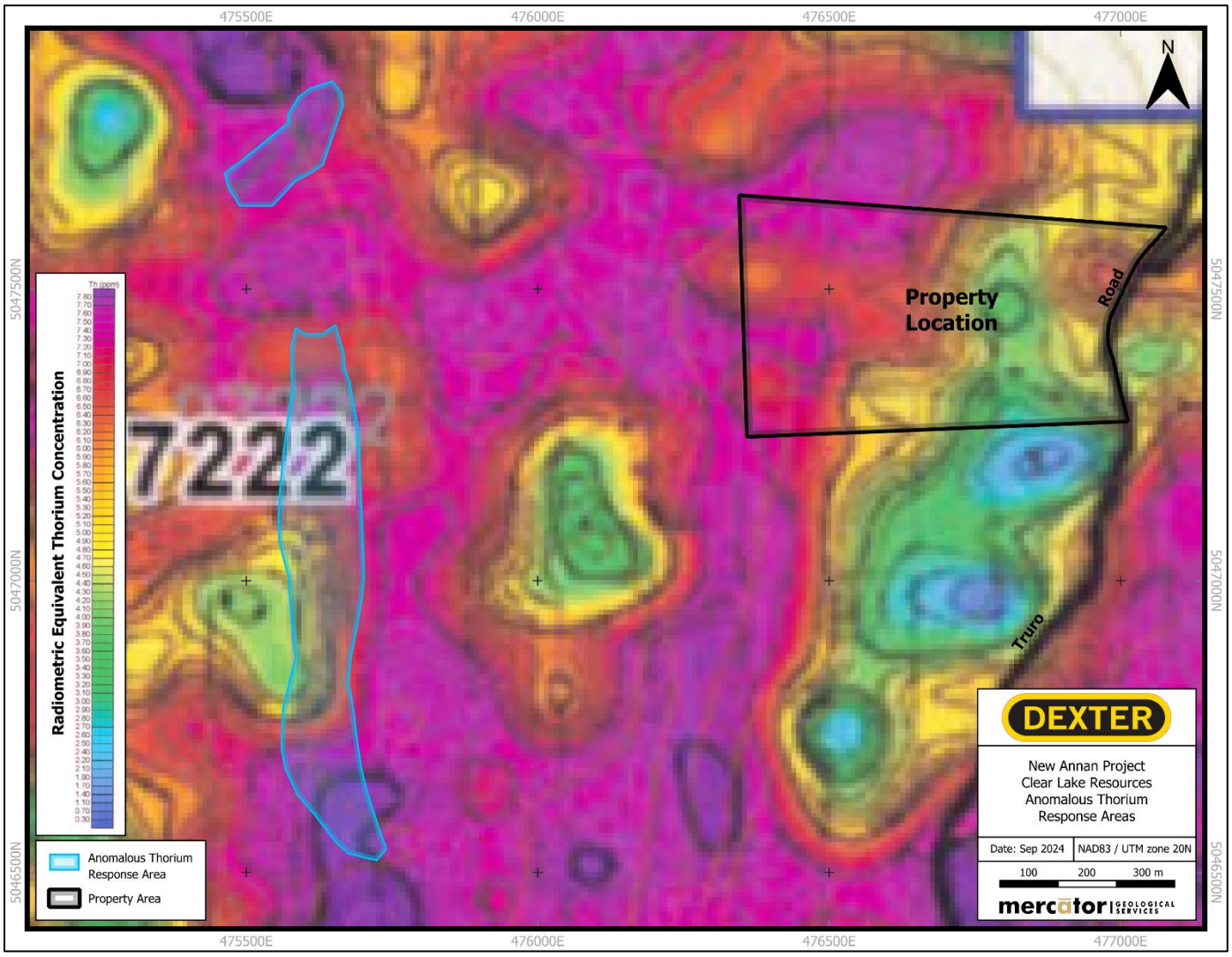
4.4 Clear Lake Resources

Since 2010, Clear Lake has conducted reconnaissance and follow-up field work to Gulf's previous work and NS government surveys. Their efforts have been focused on identifying targets for REE and Iron Ore Copper Gold (IOCG) styles of mineralization associated with the volcanic sequence. The company conducted portable X Ray Fluorescence (pXRF), spectrometer and scintillometer surveys, plus geological mapping, and rock and soil sampling. The pXRF and spectrometer surveys were conducted to identify areas of enhanced thorium, which is known to be associated with REEs in the Byer's Brook Formation. REE exploration was the primary focus for Clear Lake, but assessments of gold and other elements were also carried out.

The Truro Road that marks the eastern limit of the Project Area was tested by spectrometer surveying and returned relatively low counts/second (cps) readings between 116.2 and 174.6 adjacent to the Project Area. Elevated readings up to 292 cps were locally obtained approximately 300 m south and 200 m east of the Project Area and results of this surveying are included in previously referenced Figures 4-1 through 4-4. Elevated thorium (1000 to ~6000 ppm) and REE values were identified locally within the rhyolitic volcanic sequence approximately 750 m west and 1.0 km northwest, respectively, of the Project Area's west property boundary (Figure 4-5). Anomalous uranium values do not accompany the thorium.

Referenced information for the Clear Lake Resources era work programs appears in Clear Lake (2010, 2011a, b, c), Clear Lake (2012) and Clear Lake (2014).

Figure 4-5: Areas of elevated radiometric response with elevated thorium levels in bedrock sampling



5.0 RESULTS OF THE DESKTOP COMPILATION STUDY

5.1 Main Conclusion

- Based on review and interpretation of publicly available geological data and maps, the Byers Brook Formation volcanic sequence within the Project Area is deemed prospective for uranium mineralization. However, no historically defined bedrock uranium occurrences were identified within the Project Area.

5.2 Summary of Supporting Information

- The Project Area lies within the Byers Brook Formation which is a Devonian-Carboniferous age group of mixed volcanic and sedimentary units. Uranium mineralization has been identified in boulder and outcrop occurrences in many areas underlain by the Byers Brook Formation, particularly in proximity to the Hart Lake-Byers Lake Granite, located about 10 km west of the Project Area. It is believed that the emplacement of the Hart Lake-Byers Lake Granite is responsible for initiating the widespread uranium mineralization within the Byers Brook Formation (Gower, 1988). A review of mineralization by Gower (1988) concluded that the major mechanisms of mineralization were hydrothermal in nature. Based on the available data, mineralization was identified as occurring within rhyolite dome complexes of the Byers Brook formation, commonly in breccias which are proximal to fault zones that cross the strata. Exploration targets identified by Gower are located along the contact between the Diamond Brook and Byers Brook formations which occurs just north of the Project Area.

- The main area of historical exploration that resulted in drilling definition of significant bedrock uranium mineralization is located approximately 10 km west of the Project Area, near Debert Lake.

- According to Nova Scotia legislation regarding the moratorium on exploration and mining of uranium in Nova Scotia, “Allowing mining of uranium that is encountered in the course of mining other minerals as long as the uranium is present in quantities less than the designated threshold value of 0.01 percent by weight” (Nova Scotia Uranium Exploration and Mining Prohibition Act, 2009). **If bedrock material at the Project Area contains uranium above this concentration, it cannot be developed for commercial purposes.**

- There is no current evidence that identifies uranium at or above the threshold concentration level in any material within the Project Area. The Project area occurs within an area of relatively low ground radiometric survey responses, which suggests that potential for occurrence of substantial bedrock uranium mineralization is relatively low. To the immediate west of the current gravel pit operation, in the area being considered for future bedrock quarrying, radiometric survey results are higher than over the gravel deposit and suggest a change in bedrock composition or character from that seen in the east under the gravel deposit. Alternatively, the gravel deposit itself may be masking the radiometric response of immediately underlying bedrock. The contact defined by

these responses trends north-northeast across the full extent of the Project Area and coincides with a topographic break that transitions to higher elevations and thinner overburden west of the pit. This trend may mark the location of a fault zone that locally displaces the volcanic sequence.

- Results of exploration programs completed since 2010 have shown that localized areas of high ground radiometric response located between 750 m and 1 km west and northwest of the Project Area's west property boundary are primarily due to elevated bedrock thorium levels that are not accompanied by elevated uranium levels.

6.0 NEW ANNAN SITE VISIT

6.1 Introduction

Gavin Isenor of Dexter and Michael Cullen of Mercator visited the New Annan site on May 5th, 2024. The purpose of the visit was to view existing gravel, overburden and bedrock exposures in the planned quarry area and to assess background levels of radioactivity using an Exploranium Model 110 scintillometer. The existing pit develops glacial-fluvial gravel deposits that are well developed within the spatial confines of the north-south trending topographic valley that crosses the Cobequid Highlands in this area. The valley is followed by the Truro Road and the south-flowing West North River. Bedrock exposures of Devono-Carboniferous volcanics of the Byers Brook Formation occur locally along the valley sides, which are typically distinct and show moderate slopes in the quarry area.

6.2 Character of Gravel Deposit in Existing Pit

The gravel deposit developed to date at this site was created during the last major glacial melt-out period and is comprised of moderately well sorted sandy matrix gravels interbedded with minor sand units. These are interpreted to have accumulated due to glacial-fluvial processes. Figure 6-1 shows the current extent of the developed gravel deposit and Figure 6-2 shows the approximate vertical extent of extraction to date. The exposure shown in Figure 6-2 is approximately 10 m high and a soil layer that typically measures less than 2 m in thickness is developed on top of the gravel deposit. Gravel appears to pinch out against bedrock volcanics approximately 100 m west of the current pit limit. A substantial volume of gravel remains for future development at this site above the elevation of the Truro Road.

6.3 Bedrock In Future Quarry Area

Felsic volcanic rocks of the Byers Brook Formation form bedrock in the future quarry area. Dexter plans to begin quarrying immediately west of the current gravel pit's western limit and to advance westerly into rising topography. A line of small lakes and swampy areas marks the interpreted western limit of the main gravel deposit, about 50 m west of the currently stripped pit area, and probably marks the transition from the thick gravel deposit to adjacent till covered bedrock sequences that will be quarried.

A few isolated outcrops of dull pinkish brown, feldspar phenocrystic (5 to 15%) rhyolite occur west of the pit and along an east-west oriented forestry access road that crosses the gravel/bedrock contact a short distance north of the pit. The rhyolite in outcrop does not show pervasively developed layering but weakly developed flow banding or welding textures were noted in some exposures. The orientation of layering was not established, but the interpreted trend of the volcanic sequence in this area strikes east west and dips north, below younger mafic volcanics of the Diamond Brook Formation.

Figure 6-1: View of existing pit looking southwest

Figure 6-2: Gravel face showing approximate height of current development. The face is approximately 10 m in height above the main pit bench level

Figure 6-3: Phenocrystic rhyolite from outcrop approximately 100m west of Figure 12 face

As noted earlier, airborne magnetometer survey results in the Project Area define an east-southeast trend that is partly truncated by a north-northeast trend immediately west of the current pit location. The east-west trend probably marks the main volcanic sequence strike in this area and the other trend may mark a local fault or fracture corridor that crosscuts the sequence.

6.4 Ground Radiometric Assessment

An Exploranium Model 110 hand-held scintillometer was used to assess background gamma radiation levels in the pit area and the adjacent area slated for quarry development. Background values within the gravel deposit and pit area averaged between 70 and 100 counts per second (cps). The area of outcropping rhyolite and associated boulders has an increased background level in the 120 to 180 cps range and a zone of sub-cropping rhyolite along an access road that parallels the north property boundary shows a zone of higher background (150 to 200 cps) that extends for about 70 m along the road. In comparison, background levels in the 50 to 70 cps range were noted approximately 4 km north of the property within mafic volcanics of the Diamond Brook Formation. Higher background levels in felsic volcanics relative to mafic volcanics are expected due to their respective bulk mineralogy. No highly anomalous radiometric responses were detected in the areas traversed on the property on May 10th.

7.0 REVIEW OF 2024 DRILL CORE

7.1 Introduction

Dexter drilled four core holes on the property in June of 2024. Three of these (MW-1, MW-2 and MW-3) were drilled and completed as monitoring wells for the site environmental program and the third (BH) was drilled to assess bedrock sequences within the planned quarry area. Table 7-1 presents collar coordinate, orientation and depth information for the holes. Figure 8-1 that appears in section 8.0 below shows drill hole locations.

Table 7-1: Drill hole information

Hole Number	*Northing (m)	*Easting (m)	Elevation (m)	Angle (deg)	Depth (m)
MW-1	5047636.031	476421.579	290.974	-90	41
MW-2	5047256.519	476367.737	288.902	-90	35
MW-3	5047420.333	476913.402	254.423	-90	5.18
BH	5047383.545	476571.486	277.1	-90	35.1

*UTM NAD 83 Zone 20 North coordination

7.2 Lithology and Structure

Mercator staff did not log core from the holes in detail but a summary review of core from holes MW-1, MW-2 and BH was carried out with Gavin Isenor and Rhett Thompson of Dexter on June 11th at the Rocky Lake site (Figure 7-1). MW-3 was drilled entirely in gravel and overburden and did not core any bedrock. The other three holes intersected sections of pinkish brown to purplish brown, phenocrystic rhyolite like that seen in surface exposures west of the pit. Flow layering or welded tuffaceous laying at 30 to 50 degrees to the long core axis (LCA) is infrequently present in all holes and all show minor amounts of finely disseminated magnetite (< 1%). Rhyolite in BH and MW-1 is similar in color, texture and phenocryst content and differs slightly in color from that seen in MW-2, which is sightly more orange. A thin (~15 cm) zone of fault gouge occurs at a depth of approximately 34.7m depth in MW-1 and is followed by a small mafic dike interval between 35.66m and 36.11m. The dike shows chilled contacts with the host rhyolite that parallels fracturing oriented at approximately 60 degrees to LCA.

7.3 Drill Core Radiometric Assessment

The Exploranium 110 scintillometer used at the New Annan site was used to assess levels of radioactivity present in the drill core. All core was systematically scanned using the scintillometer and results show that the three holes have a background level of approximately 120 cps, with MW-2 showing a few slightly higher intervals in the 140-cps range (Figure 7-2).

Three samples of drill core were collected on June 11th and subsequently analyzed using a Niton portable Xray fluorescence (pXRF) unit. Averaged sample results for U, Th and K are presented in Table 7-3 and fall within expected background ranges for this association of felsic volcanics rocks. These elements are highlighted because they are commonly associated with sources of elevated radiometric responses. All

samples contain feldspar phenocrysts in a fine-grained matrix. Ten sites of groundmass were analyzed along with nine sites of feldspar phenocrysts.

Figure 7-1: New Annan drill core laid out for review at Rocky Lake

Figure 7-2: Area of higher background core (140 cps) in hole BH

Table 7-2: *pXRF results for three representative rhyolite core samples from New Annan site

Phenocryst Averages		Matrix Averages	
U (ppm)	13.21	U (ppm)	14.8
Th (ppm)	16.27	Th (ppm)	19.9
K (%)	2.94	K (%)	3.73
Number of Analyses	10	Number of Analyses	9

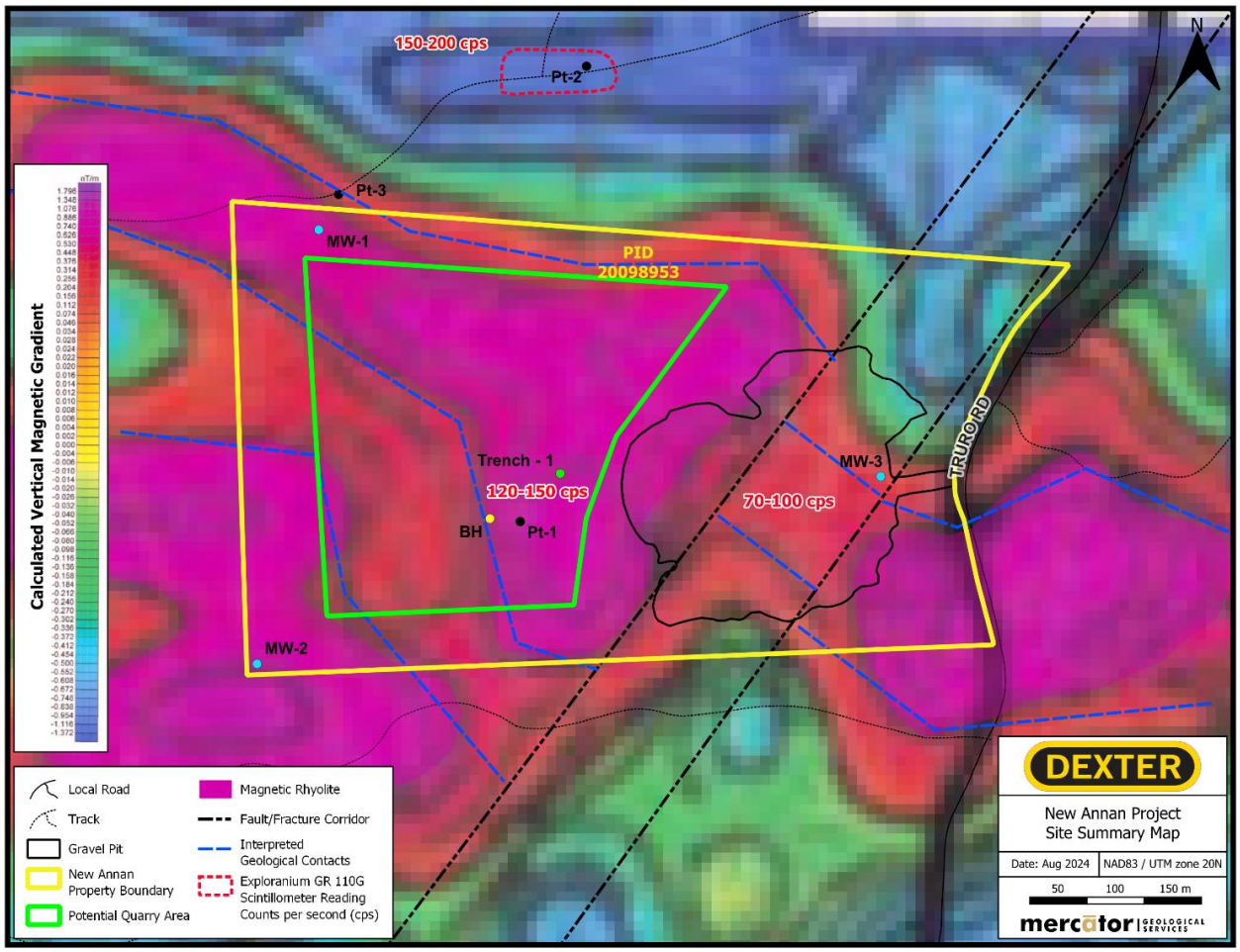
*pXRF results do not constitute certified laboratory analyses

8.0 GEOLOGICAL INTERPRETATION BASED ON COMPILATION, DRILLING AND SITE VISIT DATA

Figure 8-1 presents a geological interpretation for the proposed quarry area based on Mercator's compilation, drilling and site visit data. For interpretive purposes, it is assumed that finely disseminated magnetite observed in cored rhyolite is responsible for the magenta-colored magnetic high anomalies shown in Figure 8-1.

The area planned for quarry development is interpreted to be underlain by two units of magnetic Byers Brook Formation rhyolite separated by a zone of less magnetic material also interpreted to be rhyolite. These units strike east-southeast across the property, but dip direction and magnitude have not yet been clearly defined. A moderate to steep north dip is inferred. An interpreted northeast trending fracture or fault corridor disrupts the magnetic rhyolite unit trends and underlies the central area of the existing Dexter gravel pit. Similar breaks are apparent in the airborne radiometric survey results discussed earlier. The topographic depression between the existing pit and the area of planned quarry development to the west may mark the western limit of this structural zone or fault.

Figure 8-1: Geological interpretation for the New Annan Quarry area



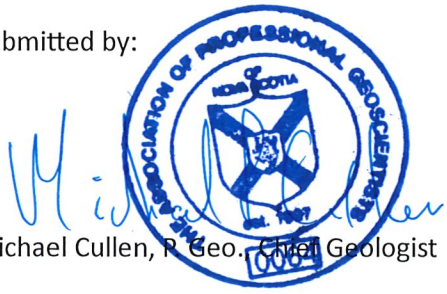
9.0 CONCLUSIONS AND RECOMMENDATIONS

No bedrock uranium occurrences have been defined to date in the Project Area and no obvious indicators of significant risk of uranium presence in the proposed quarrying area were identified during the current study. However, based on review and interpretation of publicly available information for this study, the Early Carboniferous Byers Brook Formation in the Project Area is deemed prospective for occurrence of uranium mineralization. As this rock will be quarried in the Project Area, systematic monitoring of such potential as quarry approval and production progresses is necessary. Mercator's recommendations for monitoring are as follows:

1. It is recommended that prior to blasting, newly stripped bedrock areas west of the current gravel pit be checked for anomalous radioactivity levels using a hand-held scintillometer or spectrometer. Similar checking of broken rock should be carried out after each blast and periodically during crushing for the operational life of the quarry.
2. If results of the radioactivity are found to be more than 10 times regional background levels, representative samples should be analyzed for uranium at a certified geochemical laboratory licenced to do so. These surveys and others specific to uranium monitoring and action protocols may be required by the Province of Nova Scotia under the Industrial Approval for the Project, and it is recommended that those set out under the current Environmental Approval for Dexter's Pioneer Drive Quarry at Lower Vaughan, Hants County, be considered for application at the New Annan Quarry.
3. With respect to aggregate quality, attention should be paid to any significant changes in bedrock lithology in areas being prepared for production.

Contributing Mercator Staff
Olivia Pushie, GIT
Zach MacDougall, GIT
Michael Cullen, P. Geo.
Michael Power, P. Geo.
Courtney Fry, GIS Manager

Submitted by:



Michael Cullen, P. Geo., Chief Geologist

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Appendix I – List of Supporting NS Government Digital Database and Mapping Files

Web Sub Category	Dataset	Download Source	MetaData	Citation
NR&R	p90014 - dp035v2sh - Cumberland Basin, Tata and Malagash	https://novascotia.ca/natr/meb/download/dp035dds.asp	https://novascotia.ca/natr/meb/download/dp035md.asp	DP ME 35, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1990-14, Cumberland Basin Geology Map of Tatamagouche and Malagash, Cumberland, Colchester and Pictou Counties, Nova Scotia, NTS 11E/14A, 11E/14B, 11E/11C, 11E/11D and Parts of 11E/11A and 11E/11B, Scale 1:50 000, by R. J. Ryan and R. C. Boehner, 1990
NR&R	d185t2 - dp185v2sh - Central NS	https://novascotia.ca/natr/meb/download/dp185dds.asp	https://novascotia.ca/natr/meb/download/dp185md.asp	DP ME 185, Version 2, 2006. Digital Geological Data Generated as Part of the Targeted Geoscience Initiative Project (Phase 2), Geological Mapping and Resource Evaluation in Central Nova Scotia, 2003-2005, NTS 11E/06 and 11E/07 and parts of 11E/05, 11E/10, 11E/11 and 11E/12.
NR&R	d540wi - dp504v1sh - Warwick Mountain	https://novascotia.ca/natr/meb/download/dp504dds.asp	https://novascotia.ca/natr/meb/download/dp504md.asp	DP ME 504, Version 1, 2018. Digital Version of Nova Scotia Department of Natural Resources Open File Map ME 2018-005, Preliminary Bedrock Geology Map of the Eastern Cobequid Highlands, Nova Scotia, scale 1:35 000, by T.G. MacHattie, 2018
Provincial Bedrock Map and NR&R Maps)	Fault (this is merged data between Provincial bedrock Map and Various NR&R Detailed Maps)	https://novascotia.ca/natr/meb/download/dp043dds.asp	https://novascotia.ca/natr/meb/download/dp043md.asp	DP ME 43, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 2000-1, Geological Map of the Province of Nova Scotia, Scale 1:500 000, Compiled by J. D. Keppie, 2000
Web Sub Category	**Dataset**	**Download Source**	**MetaData**	**Citation**
Geochemistry	c135nc - dp135v2sh - DP 135 Geochemical Analysis of Bulk Stream Sediment and Water Samples over Northern Nova Scotia (Heavy Fraction, Fine Fraction, Water Geochem)	https://novascotia.ca/natr/meb/download/dp135dds.asp	https://novascotia.ca/natr/meb/download/dp135md.asp	DP ME 135, Version 2, 2006. Geochemical Analyses of Bulk Stream Sediment and Water Samples by the Nova Scotia Department of Natural Resources over Northern Nova Scotia, 1986-1987
Geochemistry	c136nc - dp136v2sh - DP136 Regional Stream Sediment and Water Survey over the Northern Mainland Nova Scotia	https://novascotia.ca/natr/meb/download/dp136dds.asp	https://novascotia.ca/natr/meb/download/dp136md.asp	DP ME 136, Version 2, 2006. Regional Stream Sediment and Water Surveys by the Nova Scotia Department of Natural Resources over the Northern Mainland Nova Scotia and Cape Breton Island, 1982-1983

	and Cape Breton Island (Stream Water, Stread Sed Geochem			
Geochemistry	c138ml- dp138v2sh -DP138 Till Geochemical Survey over Mainland Nova Scoti (Till Geochem)	https://novascotia.ca/natr/meb/download/dp138.asp	https://novascotia.ca/natr/meb/download/dp138md.asp	DP ME 138, Version 2, 2006. Till Geochemical Survey by the Nova Scotia Department of Natural Resources over Mainland Nova Scotia, 1977-1985
Web Sub Category	**Dataset**	**Download Source**	**MetaData**	**Citation**
Databases	Drill Core	https://novascotia.ca/natr/meb/download/dp003dds.asp	https://novascotia.ca/natr/meb/download/dp003md.asp	DP ME 003, Version 6, 2023, Nova Scotia Drillhole Database
Databases	Historical Drillhole	https://novascotia.ca/natr/meb/download/dp003dds.asp	https://novascotia.ca/natr/meb/download/dp003md.asp	DP ME 003, Version 6, 2023, Nova Scotia Drillhole Database
Databases	Mineral Occurrence	https://novascotia.ca/natr/meb/download/dp002dds.asp	https://novascotia.ca/natr/meb/download/dp002md.asp	DP ME 002, Version 11, 2016, Nova Scotia Mineral Occurrence Database
Databases	Abandoned Mine	https://novascotia.ca/natr/meb/download/dp010dds.asp	https://novascotia.ca/natr/meb/download/dp010md.asp	DP ME 10, Version 8, 2020. Nova Scotia Abandoned Mine Openings Database
Web Sub Category	**Dataset**	**Download Source**	**MetaData**	**Citation**
Mineral Deposits	Industrial Mineral Occurrence	https://novascotia.ca/natr/meb/download/dp028dds.asp	https://novascotia.ca/natr/meb/download/dp028md.asp	DP ME 28, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1985-1, Industrial Mineral Commodities Map of the Province of Nova Scotia, Scale 1:500 000, by J. H. Fowler, 1985
Web Sub Category	**Dataset**	**Download Source**	**MetaData**	**Citation**
Prov Surficial Geology	dp036v2sh - p92003st - glacial striae	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992

Prov Surficial Geology	dp036v2sh - p92003sf - glacial striae measurement	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003ks - Kettles	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003hm - Hummocks	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003dr - Drumlins	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003dl - Deltas	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003rm - Roche Mountonnees	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003rf - Reference Sections	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003ma - Morraines	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003mw - Meltwater	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992

Prov Surficial Geology	dp036v2sh - p92003es - Eskers	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - 92003cq - Cirques	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003be - Beaches	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003sc - Terrace Scarps	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992
Prov Surficial Geology	dp036v2sh - p92003gs - Surficial Geology Poly	https://novascotia.ca/natr/meb/download/dp036dds.asp	https://novascotia.ca/natr/meb/download/dp036md.asp	DP ME 36, Version 2, 2006. Digital Version of Nova Scotia Department of Natural Resources Map ME 1992-3, Surficial Geology Map of the Province of Nova Scotia, Scale 1:500 000, by R. R. Stea, H. Conley and Y. Brown, 1992

APPENDIX H
PUBLIC CONSULTATION DOCUMENTATION

Environmental Assessment Registration Document:
New Annan Quarry Expansion
East New Annan, Colchester County
Nova Scotia

DEXTER
DEXTER CONSTRUCTION COMPANY LIMITED

January 6, 2025

Native Council of Nova Scotia
129 Truro Heights Road
Truro, NS
B2N 5N2

Attn: Chief Lorraine Augustine
Sent via email to chieflaugustine@ncns.ca

Re: New Annan Quarry Expansion Project, Lunenburg County

Further to our letter of May 31, 2024 regarding the proposed New Annan Quarry Expansion Project (the Project), this letter is to inform you that Municipal Enterprises Limited (MEL), an affiliated company with Dexter Construction Company Limited, will be registering the Project for Environmental Assessment (EA) on January 15, 2025. A Public Notice accompanying the registration will appear in the Chronicle Herald on the registration date (a copy of the draft Notice is attached). Hard copies of the EA Registration Document will be available for review at Tatamagouche Public Library, Colchester County Municipal Office, and the Nova Scotia Environment and Climate Change (NSECC) Regional Office in Truro, Nova Scotia. An electronic copy of the document will be available through the NSECC EA website (https://www.novascotia.ca/nse/ea/).

Any questions or comments regarding the Project can be forwarded to MEL or the NSECC EA Branch (EA@novascotia.ca), until February 14, 2025.

We would be pleased to meet with you to share additional details about the Project. If you are interested in discussing this Project please contact us at your convenience.

Sincerely,

DEXTER CONSTRUCTION COMPANY LIMITED

Gary Rudolph

Gary Rudolph, P.Eng
Director of Aggregates

grudolph@dexter.ca
902-832-6346

Copy: Vanessa Mitchell, Executive Director, MAARS & Projects
Christina Davis, Habitat Impact Advisor

DEXTER
DEXTER CONSTRUCTION COMPANY LIMITED

January 6, 2025

Millbrook First Nation
PO Box 634
820 Willow Street
Truro, Nova Scotia
B2N 5E5

Attn: Chief Robert Gloade
Sent via email to chief@millbrookband.com

Re: New Annan Quarry Expansion Project, Lunenburg County

Further to our letter of May 31, 2024 regarding the proposed New Annan Quarry Expansion Project (the Project), this letter is to inform you that Municipal Enterprises Limited (MEL), an affiliated company with Dexter Construction Company Limited, will be registering the Project for Environmental Assessment (EA) on January 15, 2025. A Public Notice accompanying the registration will appear in the Chronicle Herald on the registration date (a copy of the draft Notice is attached). Hard copies of the EA Registration Document will be available for review at the Tatamagouche Public Library, Colchester County Municipal Office, and the Nova Scotia Environment and Climate Change (NSECC) Regional Office in Truro, Nova Scotia. An electronic copy of the document will be available through the NSECC EA website (https://www.novascotia.ca/nse/ea/).

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We would be pleased to meet with you to share additional details about the Project. If you are interested in discussing this Project please contact us at your convenience.

Sincerely,

DEXTER CONSTRUCTION COMPANY LIMITED

Gary Rudolph

Gary Rudolph, P.Eng
Director of Aggregates

grudolph@dexter.ca
902-832-6346

Copy: Gerald Gloade, Consultation Manager, Millbrook First Nation
Gillian Fielding, Consultation Advisor, Office of L'nu Affairs

DEXTER
DEXTER CONSTRUCTION COMPANY LIMITED

January 6, 2025

Pictou Landing First Nation
6533 Pictou Landing Road
Fisher's Grant, Nova Scotia
B0K 1X0

Attn: Chief Tamara Young
Sent via email to Tamara.Y@plfn.ca

Re: New Annan Quarry Expansion Project, Lunenburg County

Further to our letter of May 31, 2024 regarding the proposed New Annan Quarry Expansion Project (the Project), this letter is to inform you that Municipal Enterprises Limited (MEL), an affiliated company with Dexter Construction Company Limited, will be registering the Project for Environmental Assessment (EA) on January 15, 2025. A Public Notice accompanying the registration will appear in the Chronicle Herald on the registration date (a copy of the draft Notice is attached). Hard copies of the EA Registration Document will be available for review at the Tatamagouche Public Library, Colchester County Municipal Office, and the Nova Scotia Environment and Climate Change (NSECC) Regional Office in Truro, Nova Scotia. An electronic copy of the document will be available through the NSECC EA website (https://www.novascotia.ca/nse/ea/).

Any questions or comments regarding the Project can be forwarded to MEL or the NSECC EA Branch (EA@novascotia.ca), until February 14, 2025.

We would be pleased to meet with you to share additional details about the Project. If you are interested in discussing this Project please contact us at your convenience.

Sincerely,

DEXTER CONSTRUCTION COMPANY LIMITED

Gary Rudolph, P.Eng
Director of Aggregates

grudolph@dexter.ca
902-832-6346

Copy: Twila Gaudet, Director of Consultation, Assembly of Nova Scotia Mi'kmaw Chiefs
Shawn Taylor, Consultation Project Support Officer, Kwilmu'kw Maw-klusuaqn Negotiation Office
Gillian Fielding, Consultation Advisor, Office of L'Nu Affairs

NOTICE

Registration of Undertaking
for Environmental Assessment
ENVIRONMENT ACT

This is to advise that on January 15, 2025, MUNICIPAL ENTERPRISES LIMITED (MEL) registered the NEW ANNAN QUARRY EXPANSION PROJECT for environmental assessment, in accordance with Part IV of the *Environment Act.*

The purpose of the proposed undertaking is to expand the existing less than 4-hectare pit and transition the site to a quarry. The existing pit is located at 3967 Truro Road, East New Annan, Colchester County, Nova Scotia and has been in operation for approximately 20 years. The land associated with the existing pit and proposed quarry expansion area will occupy a maximum of 17.42 hectares, which includes the existing pit footprint. The expansion and transition to a quarry will support continued extraction and production of quality aggregate products used primarily in the road construction industry in Colchester County. Other than the addition of blasting to the scope of activities, it is expected that the continued use of the site will be identical, or very similar, to historic use at the site, and will include occasional drilling and blasting, and temporary operation of a portable rock crusher to process, stockpile, and transport aggregate materials when MEL has work in the area. The project is anticipated to commence during the 2025 construction season with production volumes of approximately 50,000 tonnes per year during years in which the quarry is active. A project life of 40-years is expected.

Copies of the environmental assessment registration information may be reviewed at the following locations:

- Tatamagouche Public Library, 170 Main Street, Tatamagouche, NS
- Colchester Municipal Office, 1 Church Street, Truro, NS
- NSECC Regional Office, 31 Inglis Place, Truro, NS
- NSECC EA website (when available) https://www.novascotia.ca/nse/ea/

The public is invited to submit written comments to:

Environmental Assessment Branch,
Nova Scotia Environment and Climate Change
P.O. Box 442, Halifax, Nova Scotia B3J 2P8

on or before February 14, 2025 or contact the Department at 902-424-3600, 902-424-6925 (Fax), or e-mail at EA@novascotia.ca.

All comments received from the public consultation will be posted on the Department's website for public viewing. In the case of an individual, the address, email and contact information will be removed before being placed on the website. By submitting your comments, you are consenting to the posting of your comments on the Department's website.

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