BELT ACID MINE DRAINAGE WATER TREATMENT PLANT

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Coal Fields of Montana

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Historical Coal Mining and Coking

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Chemistry Of Pyrite Weathering: The Acid-Forming Process

Summary Reaction For Pyrite Weathering

Pyrite + Oxygen + Water $\rightarrow$ Iron Hydroxide + Sulfuric Acid

$FeS_2 + 15/4\ O_2 + 7/2\ H_2O \rightarrow Fe(OH)_3 + 2\ H_2SO_4$

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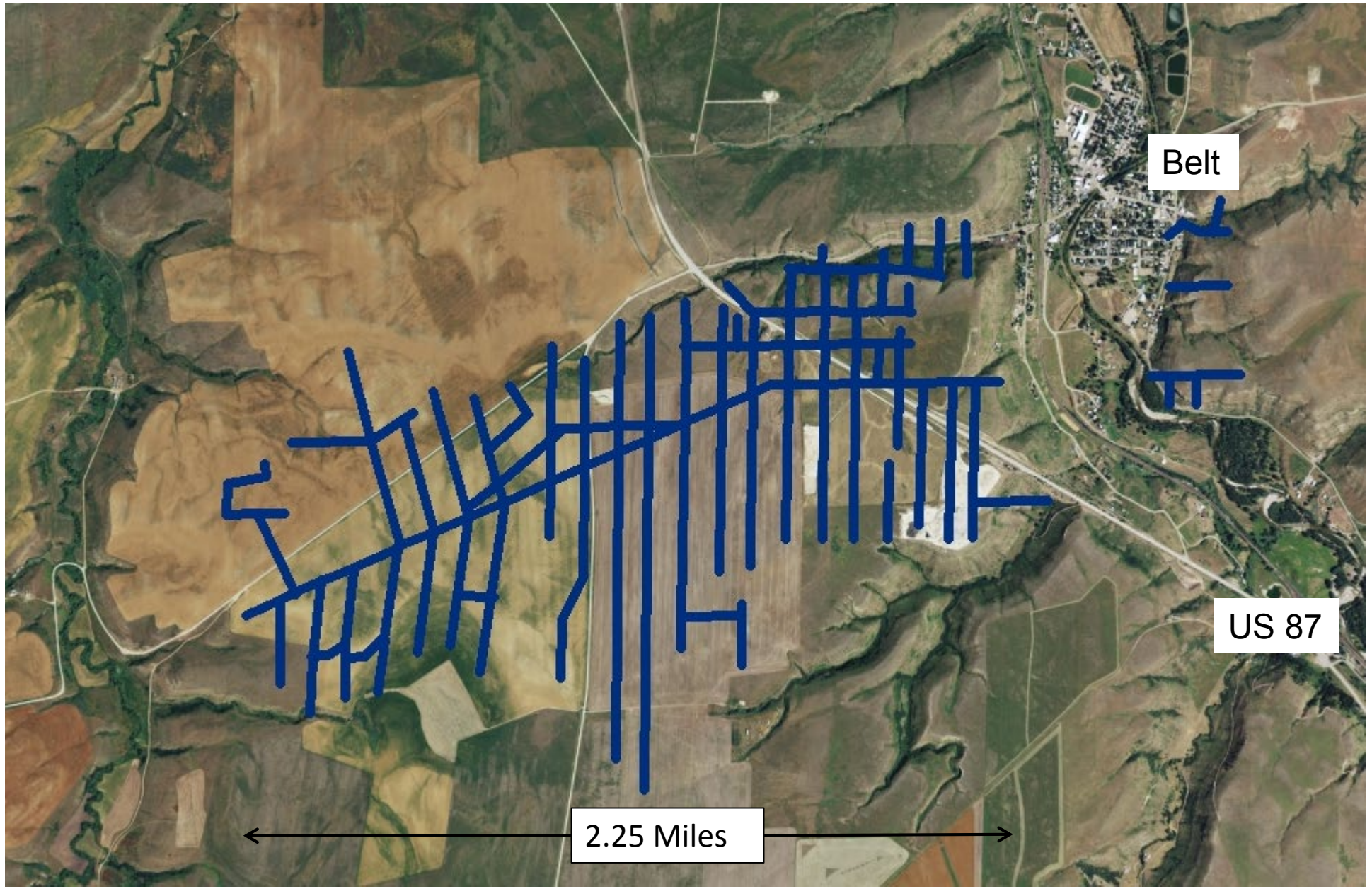

Anaconda Mine Workings in Belt

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Belt Creek Water Quality

Exceeds:

- aluminum
- cadmium
- iron
- nickel
- zinc

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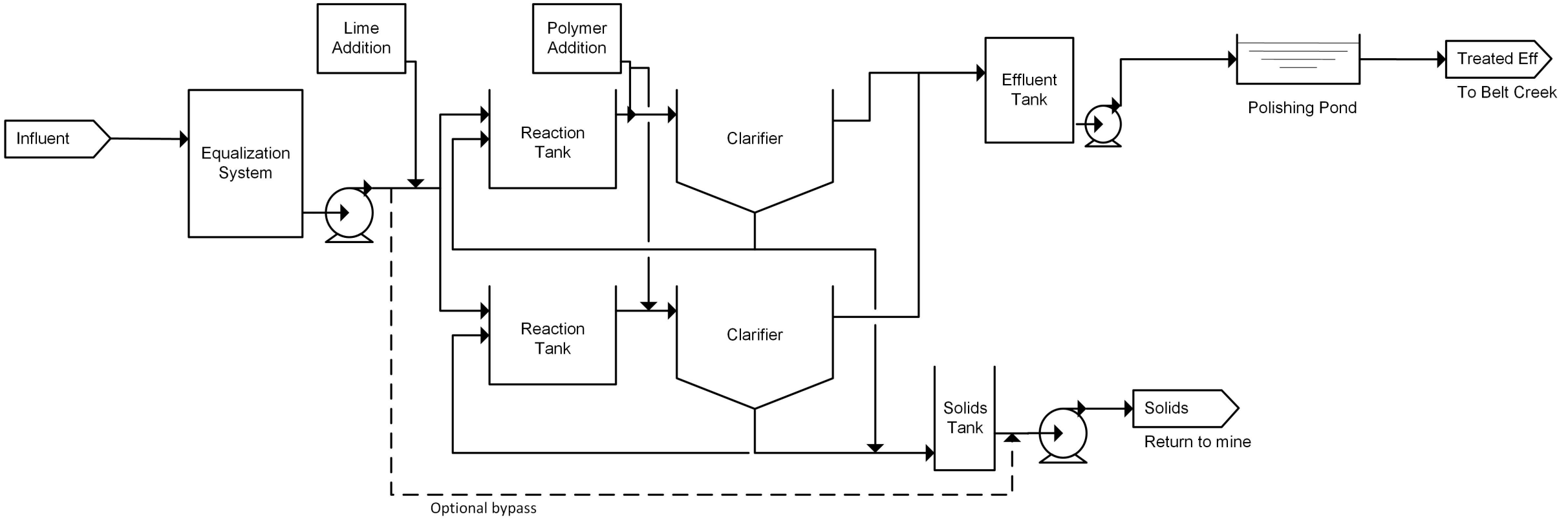
Belt Water Treatment Plant Engineering Design Update

- Finishing 30% Design
- Treatment Type:
  - Single Stage Lime Treatment
- Sludge Management
  - Injection Into Underground Workings

Single Stage Lime Treatment



Single Stage Lime Treatment

Design Status

Water Treatment Plant

Components Under Design or Study:

- Building Type/Layout
- Process Layout
- Electrical/Pumps/Controls Design
- Figuring out the best way to capture groundwater at Coke Oven Flats
- Site Civil Design
- Sludge Testing
- Settling Pond design

Sludge Injection Pipeline Under Design or Study:

- Pipeline Route
- Pipeline Sizing
- Sludge Testing
- Pump Selection
- Power and Controls Design

Coming up…..

Treatment Plant

- Site Layout Design
- Building Planning
- Lewis Coulee Flow Monitoring
- Injection Design Investigation for Millard Mine
- Conceptual Design Completion

Sludge Injection

- Reporting on latest mine pump test
- Well casing and grouting
- Test sludge injecting with water
- Pipeline route soil testing

Progress

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Thank You

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