

A dark blue world map is centered in the background of the slide. The text is overlaid on the map.

# *Overview and Recent Exploration Success at the McArthur River Uranium Deposit, Athabasca Basin, Saskatchewan, Canada*

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The Cameco logo, consisting of three concentric blue arcs, is positioned above the word "Cameco".

**Cameco**

# *McArthur River Project*

## Presentation Outline

- Project location
- Discovery history
- Geological setting
- Recent discoveries
- Summary



# McArthur River Project

## Location

\*Photo taken near Bermuda Lake,  
Northern Saskatchewan

# Location Map



# *McArthur River Project*

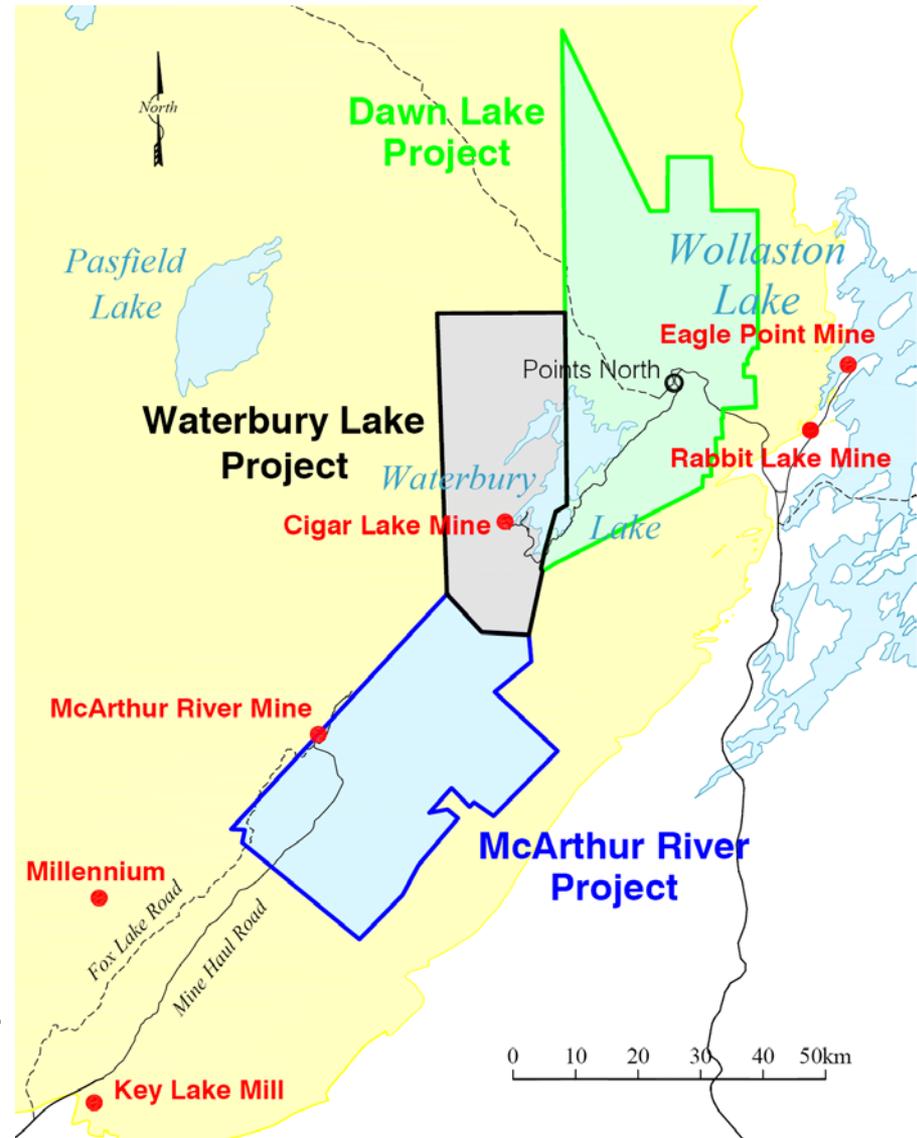
## *History*

\*Photo taken looking southwest at  
McArthur River Mine

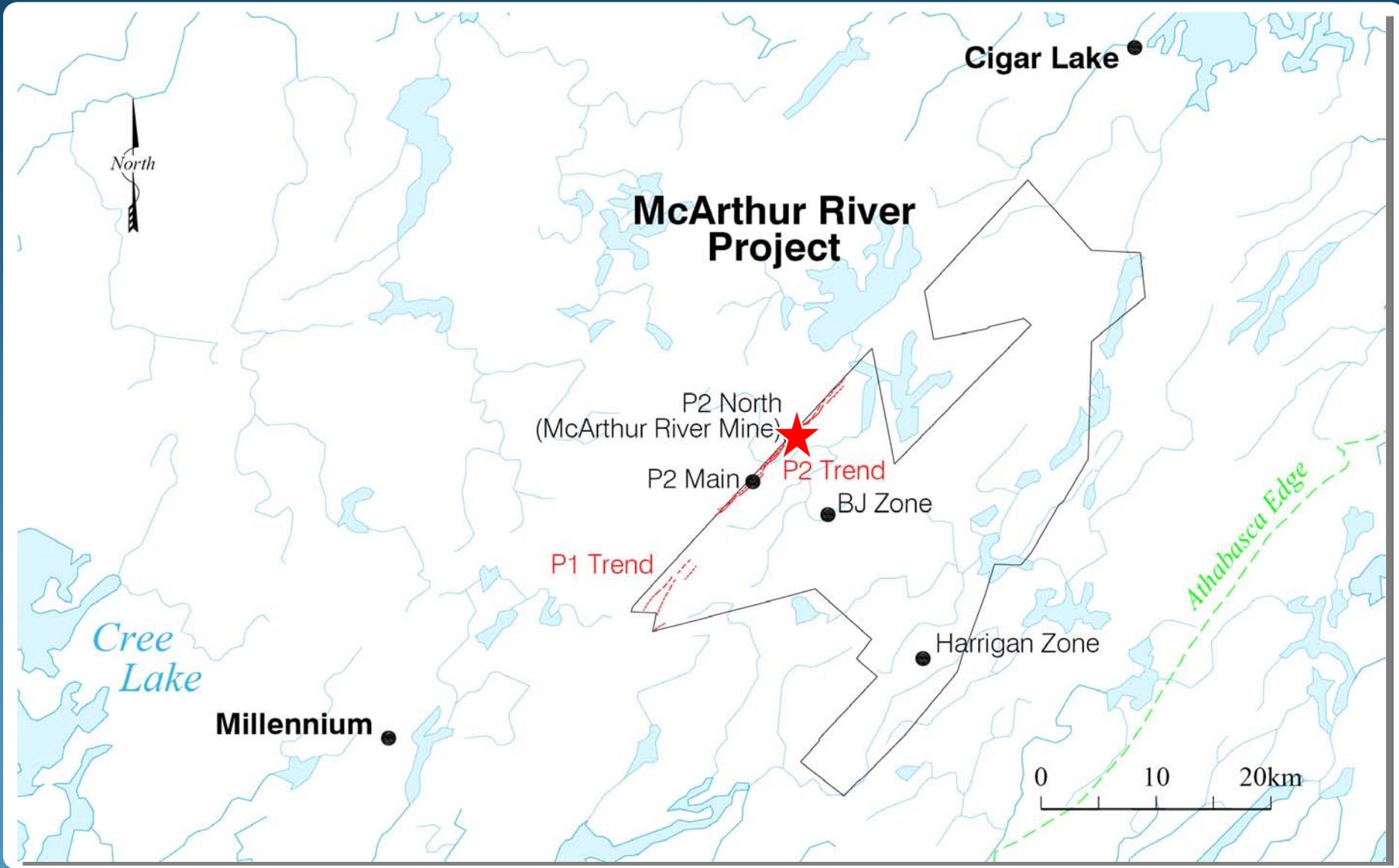
# In the beginning...

## Keefe – Henday Joint Venture

- Included a huge land package that would later become 3 projects
  - Dawn Lake
  - Waterbury Lake
  - McArthur River
- Asamera was the operator and wanted to focus in the Dawn Lake area
- Seru Nuclaire operates Waterbury Lake
- SMDC a predecessor company to Cameco chose McArthur River to operate as the southern portion was <200 m depth



# Property Targets and Trends



# Harrigan Zone

- **1980 – Vollhoffer Lake**

Winter; two holes intersected U mineralization in the basement; best intercept was **4.5 m of 0.24% at 245 m**

Summer; best **0.52% / 5.3 m**

The Harrigan Zone had been discovered

Basement hosted U in altered pelitic gneisses

**1.86%  $U_3O_8$  over 5.0 m in altered pelitic gneiss – 266.0 – 271.0 m**



# Harrigan Zone



**1.86%  $U_3O_8$  over 5.0 m in altered pelitic gneiss – 266.0 – 271.0 m**

- **1984-85 – BJ Lake**
- Basement dominated by quartzite with no EM conductors
- Tracing radioactive boulders in the till up ice to source
  - Drilling at BJ intersected sporadic U over wide intervals of the sandstone
  - MAC-121 encountered 1.2% eU<sub>3</sub>O<sub>8</sub> / 6 m



# BJ Zone

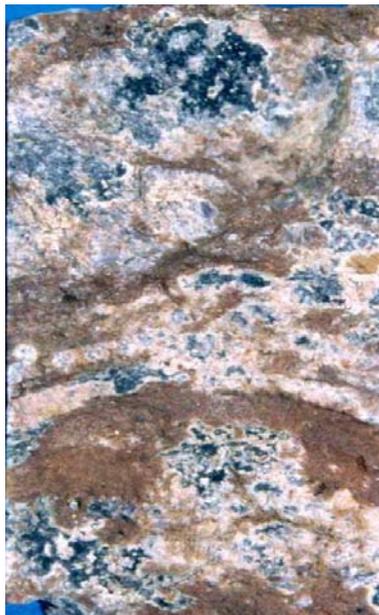


**Druzy quartz rimmed by dravite**



**Dravite, kaolinite and  $\pm$  illite**

**MAC-162 427.2 m**

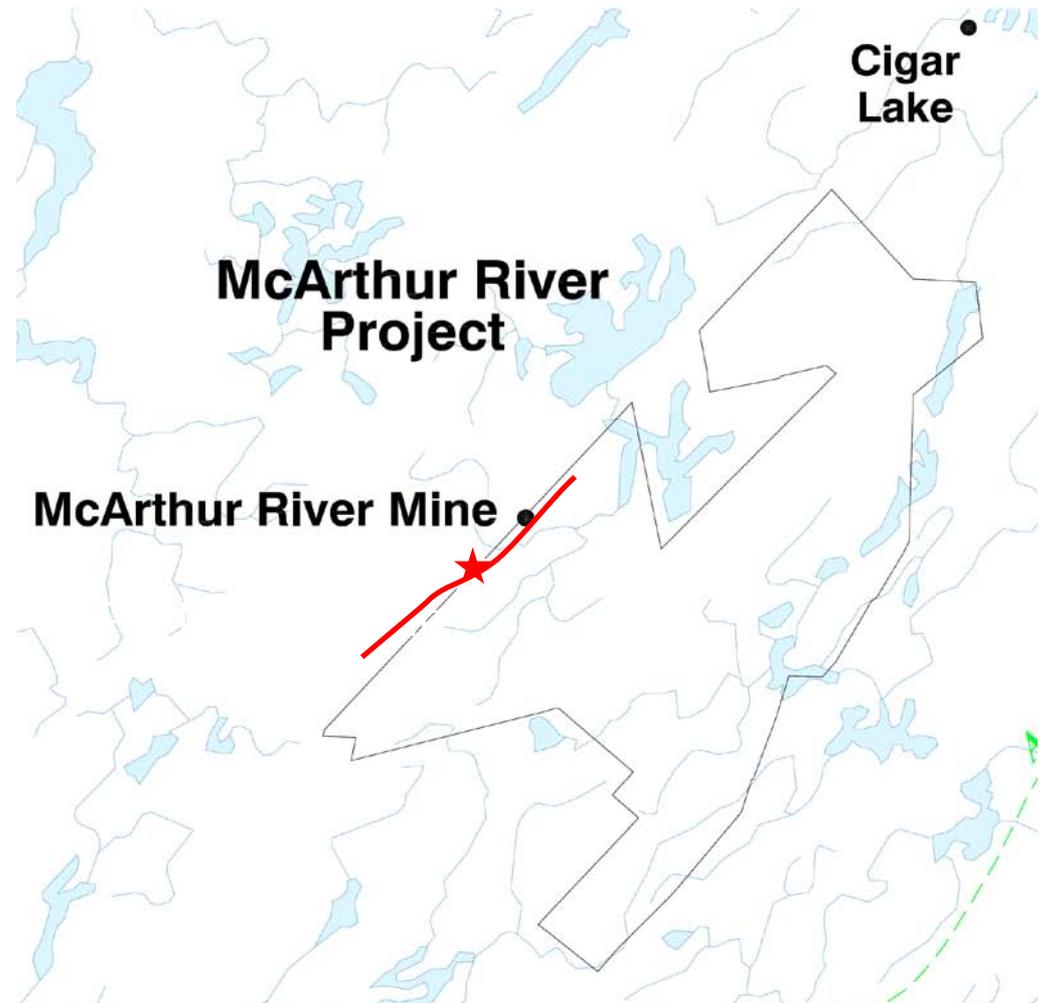


**MAC-162 427.9m**



# P2 Main Zone

- **1985 – Bermuda Lake**
  - Summer drilling intersects significant U mineralization on the P2 grid
  - Hole MAC-137 intersected the P2 structure in the basement
  - Hole MAC-143A yielded 1.4%  $U_3O_8$  / 7.3m



# P2 Main Zone



# 1988 – Perseverance Pays Off ...

- MAC-195, drilled along strike 5 km to the north of P2 Main, designed to test the footwall of the P2 structure
  - intersected the hanging wall
  - Strong kaolinite and chlorite in the sandstone
  - Lower 300 m of sandstone averaged 5 ppm U
  - Entire sandstone enriched in B (max 7500 ppm)
  - Ranked by project team as the most strongly anomalous non mineralized hole on the property
- Follow-up drilling would result in the discovery of the P2 North zone which would become the McArthur River deposit.
- Best surface hole to date: MAC-236 at **43.4%  $U_3O_8$  / 25.5 m = GT of 1107 m%  $U_3O_8$**

# Summary of Important Events

- Government's mandatory participation
- SMDC takes over operatorship of McArthur
- Decision to undertake DEEPEM where no significant INPUT anomalies existed
- SMDC's desire to maintain exploration despite partners wanting to reduce the budget and drop land
- Recognition by the project team of a "near miss" hole, MAC-195

# McArthur River today ...

- Partner interests:

- Cameco (69.8%)
- AREVA (30.2%)

- Historical Companies Involved:

- AGIP
- Asamera
- Bradley
- Crest
- Douglas
- E&B
- Kelvin
- Lyall
- Morgens
- Phillips
- Reserve
- Saarberg
- SERU
- SMDC
- Texaco
- UEM
- Vaquero Petro
- Vaquero Energy



# McArthur River today ...

- Full potential not realized until after first phase of underground exploration
- Mine construction commenced in 1997
- Full production achieved in November 2000
- Surface exploration resumed in 2004



# McArthur River today....

- 6 zones identified to date (Zones 1, 2, 3, 4, A and B)
- Reserves: Proven and Probable (Dec 31, 2008)
  - **729,200 t @ 20.69% U<sub>3</sub>O<sub>8</sub> = 332 million lbs**
    - value per tonne = US \$19,000 or 21 opt Au equivalent (U = \$46/lbs, Au = \$912/oz)
- Mine production to Dec. 31, 2008
  - 476,300 tonnes @ 14.70% U<sub>3</sub>O<sub>8</sub> 154,236,000 pounds
- Current production of 18.7 M lbs
- Additional Resources: Measured and Indicated
  - 248,800 tonnes @ 9.07% 49,731,000 pounds
- Additional Resources: Inferred
  - 642,600 tonnes @ 9.81% 139,013,000 pounds

**World's largest high-grade U deposit**



# McArthur River Project

## Geology

\*Photo taken of small lake on McArthur River property

# Basement Geology

## Legend

### NEOPROTEROZOIC

Moore Lake Complex; diabase, gabbro

### TRANS-HUDSON OROGEN

Wathaman Batholith; feldspar megacrystic granitoids

### PALEOPROTEROZOIC

'Upper' Wollaston Gp; meta-arkose dominated sequences

'Middle' Wollaston Gp; quartzite-bearing sequences

'Lower' Wollaston Gp; pelitic/psammopelitic dominated sequences

### ARCHEAN

Granitic, granodiorite, tonalitic gneisses

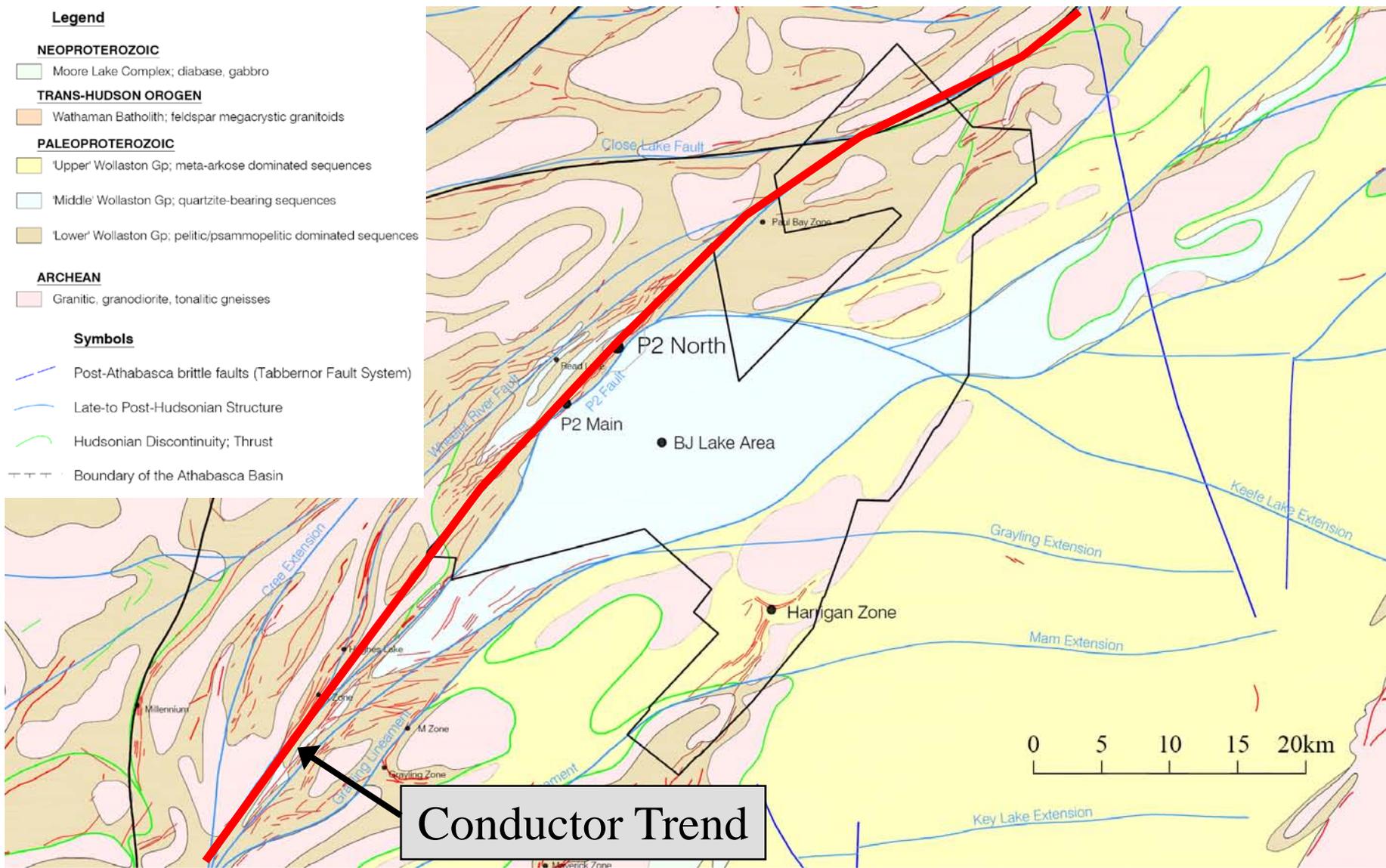
### Symbols

Post-Athabasca brittle faults (Tabbernor Fault System)

Late-to Post-Hudsonian Structure

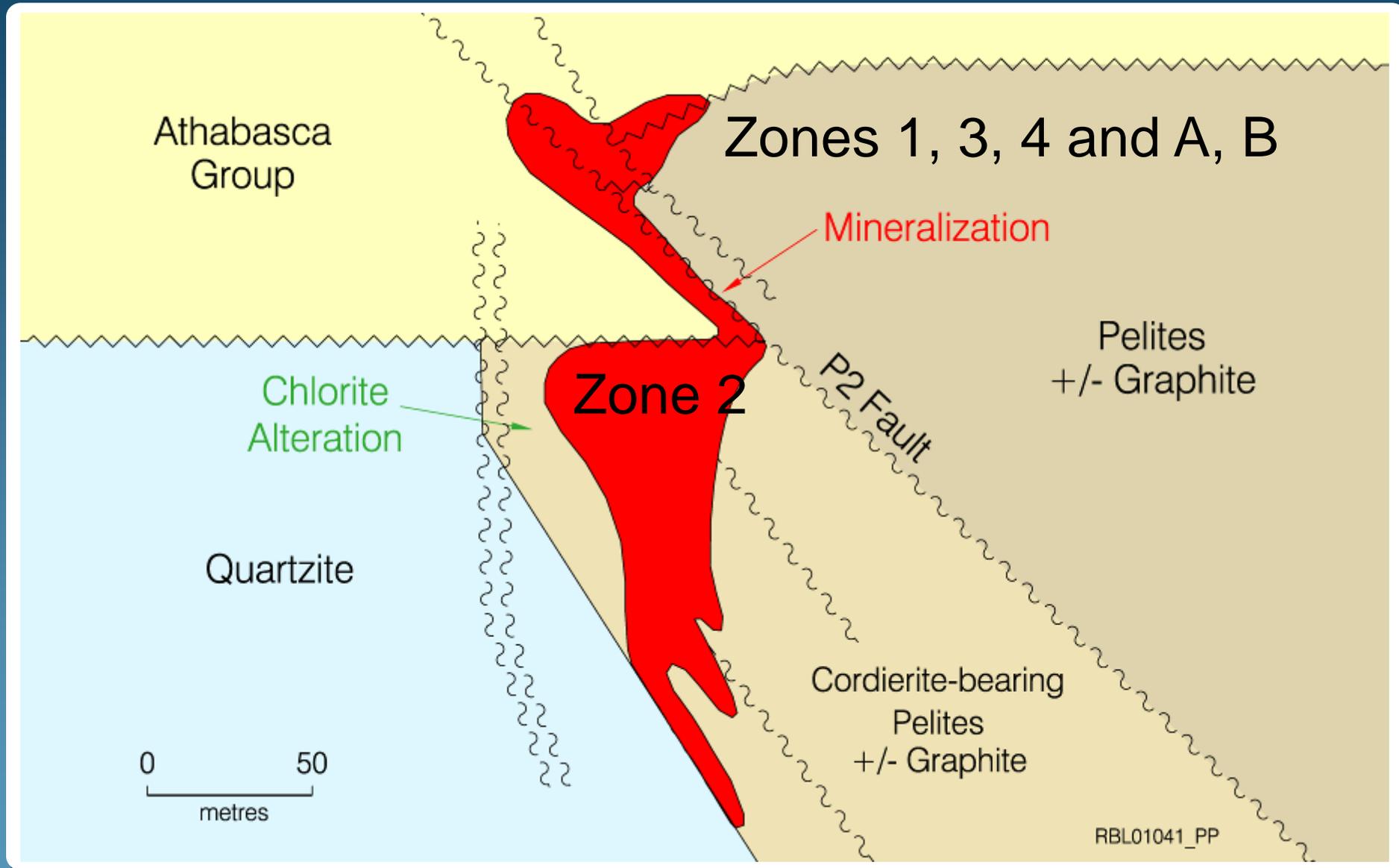
Hudsonian Discontinuity; Thrust

Boundary of the Athabasca Basin

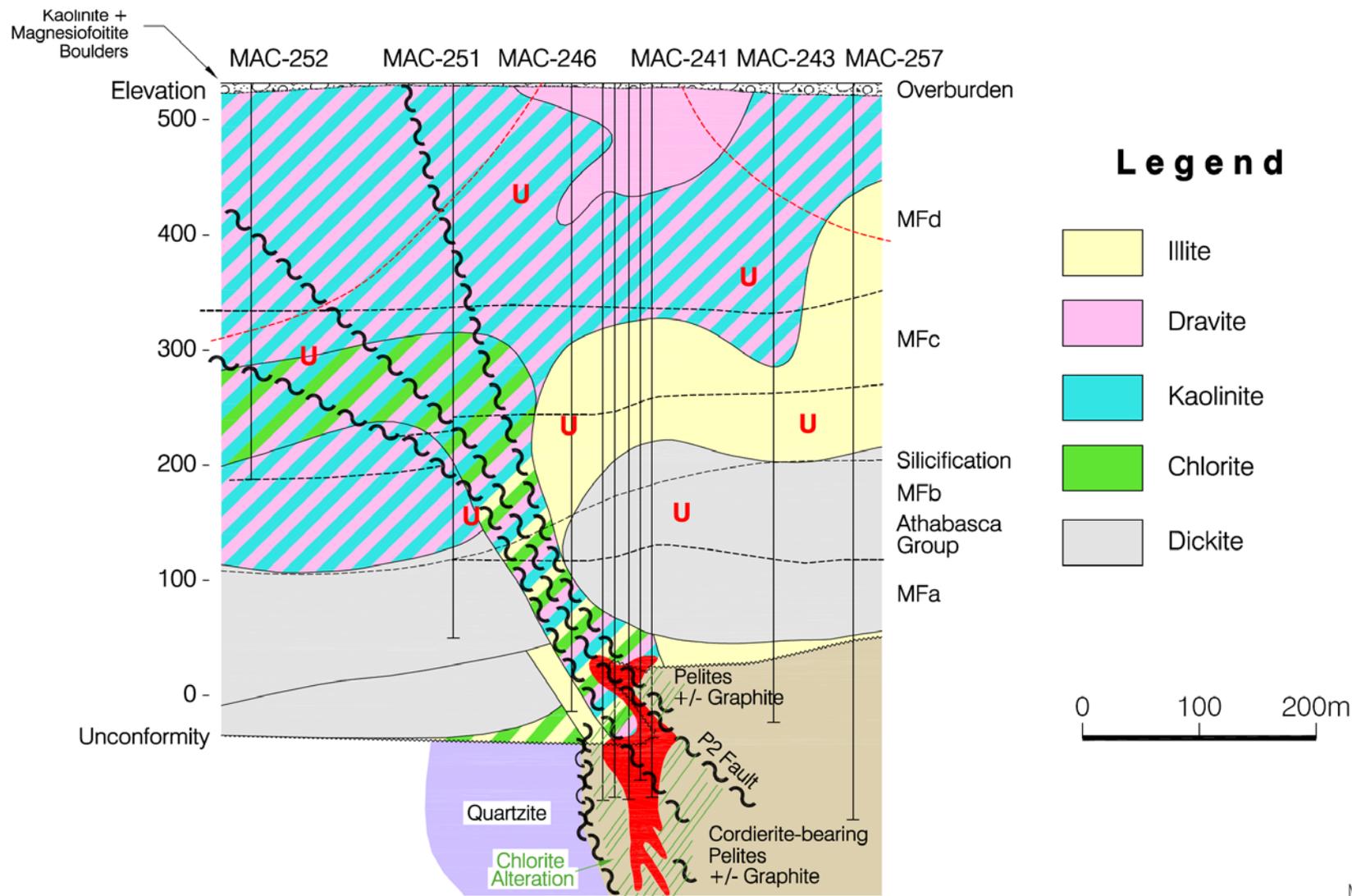


**Conductor Trend**

# Schematic Cross Section - McArthur

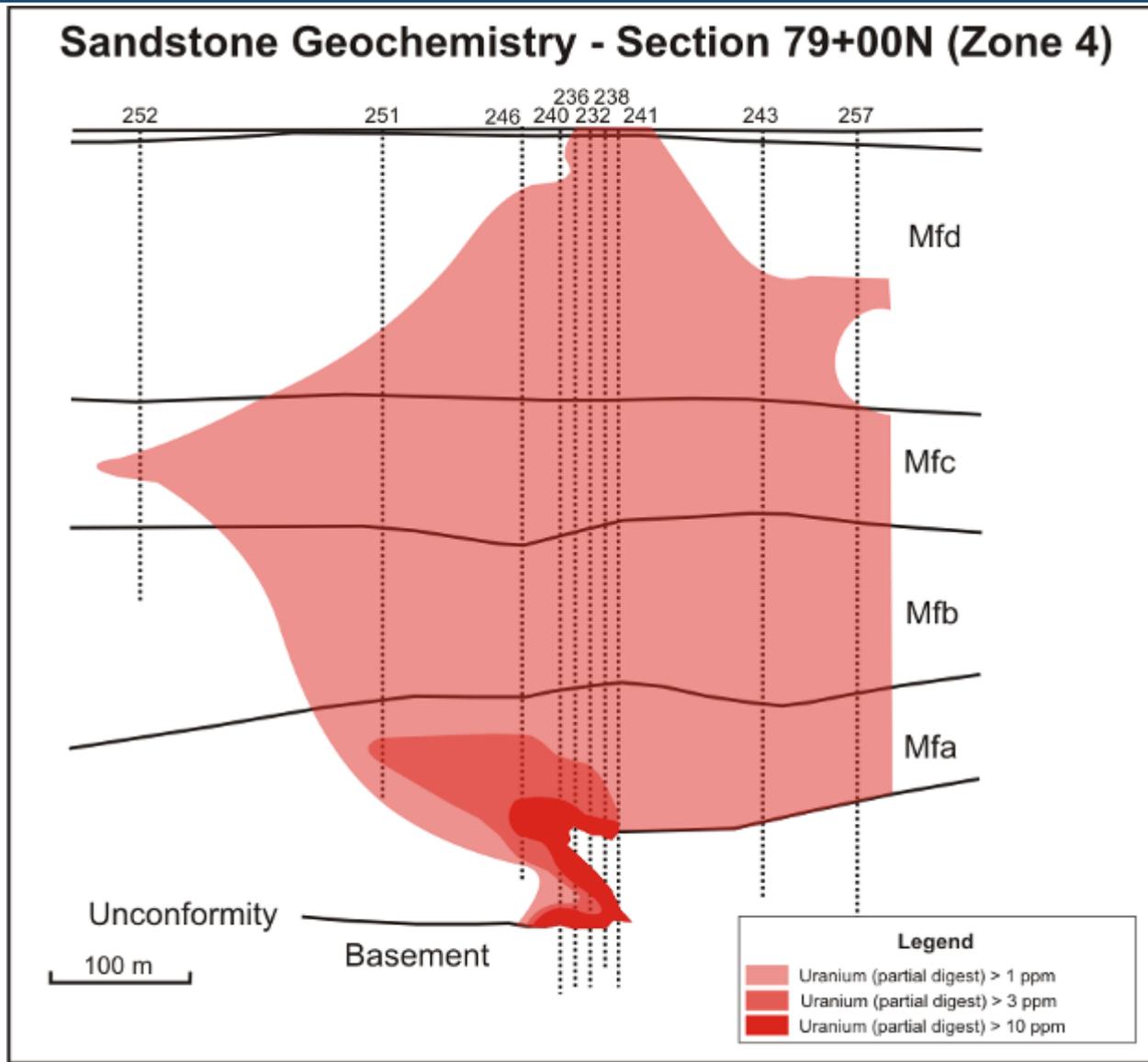


# McArthur River Alteration

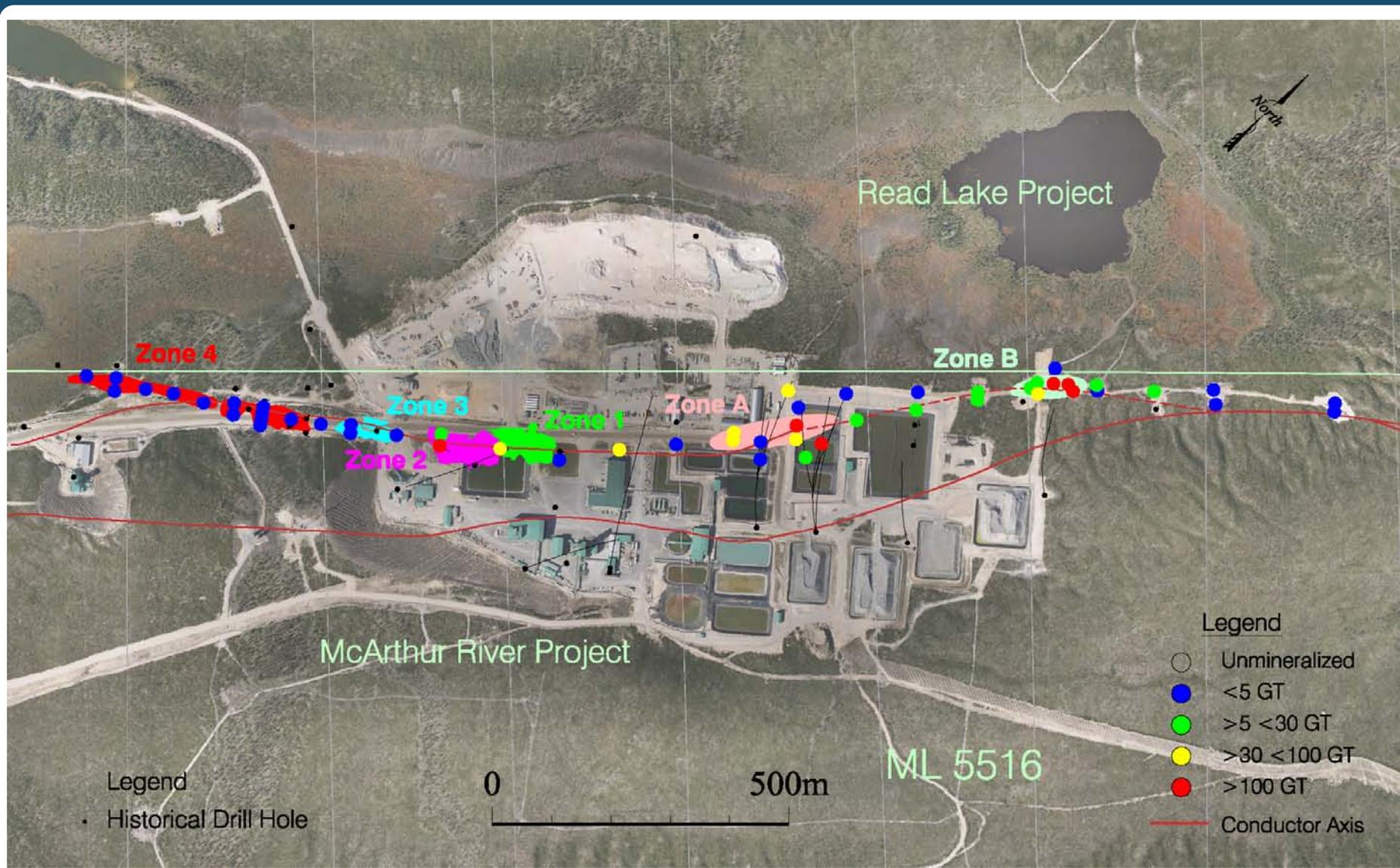


MC02013

# McArthur River Uranium Geochemistry

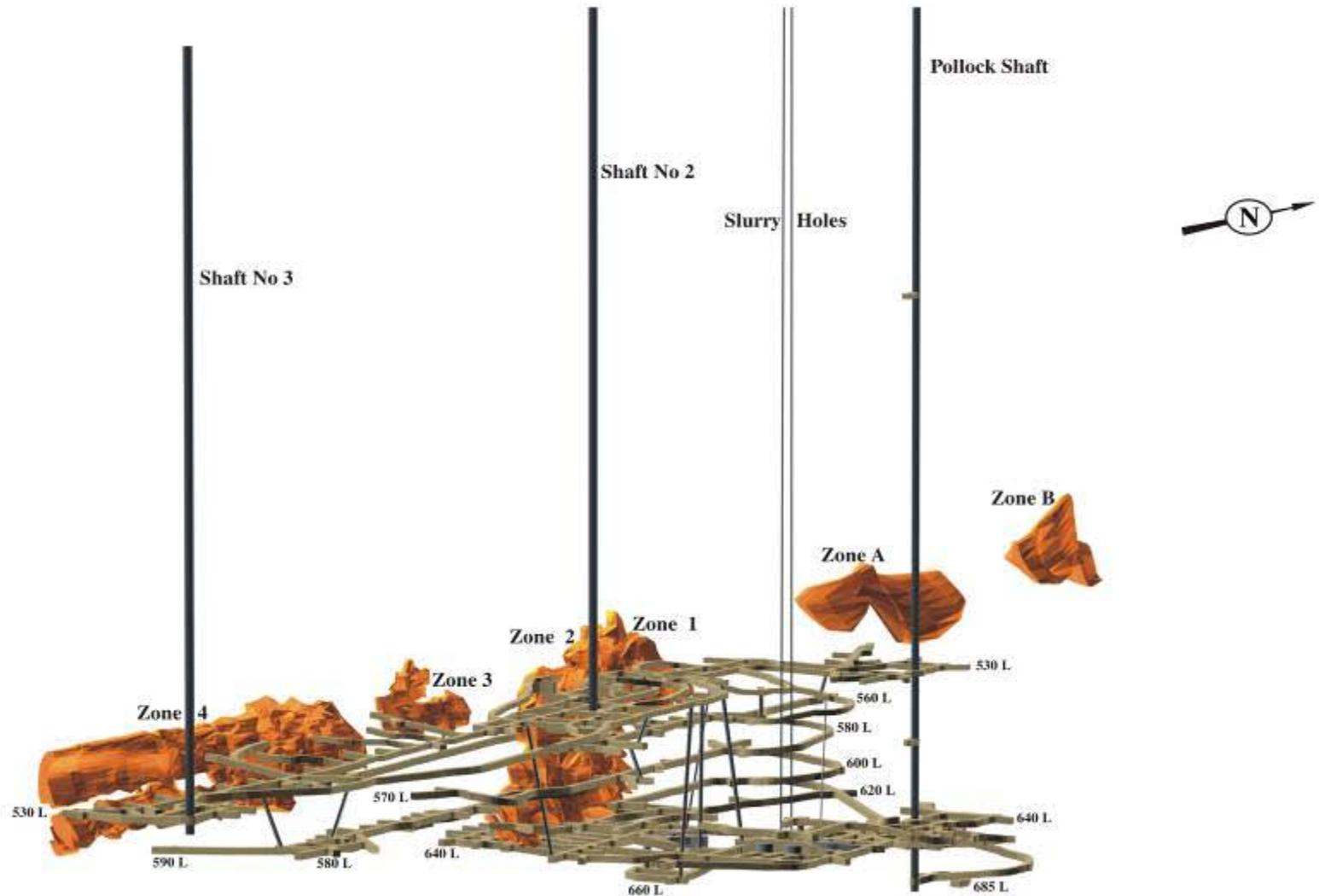


# P2 North now ...



# McArthur River Operation

## Underground Development and Mineralized Zones from Drilling



# Key McArthur Features and Targets

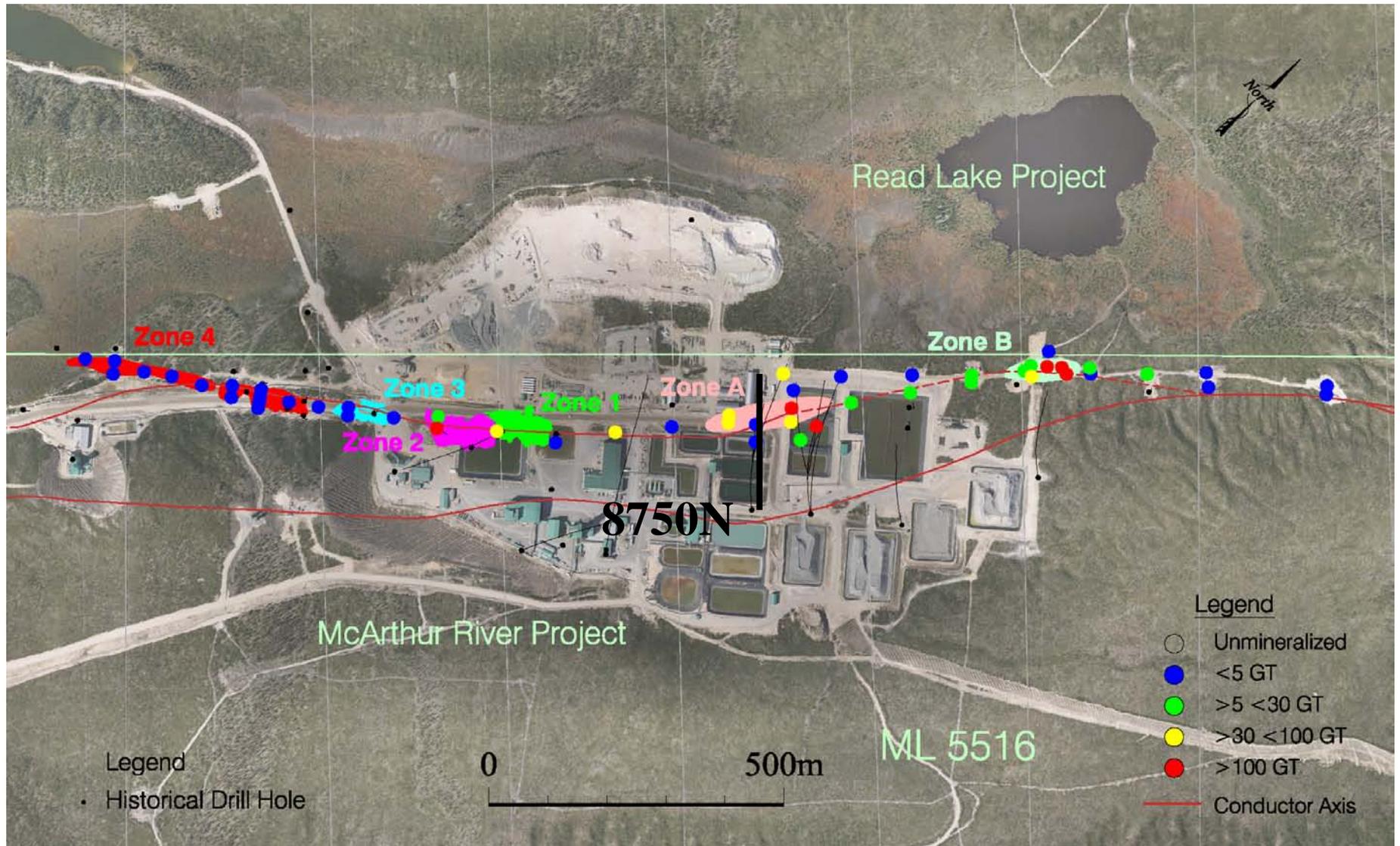
- P2 trend at best 40% explored.
  - 18 km strike length
  - Excellent potential for additional zones
- Two new inferred zones since 2004
  - Zone A (2004) – 255,600 tonnes @ 8.19% for 46.2 M lbs
  - Zone B (2005) – 151,300 tonnes @ 14.90% for 49.7 M lbs.
- Promising regional targets
  - Harrigan Zone – follow-up required. Open at depth, basement potential
  - P2 Main – follow-up required. Major structures not tested



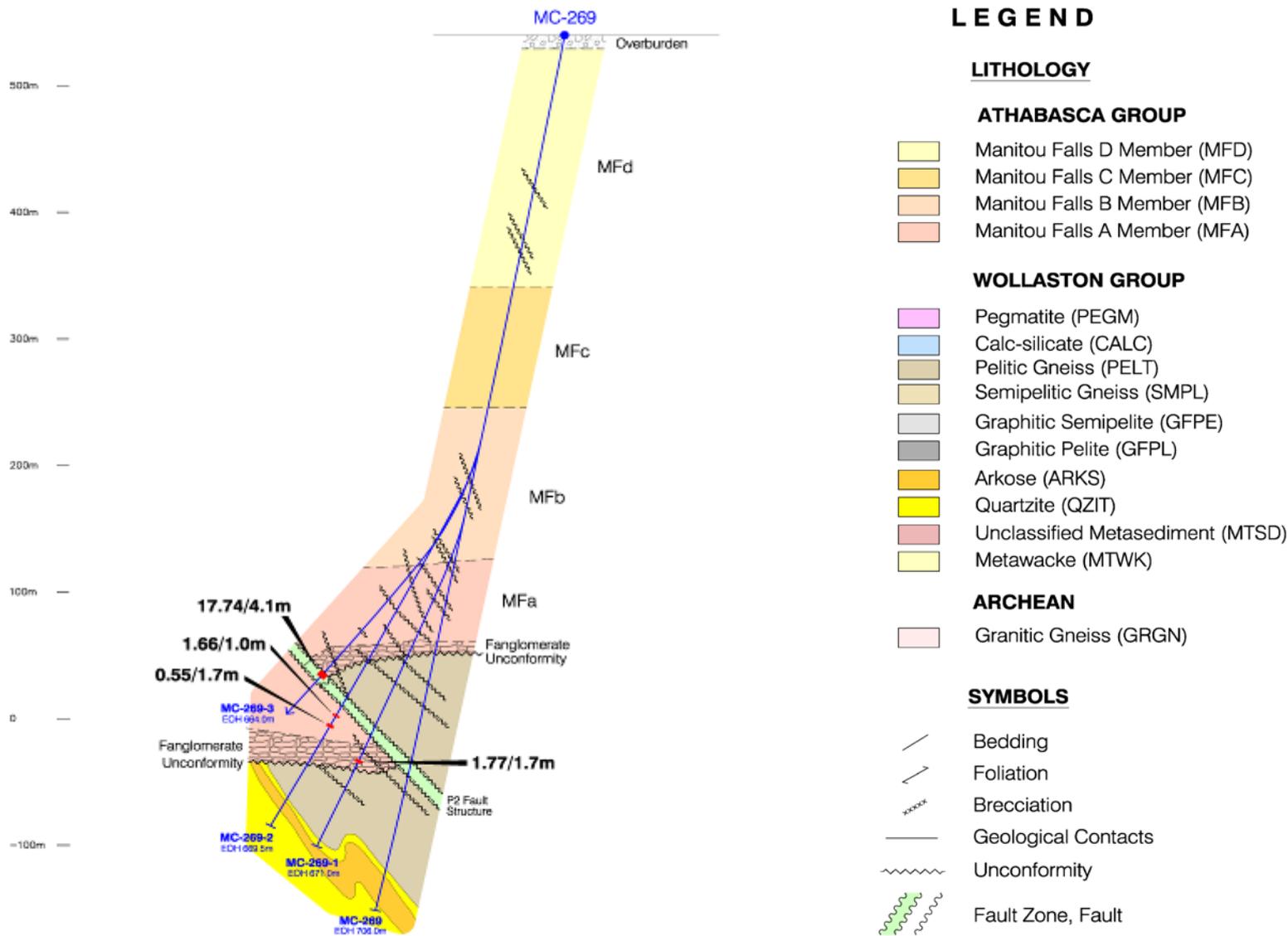
*Recent Exploration  
McArthur River Project  
2004 - Zone A*

\*Hy-Tech drill rig

# Zone A Location and Section

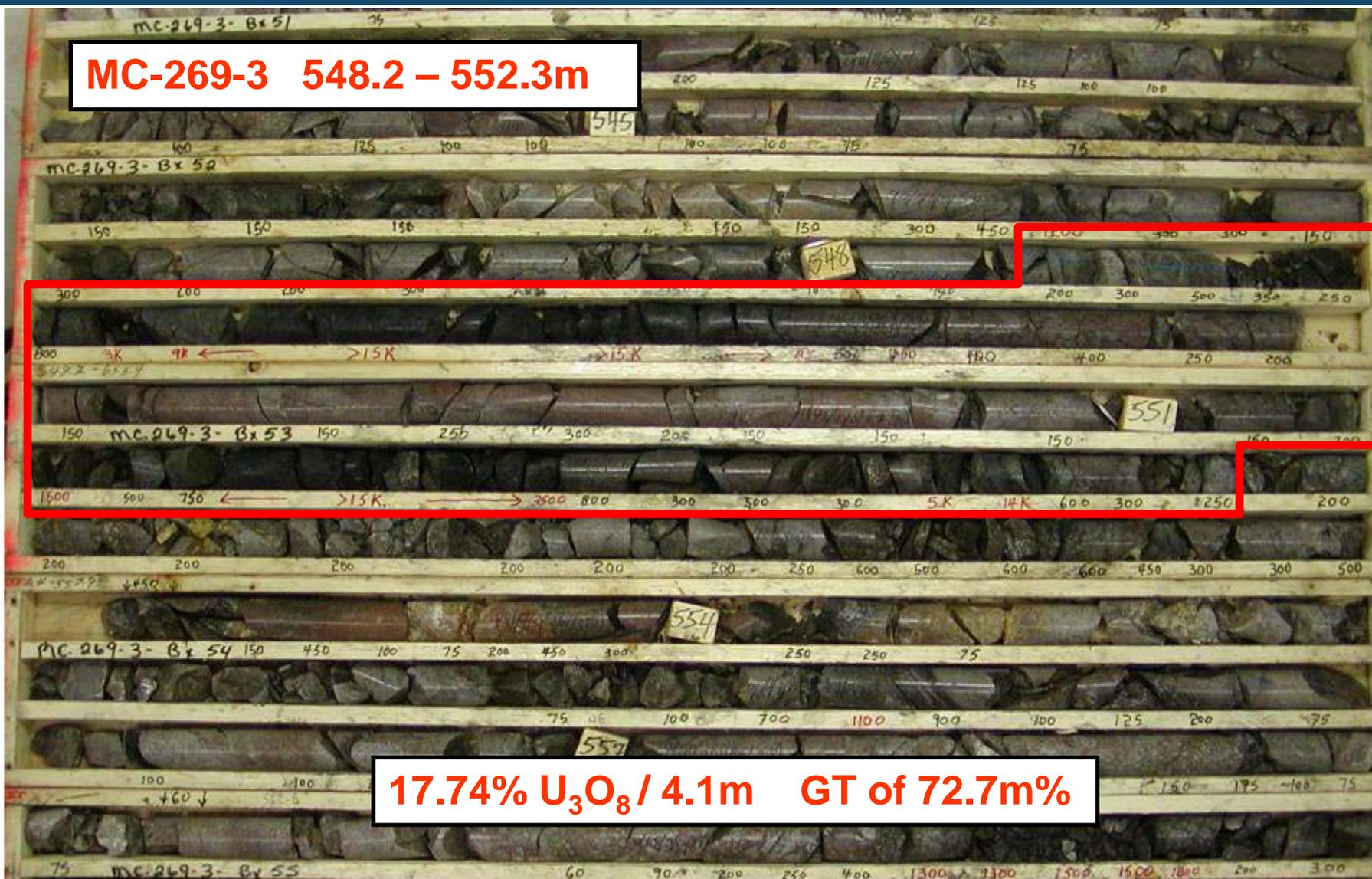


# Zone A - Section 8750N



# Zone A - Section 8750N

**MC-269-3 548.2 – 552.3m**



**17.74% U<sub>3</sub>O<sub>8</sub> / 4.1m GT of 72.7m%**

# Zone A Summary

- Nose Ore
- Sandstone-hosted
- Inferred Resource of **255,600 tonnes @ 8.19%**  
**for 46,146,000 lbs**
- Based on 11 drill holes

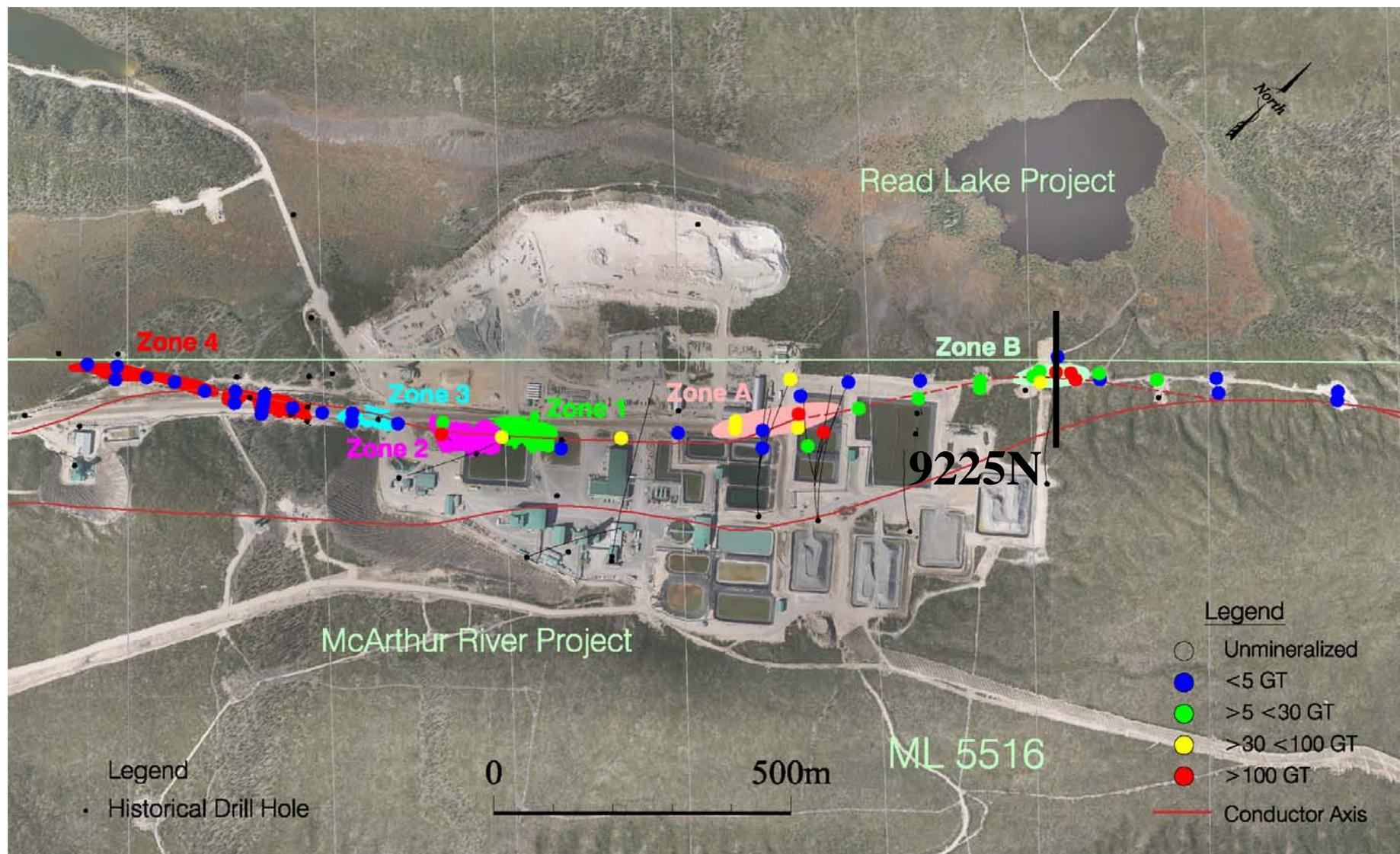


*Recent Exploration  
McArthur River Project*

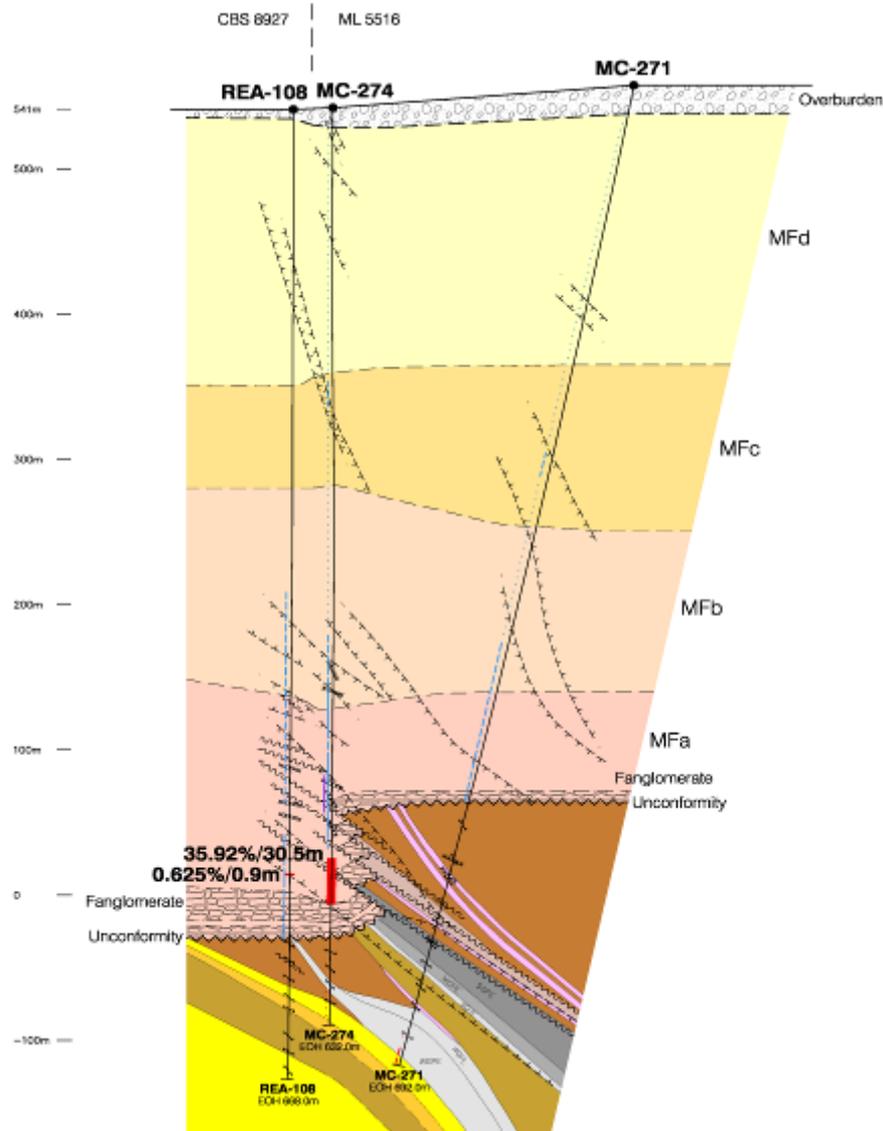
*2005-2006  
Zone B*

\*Photo taken of high grade mineralization  
from MC-274

# Zone B Location and Section



# Zone B - Section 9225N



## ALTERATION

- Strong Silicification
- - - Moderate Silicification
- · · · · Weak Silicification
- Hydrothermal Hematite
- Dravitic Breccia

## SYMBOLS

- Bedding
- Foliation
- Brecciation
- Geological Contacts
- Unconformity
- Fracture Zone
- Fault Zone, Fault

## LEGEND

### LITHOLOGY

#### ATHABASCA GROUP

- Manitou Falls D Member (MFD)
- Manitou Falls C Member (MFC)
- Manitou Falls B Member (MFB)
- Manitou Falls A Member (MFA)

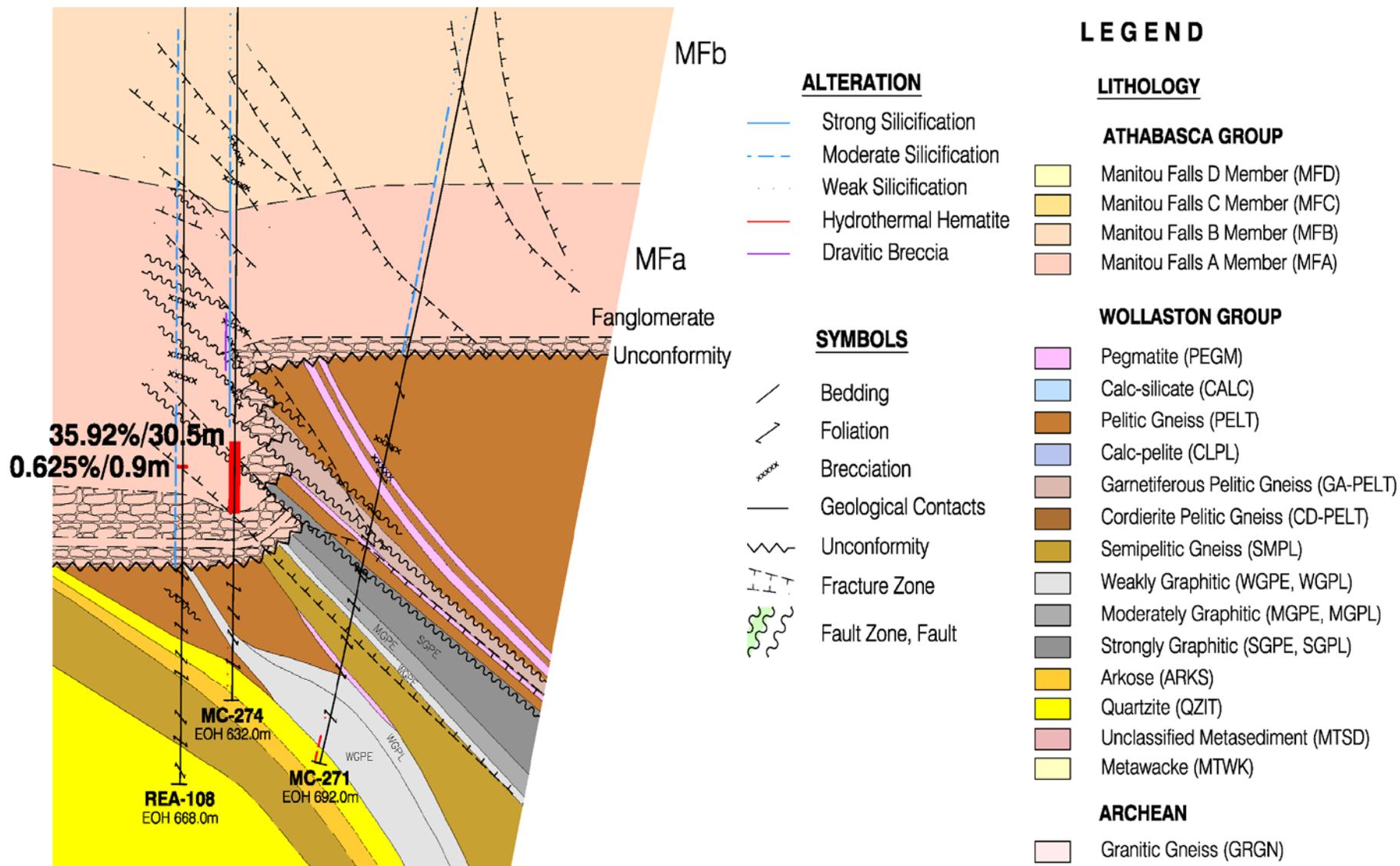
#### WOLLASTON GROUP

- Pegmatite (PEGM)
- Calc-silicate (CALC)
- Pelitic Gneiss (PELT)
- Calc-pelite (CLPL)
- Garnetiferous Pelitic Gneiss (GA-PELT)
- Cordierite Pelitic Gneiss (CD-PELT)
- Semipelitic Gneiss (SMPL)
- Weakly Graphitic (WGPE, WGPL)
- Moderately Graphitic (MGPE, MGPL)
- Strongly Graphitic (SGPE, SGPL)
- Arkose (ARKS)
- Quartzite (QZIT)
- Unclassified Metasediment (MTSD)
- Metawacke (MTWK)

#### ARCHEAN

- Granitic Gneiss (GRGN)

# Zone B - Section 9225N



# Massive mineralization (MC-274)

56.7

78.2

84.2

85.5

85.9

84.7

75.6

77.8

82.4

80.9

74.0

75.9

74.9

73.9

72.8

62.5

51.4

32.4

33.5

67.7

63.2

63.3

56.8

52.4

54.5

58.4

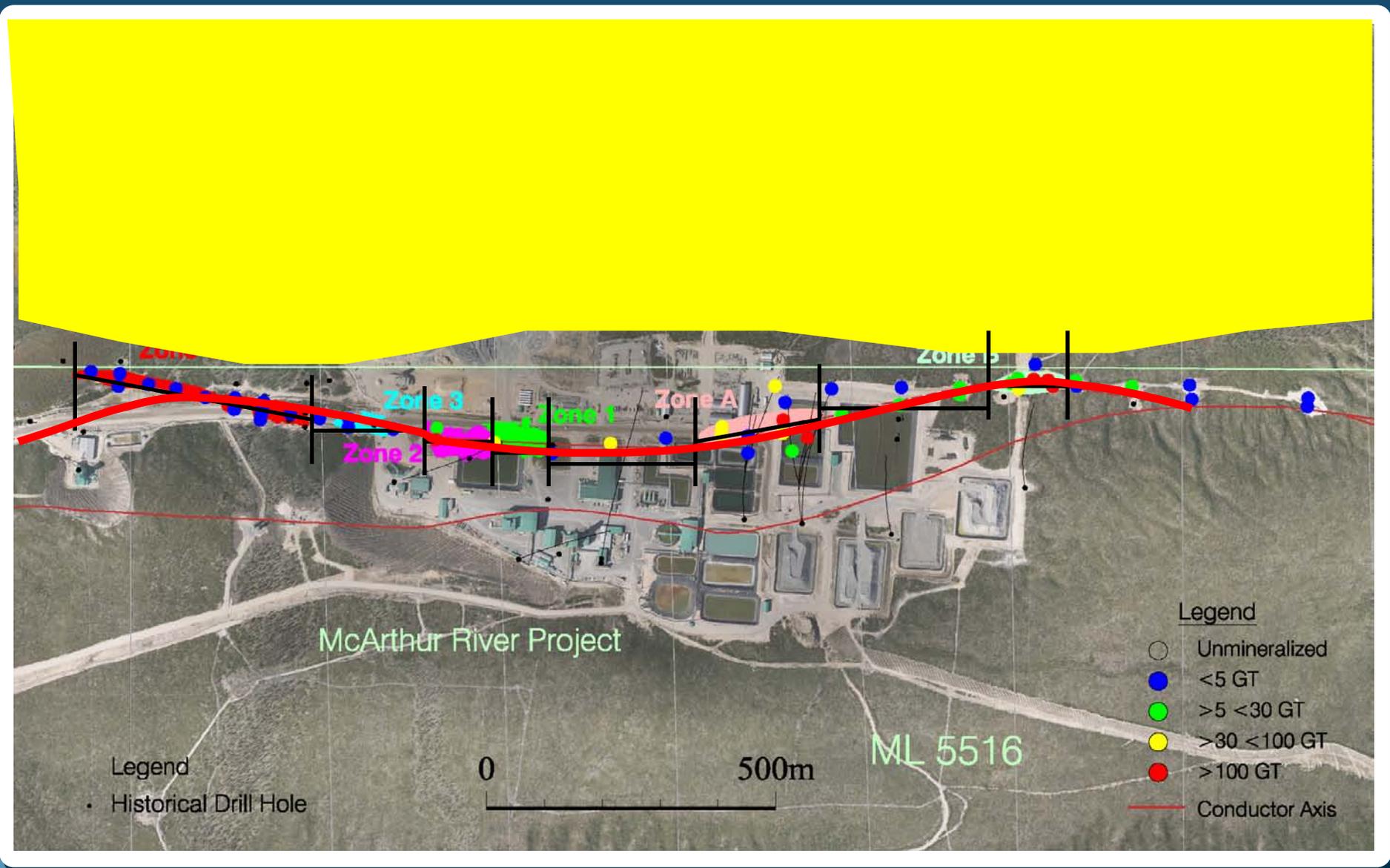
29.2

43.3

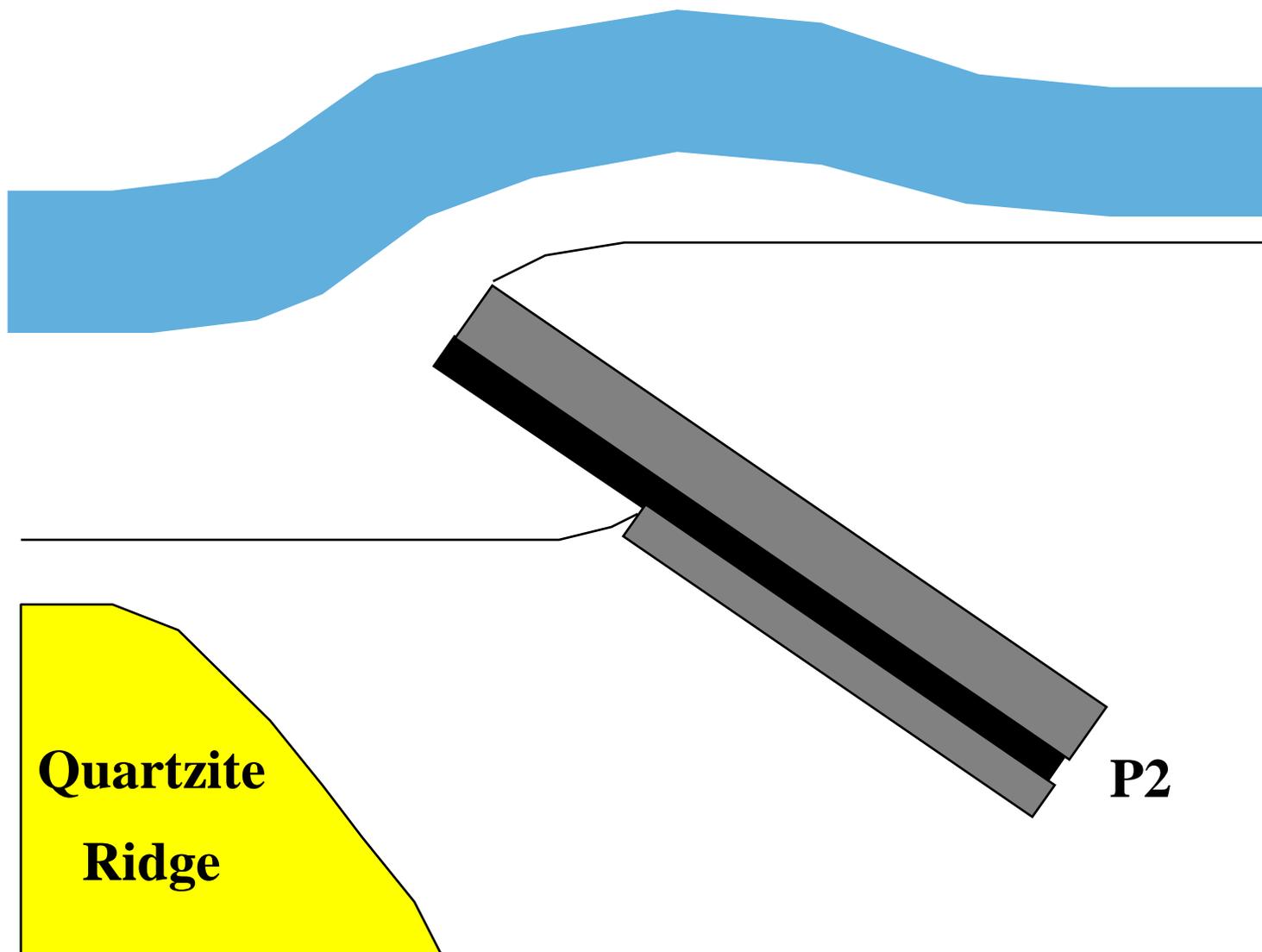
# Zone B Summary

- Nose Ore
- Sandstone-hosted
- Inferred Resource of **151,300 tonnes @ 14.90%**  
**for 49,690,000 lbs**
- Based on 7 drill holes
- Contains one of the highest grade intercepts ever reported from surface

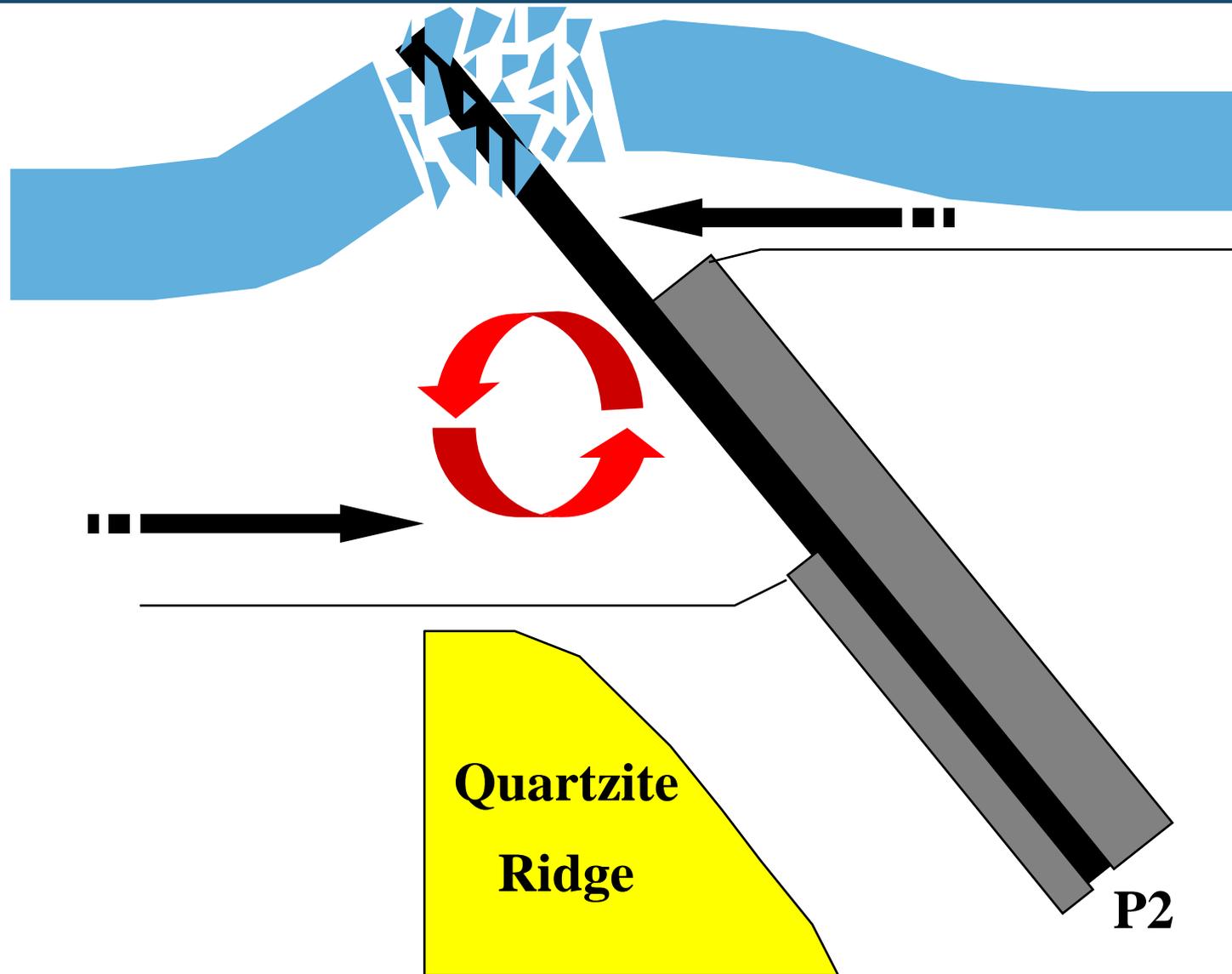
# P2 - Structure



# Why so high-grade?



# Why so high-grade?



# Summary

- Project initially operated by Asamera as part of the large Keefe-Henday Joint Venture
- SMDC becomes operator in 1978
- McArthur River deposit discovered in 1988
- Production to date of **476,300 tonnes @ 14.70% U<sub>3</sub>O<sub>8</sub>**  
**154,236,000 pounds**
- Current reserves of **729,200 tonnes @ 20.69% U<sub>3</sub>O<sub>8</sub>**  
**332,631,000 pounds**
- Discovery of 2 new high-grade zones
- The association of the quartzite, P2 structure and graphitic metasediments is believed significant in contributing to the high grade of this deposit
- 60% of P2 trend is still under-explored
- Regional targets remain prospective

# Acknowledgements



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- Clayton Durbin (Exploration)



**Questions?**

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