



White Pine Copper Refinery, Inc.



# P.M. Power Group, Inc.

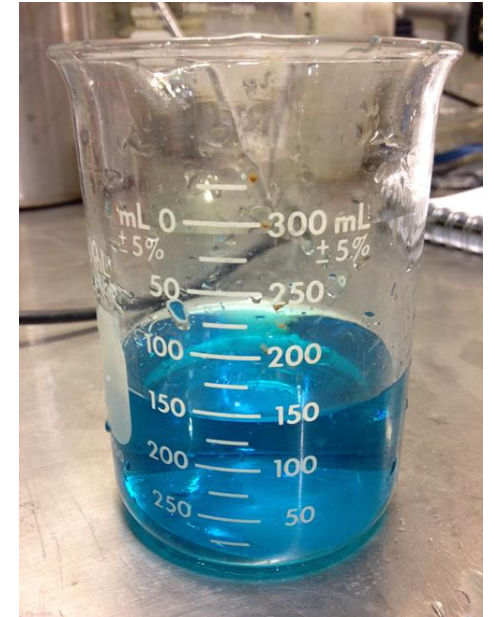
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## White Pine Copper Refinery EMEW Project – Stamp Sands Grant

August 14, 2019

# Introduction – PM Power Group, Inc.

- PM Power Group, Inc. owns White Pine Copper Refinery, Inc.
  - Facility capable of producing 3,000,000 lbs of B115 Copper Cathode Annually from landfill diverted products.
  - Business change from typical refining to recycling and recovery.
  - Fully permitted
  - Full utility service
  - 3 year Union contract is signed
  - Completing pilot phase, in process of ramping up towards commercial output.





# White Pine – Stamp Sands Work

- PM Power Group is working under a \$100,000 grant from LARA/Rural Development towards a pilot project to determine beneficial reuse economics of the stamp sands located in the Keweenaw impacting Buffalo Reef.
  - White Pine has been able to extract copper from lab tests.
  - Pilot project underway to determine economics of full-scale project in White Pine as beneficial reuse partner with the State of Michigan to help clean up Buffalo Reef.



- Task force – Army Corps, DEQ, Tribe
- Have met with both USPEA and Tribal Entities
- Challenges
- Army Corp Dredging Work
- Beneficial Reuse
- Final Waste Disposal

# White Pine – Stamp Sands Work

# Benefits to the Region

- Jobs - Keweenaw Remediation, transport, Copper extraction, expand tax base to benefit schools and infrastructure, etc.
- Long Term Benefit – minimum 20 year project
- Highland Project
- Environment Clean & Permanent Solution to both Gay and White Pine





# Pilot Project Update

- 20 Tons of sands have been collected from the Keweenaw with assistance from Keweenaw Road Commission.
- Sand was transported in super sacks to reduce any potential spillage and help manage sand during piloting phase
- Commercial transport of sand would be either barge and conveyor or trucking.



# 1/5 scale cell of tank house

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- Tankhouse annual copper production was 75,000 Tons / 1,500,000 lbs. of copper annually.
- For pilot project created a 1/5 scale test cell to determine if tanks could be modified for copper recovery from stamp sands.



# Testing to determine copper recovery in cells

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- Testing wide ranges of sand and solution to determine best economics and chemistry of residual sands post processing.
- Testing different options of sands.
  - Sand as is off beach
  - Screen to different mesh sizes
  - Highgraded and screened



# Testing Process





# SubTerra

Final Resting Place