



U.S. Department of the Interior
Bureau of Land Management

Risk Assessment for Mercury Releases to the Kuskokwim River from the BLM Red Devil Mine

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Red Devil Mine



Presentation Organization

- PART 1: Site setting and the Kuskokwim River
 - History of mercury mining activities
- Summary of Relevant Site Investigations
- PART 2: Fish telemetry and tissue study
 - *(Presented by Dr. Angela Matz)*
- PART 3: Human health Risk Assessment Issues
 - Multiple lines of evidence
 - Supplemental RI risk assessment approaches
 - Overview of findings



Introduction and Project Overview

- Mercury and other chemicals from Red Devil Mine and regional mineralized zones are present in Kuskokwim River sediment and biota
- The methylation of mercury and food chain biomagnification can impact upper food chain organisms, such as pike and burbot
 - Concerns about human health risk (esp. subsistence) from consumption of contaminated fish
- This presentation describes a “**Multiple Lines of Evidence**” approach to integrate a number of relevant findings into risk management decision making

Kuskokwim River

- Drains much of southwest AK
- Ninth largest river in North America
- Average discharge is 67,000 cfs
- Multiple large tributaries





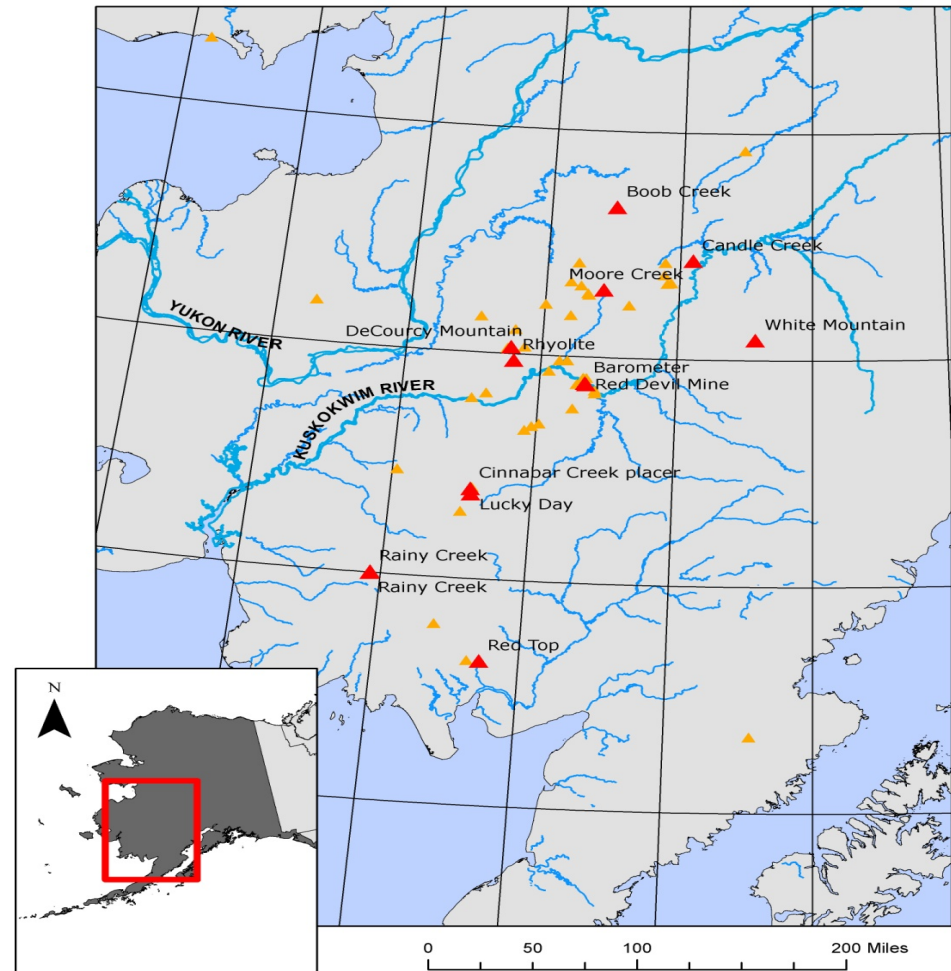
Kuskokwim River Adjacent to Red Devil June 2015





Important Site Issues Related to RDM and the Kuskokwim River

- Numerous mercury deposits and mines across region
- Elevated background mercury in mineralized zone
- Fish are important local source of protein for subsistence peoples
- Mercury detected in resident fish across region and Kusko watershed



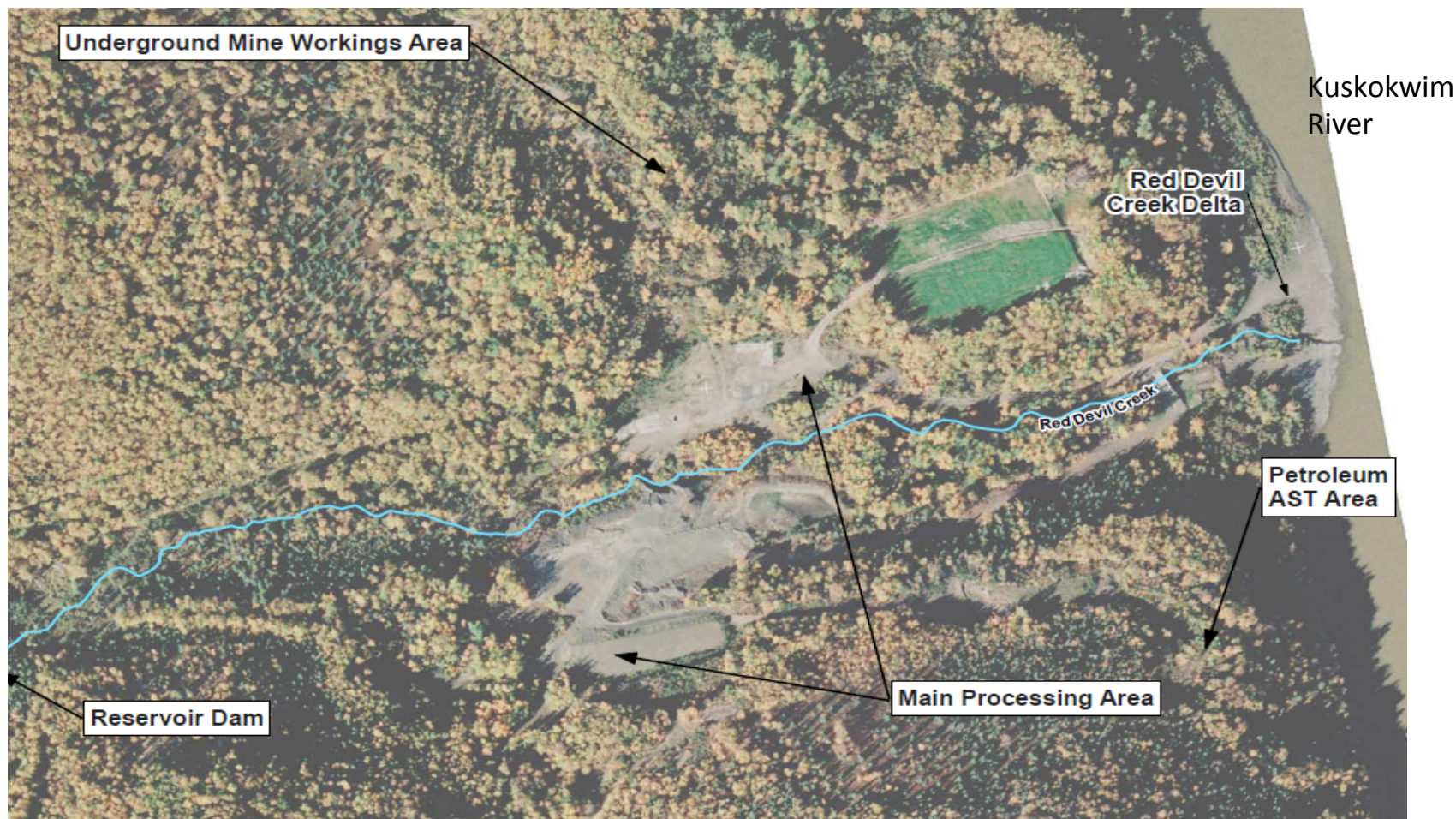


Brief Operational History of Red Devil Mine

- Mercury mine (cinnabar ore) operated intermittently from 1933-1971, depending on market price
- Red Devil Mine produced nearly 87% of all mercury from Alaska (1,330 Tons)
- Most of the mining was underground, with later phases including open pit mining
- Mining, milling, retorting, chemical storage, and waste disposal all done on-site
- Tailings and retort waste disposed of on-site, used as fill, and dumped in Red Devil Creek
 - Pushed out into the Kuskokwim River



Historic Ore Processing Area, Red Devil Mine (buildings already removed)





Red Devil Creek Setting





Current Status of Red Devil Mine Site

- Site is abandoned, leaving BLM to conduct investigation and cleanup activities
- Viable Potentially Responsible Party (PRP) not identified
- BLM demolished buildings, removed fuel tanks, and buried materials in on-site monofills in early 2000s
- Red Devil village nearby; no other industrial facilities in the area



Current Status of Red Devil Mine Site

- BLM initiated RI/FS in 2009; RI completed in 2014
 - Focused on groundwater and upland setting
 - Did not fully address Kuskokwim River
- Supplemental RI currently underway
 - Additional Kuskokwim River data collected
- Supplemental Human Health and Ecological Risk Assessment in development
 - *Ecological risk not a topic of today's presentation*



Early Action at Red Devil Mine Monofills, Tailings Stabilization

1960's



2014





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