NexGen Energy Ltd.

Results of Preliminary Competency Testing of Paste Backfill Derived from Uranium Leach By-Products

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October 18th, 2018

Forward Looking Statement

Information Contained in this Presentation

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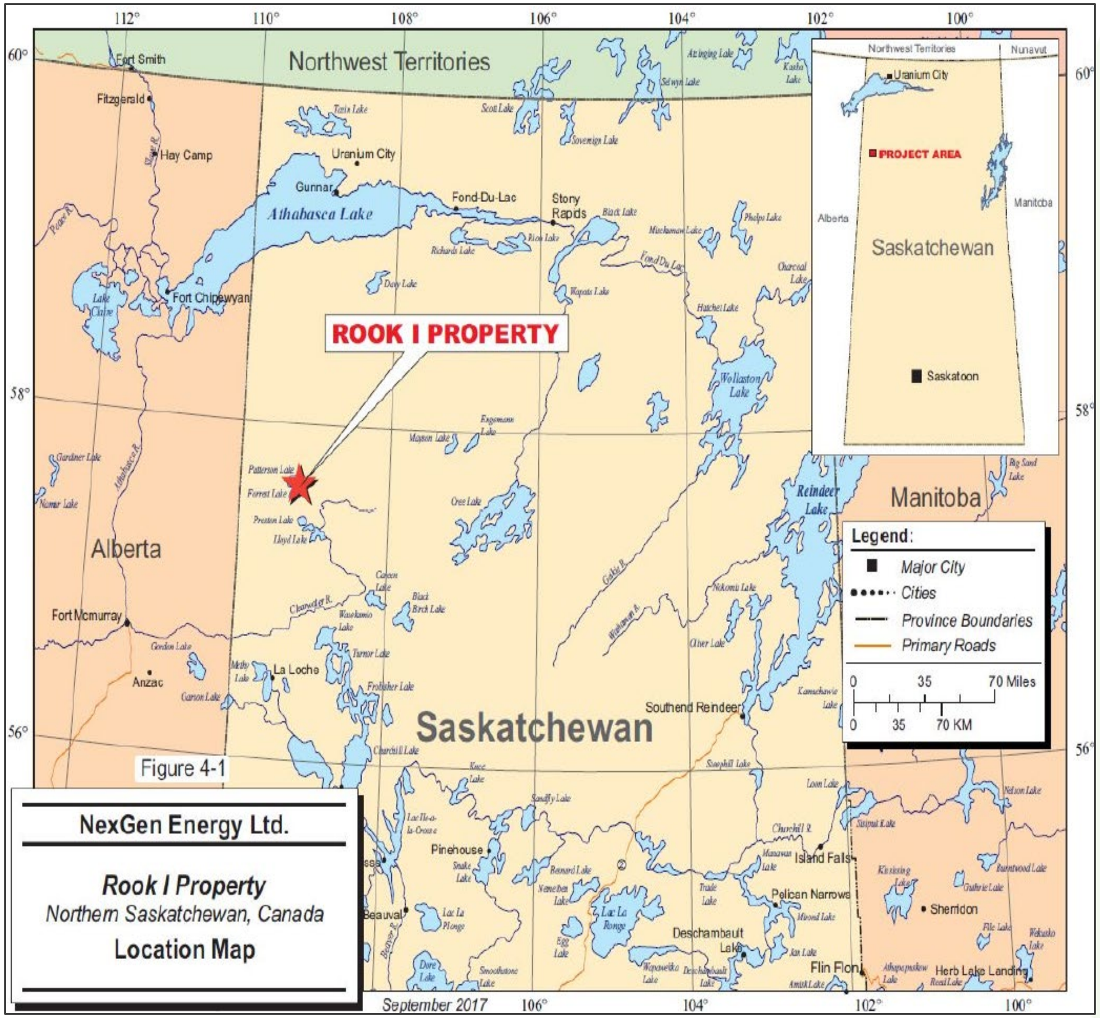
Presentation Outline

- Background
    - NexGen Energy
    - Rook I property
    - Arrow deposit
- Paste backfill study
    - Purpose
    - Objectives
    - Criteria
    - Methodology
    - Results
    - Conclusions
- Next steps

Background
NexGen Energy



- Canadian uranium exploration and development company
  - 380 km^2 mineral lease
  - Focused in the Southwest Athabasca Basin
  - Operations headquarters in Saskatoon
- Rook I
  - Flagship property
  - Patterson Lake area
  - 150 km north of La Loche
    600 km north of Saskatoon

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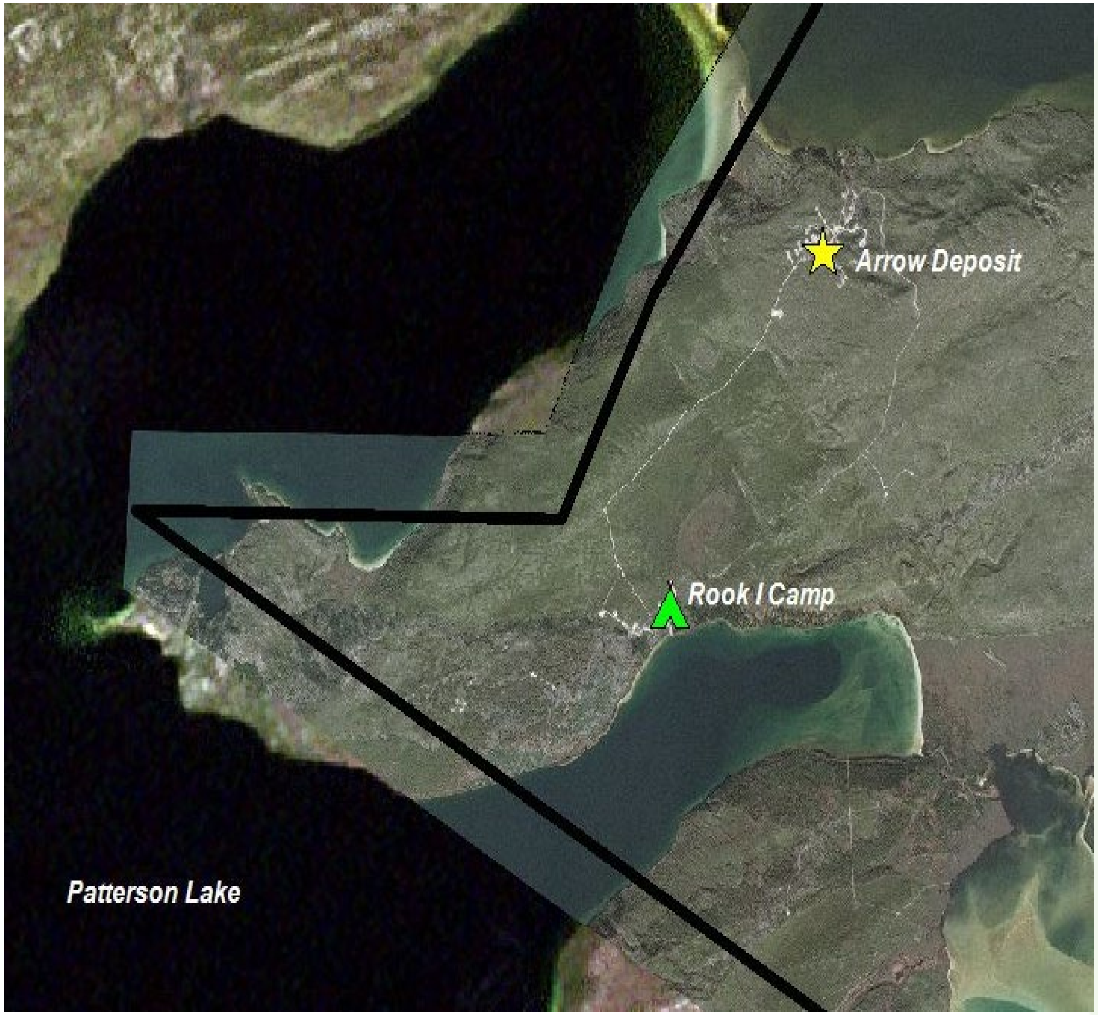
Background
Rook I

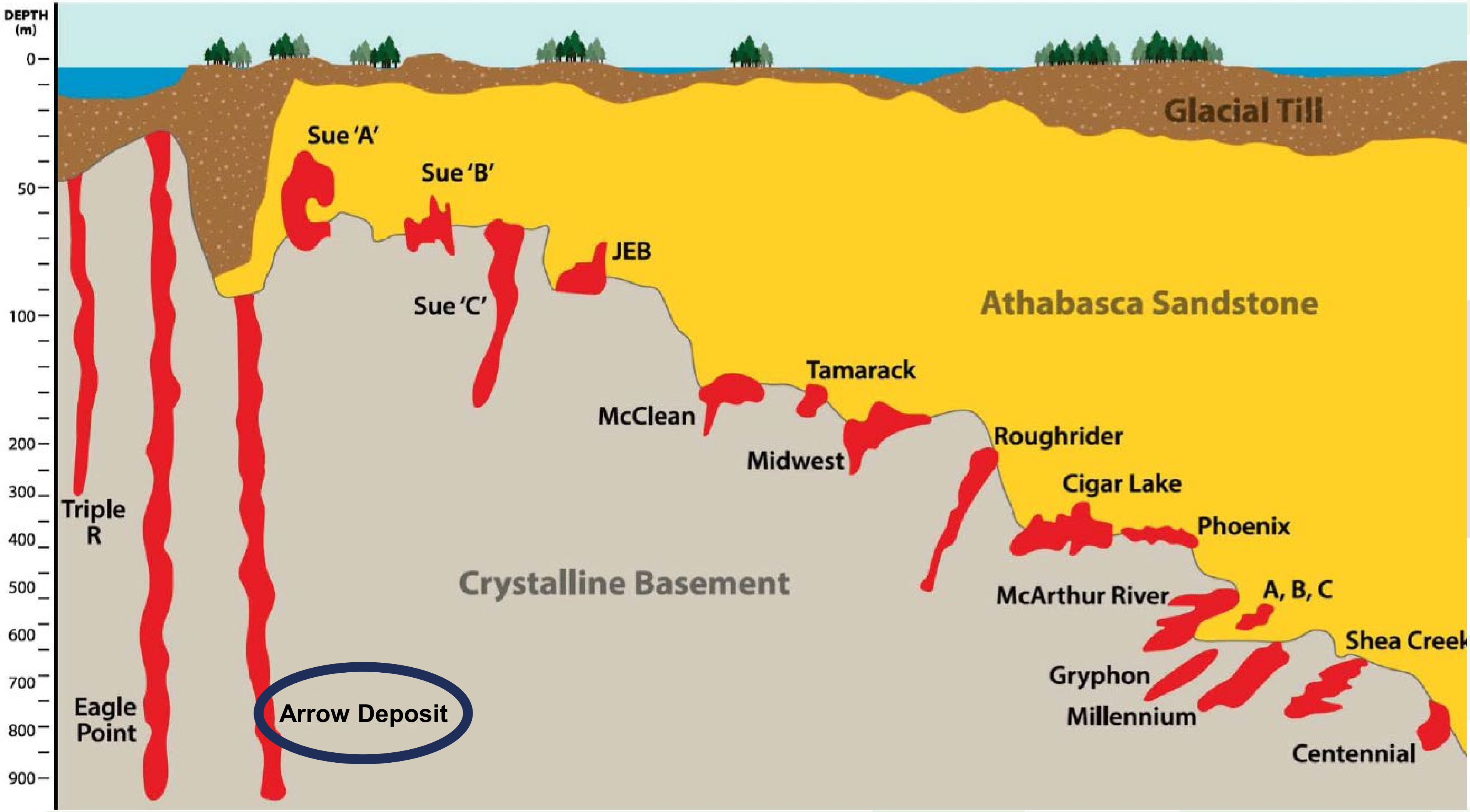
- Exploration since 2012
  - Air and land-based
  - >300,000 m drilled
- Supported by advanced exploration camp
- Arrow deposit
  - Discovered in 2014

Background
Arrow Deposit



- Location
  - North of existing camp
  - 14 km east of Highway 955
- Basement hosted deposit
  - Entirely within crystalline basement rock
- Land-based
  - Remains open at strike and depth

Arrow Deposit Setting



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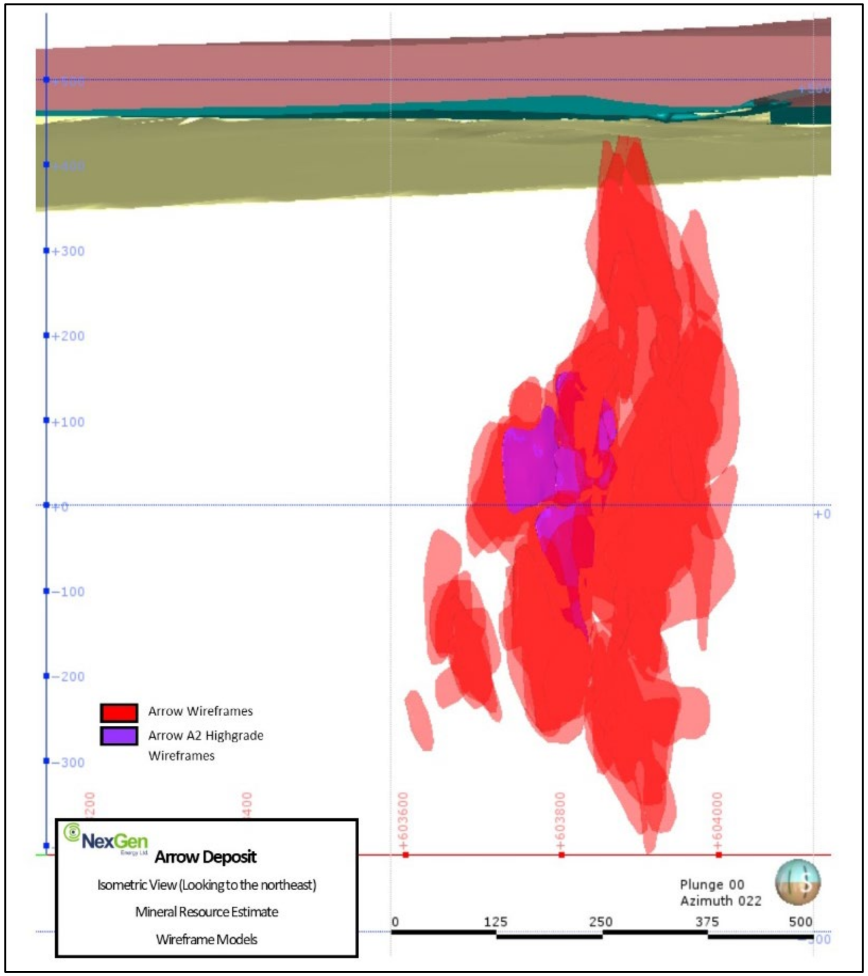
Arrow Deposit Results to Date



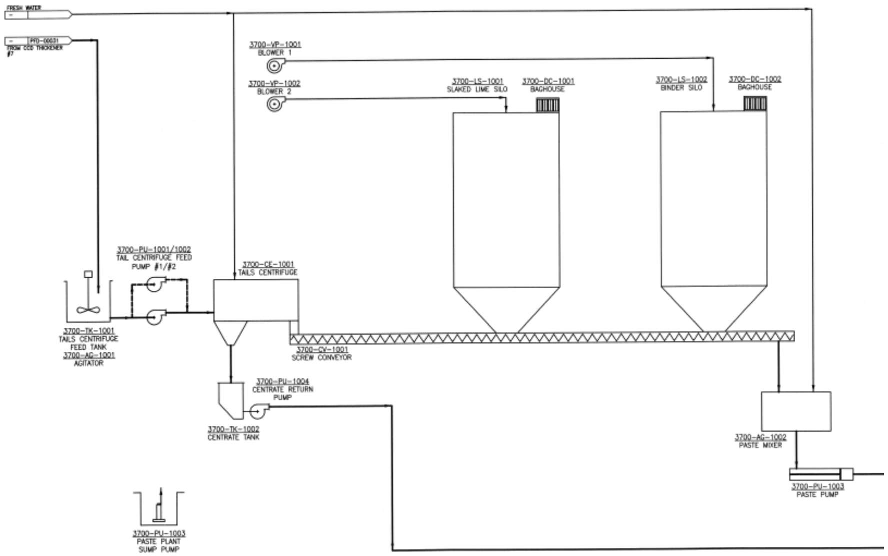
- Largest undeveloped uranium deposit in Saskatchewan
- Evaluating technical, economic & environmental feasibility
  - PEA (July 2017)
  - PFS (Q4 2018)
- Strong potential for mine and mill development

Classification	Resource Estimate (million tonnes)	Grade (% U_3O_8)	Total U_3O_8 (million pounds)
Indicated	1.18	6.88	179.5
Inferred	4.25	1.30	122.1

Rook I
Project Development

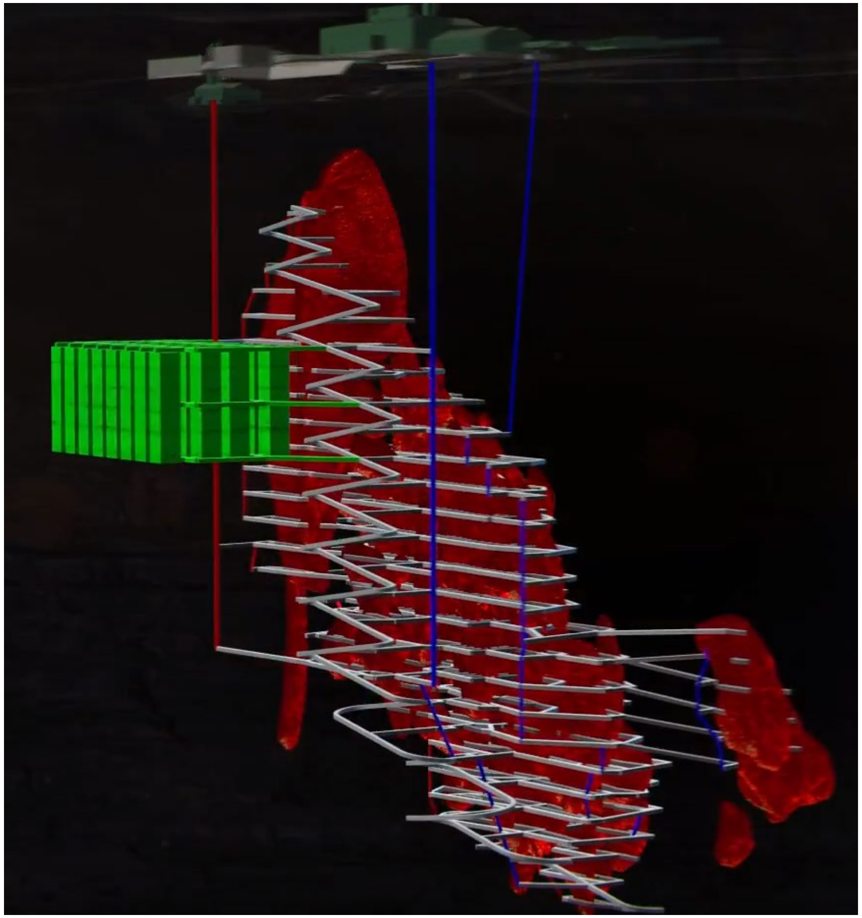
- Mine
  - Conventional long-hole stope, drill & blast
  - Shaft access
  - 1,200 – 1,500 tonnes per day
- Mill
  - Conventional mill w/ acid strip
  - 29 million lbs U_3O_8 per year
  - 15 year mine life
- Small surface footprint
  - 132 hectares
- **Novel approach to processing and disposing mill waste streams**

Arrow Deposit
Mill Solid Waste Management



- Mill solid waste streams
  - Neutralized leaching residues
  - Gypsum residues
  - Water treatment precipitates
- Paste plant processing
  - Wastes processed into cemented paste within the mill
  - Mixed with binders and water
  - Engineered to meet prescribed criteria for strength, rheology, and stability

Cemented Paste Backfill
Alternative Uranium Tailings Management



- Mine waste return via pipeline
  - Pumped underground
- Storage options
  - Stope backfill
    - Utilization of cemented paste backfill in mined-out stopes to support on-going operations
  - Underground Processed Waste Management Facility
    - Purpose-built, dedicated processed waste management facility

Cemented Paste Backfill
Alternative Uranium Tailings Management

- Proven approach
  - Well understood, broadly used in other mining sectors
  - Technology readily available and demonstrated
- Integration with operations
  - Structural support for mining operations
  - Return residual solid waste back underground
- Environmental performance
  - Reduced surface footprint
  - Reduced potential contaminant mobility
  - No long-term management of surface facility
  - Allows for progressive decommissioning of process waste during operation

Cemented Paste Backfill Pilot-Scale Characterization Study

- Evaluation of technical feasibility
  - Proof-of-concept
  - Incorporated into metallurgical test-work
- Designed and directed by subject matter experts
  - Wood Canada Limited
  - Saskatchewan Research Council
- Study lead
  - Corina-Maria Aldea, PhD, P. Eng, FACI
    - Test program development, paste backfill design and oversight
- Laboratory testing leads
  - Jack Zheng PhD, P. Eng & Tim Oleniuk P. Eng
    - Paste backfill preparation and testing

Cemented Paste Backfill Study Objectives

- Neutralized leach residues
  - Physical: establish ability to form a stable, competent, and pumpable paste
  - Chemical: evaluate acid generating potential and chemical compatibility with the additives
- Cemented Paste backfill
  - Identify suitable binders
  - Identify appropriate mix design
  - Evaluate suitability of using process water in the paste mix
  - Evaluate paste pumpability, in-situ strength, long-term durability

Cemented Paste Backfill Study Criteria

Category	Property	Description	Value	Unit
General Criteria	Paste Pumpability/ Mix Design	% Fines (<20 µm)	15 – 20	%
Project-specific Targets	Paste Pumpability	Slump	203 - 229	mm
	28 day Unconfined Compressive Strength	High-strength backfill	1.5	MPa
		Regular strength backfill	1	MPa
		Low strength backfill	0.5	MPa

Cemented Paste Backfill Methodology: Neutralized Leach Residues

- Sample preparation
  - Sample collection
    - Neutralized washed residues from pilot-scale leaching circuit
    - Decanted and dried to ~80% - 85% solids
  - Process water characterization
    - Collected and analyzed to evaluate suitability for use in paste mix (potential to reduce freshwater consumption)
- Testing
  - Physical
    - Sieve analysis, laser particle diffraction, specific gravity
  - Chemical
    - Full chemical analysis, acid-base accounting
  - Mineralogical
    - X-ray diffraction

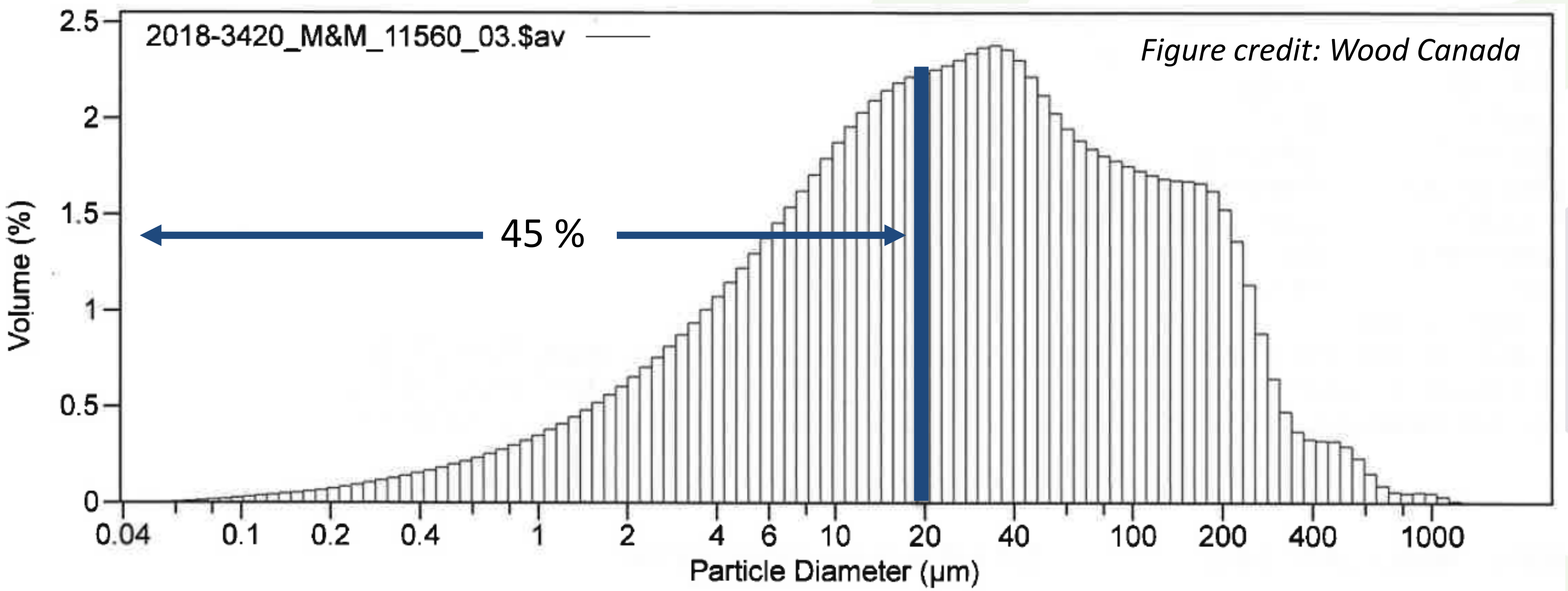
Cemented Paste Backfill Methodology: Paste

- Paste mix preparation
  - Laboratory scale batches
  - Portland cement & granulated blast furnace slag used as binders

Ingredient	Unit	MO	M1	M2	M3	M4	M5	M6
Dry Tailings	%	71	62	61	59	61	62	61
Process water	%	29	34	34	34	35	33	32
Portland Cement	%	0	4	5	7	2	2.5	3.5
Slag	%	0	0	0	0	2	2.5	3.5

- Testing
  - Rheology
    - Cylinder and cone slump, slump flows, shear rate, shear stress, viscosity
  - Strength
    - Unconfined compressive strength
    - 7, 14, 28, 56, 90 day aging tests

Cemented Paste Backfill
Study Results: Particle Distribution



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Cemented Paste Backfill Study Results: Slump

Photo credit: Wood Canada

Cemented Paste Backfill Study Results: Strength

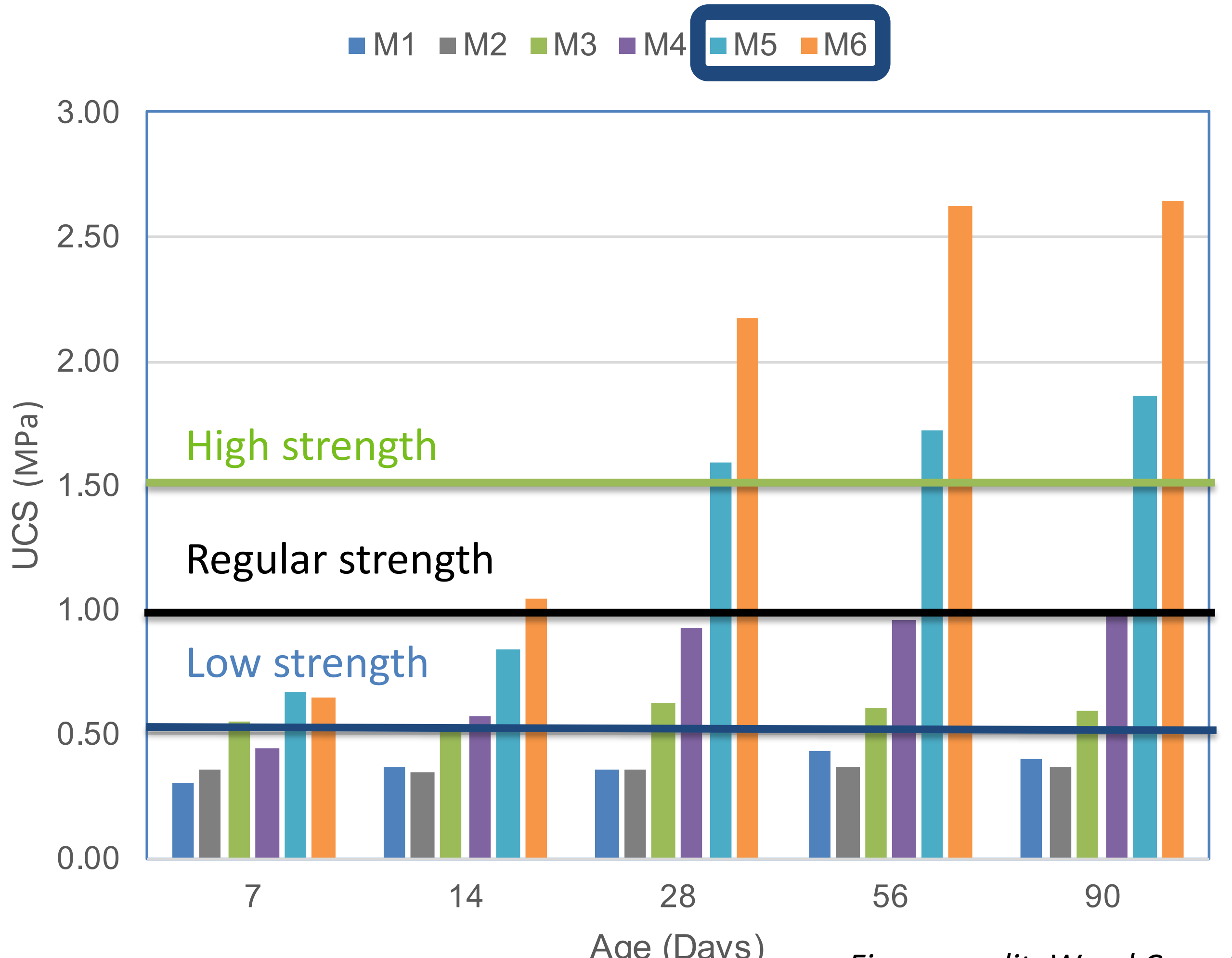

Figure credit: Wood Canada

Cemented Paste Backfill
Study Conclusions: Leach Residues

- Creation of a stable, competent, and pumpable paste
  - Workable paste product can be achieved using neutralized leaching residues
  - High fines content requires additional consideration
- Chemically compatibility with the additives
  - No adverse or unexpected chemical reactions with Portland cement or slag

Cemented Paste Backfill
Study Conclusions: Paste Backfill

- Optimal mix design
  - ~30% water
  - ~60% neutralized leach residues
  - ~5 – 7% binder
- Process water as a component of the paste mix
  - No impact on condition or quality of paste product
- Paste pumpability
  - Established pumpability of paste product
  - Ideal moisture content identified, evaluate options for fines fraction
- Strength of paste
  - High strength achieved
  - Incorporation of binders to meet strength specifications
  - Strength increases during the setting period

Cemented Paste Backfill
Next Steps

- Paste mix design
  - Investigate local binder sources
  - Optimize binder dosage rates
- Other process waste streams
  - Gypsum residues
  - Water treatment precipitates
- Processed waste product characterization
  - Radiological properties
  - Long-term leaching potential
- Paste plant, transfer and storage
  - Design consideration and plant capacity, pump and transfer system, placement strategy and design

Questions