Red Devil Mine
Proposed Plan – February 2020
Red Devil Mine
What We Found

Processed Tailings are Primary Source of Contamination

Contaminants of Concern

- Mercury
- Arsenic
- Antimony

Affected Media

- Tailings/Soil/Red Devil Creek Sediment
- Groundwater
- Kuskokwim River Sediment

Basis for Action

- Contaminants moving offsite (early action)
- Elevated risk to humans/wildlife
Red Devil Mine
Soil Concentrations
Red Devil Mine
Red Devil Creek Water Concentrations
Red Devil Mine
Remedial Investigation
Groundwater Concentrations

- Groundwater flows toward Red Devil Creek
- Underground Mine tunnels affect flow pattern
- Groundwater concentrations affected by natural ore in the rock

Size of green dots represent levels of concentration. Larger the dot equals larger the concentration
Red Devil Mine
Risk Assessment Findings

Cancer Risk
*Above* the standard for both EPA and ADEC

Toxic Risk
*Above* the standard for both EPA and ADEC

Cancer Risk
*Below* the EPA Standard
*Above* the ADEC Standard

Toxic Risk
*Below* the EPA Standard and the ADEC Standard
Red Devil Mine
Cleanup Objectives

Reduce Risk to Below EPA and ADEC Levels

• Prevent Direct and Indirect Human Contact with Tailings, Soil, and Sediment
• Eliminate Impacts of Tailings to Red Devil Creek
• Eliminate Current/Future Impacts to Groundwater
• Monitor to Verify that Action is Effective
## Red Devil Mine
### Site Cleanup Options

<table>
<thead>
<tr>
<th>Site Wide Clean-up Alternatives</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1  No Action</td>
<td>$0</td>
</tr>
<tr>
<td>SW2  Encircle the site with a 12-foot fence</td>
<td>$816K</td>
</tr>
<tr>
<td>SW3  Excavate - Onsite Disposal - Monitoring</td>
<td>$26.4M - $32.7M</td>
</tr>
<tr>
<td>SW4  Excavate - Offsite Disposal – Reduced Monitoring</td>
<td>$198.7M</td>
</tr>
</tbody>
</table>
Red Devil Mine
Cleanup Alternatives SW3 & SW4

Legend
- Excavation Area
- Monofill 2
- Proposed Repository
- Sediment Excavation
- Groundwater monitoring
- River Sediment Monitoring
Red Devil Mine
Proposed Repository

Approximately 205,000 cubic yards of tailings, soil and sediment
Red Devil Mine
Proposed Repository Profile

Rain/Snowmelt

See Cap Layering Detail

See Cap Perimeter Detail

Tailings

50 ft

Drainage Level

Ground Surface

Water Table
Red Devil Mine
Cap Perimeter Detail

Existing Drainage Ditch along perimeter
Slope to Existing Ditch. Slope varies 3H:1V

Final Grade

Cap Layers
Geomembrane
Loess
Tailings / Soil / Sediment

Existing Grade

Anchor Trench
BEDROCK
Red Devil Mine
Cap Layering Detail & Hydrologic Analysis

Rain/Snowmelt fall on repository

Leachate Concentration
- Antimony: 85 mg/L
- Arsenic: 6 mg/L
- Mercury: 0.36 mg/L
## Red Devil Mine Hydrologic Analysis

All contaminant concentrations meet ADEC Drinking Water Standards at depths of less than 4 feet below repository.

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Initial Leachate Concentration (mg/L)</th>
<th>ADEC Drinking Water Standard (mg/L)</th>
<th>Maximum Depth of Leachate Below Repository (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>85.40</td>
<td>0.006</td>
<td>3.15 - 3.55</td>
</tr>
<tr>
<td>Arsenic</td>
<td>6.118</td>
<td>0.010</td>
<td>0.65 – 0.75</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.357</td>
<td>0.002</td>
<td>0.05 – 0.15</td>
</tr>
</tbody>
</table>
Red Devil Mine
Preferred Cleanup Alternative
Red Devil Mine
Preferred Alternative Meets Cleanup Objectives

- Prevents Direct/Indirect Human Contact with Tailings
- Eliminates Impacts of Tailings on Groundwater
- Eliminates Impacts to Red Devil Creek

Demonsrte that sediment concentrations decrease

Eliminates human contact with tailings in shore sediment

Protects Groundwater Quality
Contact Information

Project Manager          Mike McCrum
                         907-271-4426
                         mmccrum@blm.gov

Field Office Manager    Bonnie Million
                         907-267-1285
                         bmillion@blm.gov

All documents are available in the project administrative record available on the BLM Alaska website:  https://www.blm.gov/alaska

Access the Red Devil Mine Proposed Plan and Administrative Record of documents by:

1. Clicking on Popular Links
2. Clicking on Red Devil Mine Project
3. Clicking on Administrative Record or the Proposed Plan under Quick Links

Comments can be emailed to blm_ak_reddevil@blm.gov or mailed to BLM Anchorage Field Office, Attn: Red Devil Mine Clean up, 4700 BLM Road Anchorage, AK 99507