2021 Alaska Mining Industry Update

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Alaska Division of Geological & Geophysical Surveys

AME Roundup
January 31, 2022
ALASKA

- 5th-highest Investment Attractiveness globally; 3rd among U.S. states
- Outstanding mineral potential
- Mining-friendly regulatory & fiscal policies
- Attractive geological databases
7 lode mines (1 new)
1 coal mine
~ 150 placer gold mines
~ 52 exploration projects

### 2021 Production Est.

<table>
<thead>
<tr>
<th>Metal</th>
<th>Production Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zn</td>
<td>565-585,000 tonnes</td>
</tr>
<tr>
<td>Pb</td>
<td>110-120,000 tonnes</td>
</tr>
<tr>
<td>Au</td>
<td>624-644,000 oz.</td>
</tr>
<tr>
<td>Ag</td>
<td>~15,200,000 oz.</td>
</tr>
</tbody>
</table>

- **Red Dog**: 510,000-530,000 tonnes Zn, 90,000-100,000 tonnes Pb
- **Fort Knox & Gil**: ~254,000 oz. Au
- **Pogo**: ~200,000 oz. Au
- **Usibelli**: ~925,000 tonnes coal
- **Greens Creek**: ~9,200,000 oz. Ag, ~46,000 oz. Au, ~55,000 tonnes Zn, ~20,000 tonnes Pb
- **Dawson Au Mine**: ~12,500 oz. Au

$211 million estimated exploration spending (up 45% over 2020)
Open-pit gold mine; intrusion hosted

**Reserves & Resources (Dec. 31, 2020)**

<table>
<thead>
<tr>
<th></th>
<th>Million Tonnes</th>
<th>Au g/T</th>
<th>Ounces Au (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P&amp;P reserves</td>
<td>230.0</td>
<td>0.3</td>
<td>2.471</td>
</tr>
<tr>
<td>Measured &amp; Indicated</td>
<td>267.0</td>
<td>0.3</td>
<td>2.589</td>
</tr>
<tr>
<td>Inferred</td>
<td>128.1</td>
<td>0.3</td>
<td>1.057</td>
</tr>
<tr>
<td>Total</td>
<td>625.1</td>
<td>0.3</td>
<td>6.117</td>
</tr>
</tbody>
</table>

- 2021 production forecast: ~254,000 oz. Au

**Gilmore (West-Pit) Expansion**
- Replaced resource base
- Extends mine life through 2027
- 2022-2027 annual production: ~250,000 oz.
- Jan. 2021 – 1st gold bar pour from 172.4-MT-capacity Barnes Ck. heap leach pad

**Gil Satellite-Ore Pits [NEW MINE IN ALASKA]**
- ~13 km east of Fort Knox; haul ore to mill using existing road network
- First blast, Sept. 2021
- First production before year-end 2021
- Adds 80-100 jobs
- Produce ~160,000 oz. Au over 2-year mine life
- $5.5M to explore west of Gilmore, extend Gil ore, regional exploration; convert Gil resources to reserves
Kinross/Contango ORE – Manh Choh (Peak)

Planned open-pit; Au-Ag-Cu skarn, Tetlin tribe native land

Kinross purchased 70% interest for US$93.7 million
Contango ORE retains 30% interest

- Kinross to receive management & toll milling fees for Contango’s share of milling
- One-year construction
- Truck ore ~370 km to Fort Knox mill
- Will add ~220,000 oz. Au/year to Fort Knox production
- Production 2024 – 2029

2020 Program (US$3.6 million):
- Initiated permitting
- Water & rock geochemical sampling

2021 Program (US$18 million):
- Initiated feasibility study (FS)
- FS & initial permitting by EOY 2022
- Metallurgical and geotechnical infill drilling
- Engineering & environmental studies for permitting
- Exploration

<table>
<thead>
<tr>
<th>Metric</th>
<th>Kinross Estimate (100% basis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First production</td>
<td>2024</td>
</tr>
<tr>
<td>Life of mine</td>
<td>4.5 years</td>
</tr>
<tr>
<td>Total production (Au eq. oz.)</td>
<td>~1 million</td>
</tr>
<tr>
<td>Average AISC (Au eq. oz.)</td>
<td>~$750/oz</td>
</tr>
<tr>
<td>Mined gold grade</td>
<td>~6 gpt</td>
</tr>
<tr>
<td>Initial capital expenditures</td>
<td>~$110 million</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Dec. 31, 2020</th>
<th>Million Tonnes</th>
<th>Au g/T</th>
<th>Ounces (million)</th>
<th>Ag g/T</th>
<th>Ounces (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td></td>
<td>0.331</td>
<td>6.4</td>
<td>0.068</td>
<td>16.7</td>
<td>0.178</td>
</tr>
<tr>
<td>Indicated</td>
<td></td>
<td>6.110</td>
<td>4.0</td>
<td>0.778</td>
<td>14.1</td>
<td>2.762</td>
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<tr>
<td>Inferred</td>
<td></td>
<td>0.941</td>
<td>2.7</td>
<td>0.081</td>
<td>16.1</td>
<td>0.486</td>
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<tr>
<td>Total</td>
<td></td>
<td>7.382</td>
<td>3.9</td>
<td>0.927</td>
<td>14.5</td>
<td>3.426</td>
</tr>
</tbody>
</table>

Data from Kinross, 2021
Underground, shear zone/quartz vein-hosted gold

**Estimated 2021 Production:** ~200,000 oz Au
- **FY2022 Guidance:** 220,000-250,000 oz Au
- **Increasing Au production to 300,000 oz/yr by 2023**
- **Endowment ~ 11 M oz, and expanding resource**

**2021 Drilling:**
- **Underground:** resource definition and conversion across Liese, South Pogo, and Fun Zone vein systems in underground mining areas
- **Surface exploration:** resource definition drilling in Goodpaster zone and Central Gap prospect

**2021 Activities:**
- **Completed mill expansion, from ~1.0 to 1.3 M tonne/year capacity**
- **Replaced primary conveyor belt that transports ore from underground to processing plant**
- **Mill bottlenecks removed; throughput increasing**

**March 31, 2021**

<table>
<thead>
<tr>
<th></th>
<th>Million Tonnes</th>
<th>Au g/T</th>
<th>Ounces (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves</td>
<td>5.852</td>
<td>8.0</td>
<td>1.498</td>
</tr>
<tr>
<td>Resource</td>
<td>22.897</td>
<td>9.4</td>
<td>6.907</td>
</tr>
<tr>
<td>Total</td>
<td>28.749</td>
<td>9.12</td>
<td>8.405</td>
</tr>
</tbody>
</table>

*Data from Northern Star Resources, 2021*
Underground mesothermal gold quartz-vein system

- Expected production (2021): 115,000-130,000 oz. Au
- Current mine life (reserves) through 2023
- Mining Kensington, Jualin, Raven veins:

~US$13M 2021 drilling program
- Infill drilling Elmira and Upper Kensington veins
- Expansion drilling at Elmira, Johnson, Jualin, Raven veins
  - Elmira (4.5 m of 36.3 g/t gold) vein
  - Johnson (1.1 m of 24.7 g/t gold) vein
- Exploration drilling at Big Lake, Gold King, Comet targets
- Extend mine life; identify growth opportunities
- Elmira development drift; refine vein shapes; maiden reserve in 2022;
- Plan to start mining Elmira in 2023

<table>
<thead>
<tr>
<th>Dec. 31, 2020</th>
<th>Million Tonnes</th>
<th>Au (g/T)</th>
<th>Au Ounces (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves</td>
<td>1.520</td>
<td>6.78</td>
<td>0.331</td>
</tr>
<tr>
<td>Measured &amp; Indicated</td>
<td>3.260</td>
<td>7.22</td>
<td>0.830</td>
</tr>
<tr>
<td>Inferred</td>
<td>1.449</td>
<td>7.72</td>
<td>0.394</td>
</tr>
<tr>
<td>Total</td>
<td>6.230</td>
<td>7.08</td>
<td>1.555</td>
</tr>
</tbody>
</table>

Data from Coeur Mining, 2021
2021 Production estimates:
- 9.2 M oz. Ag; 46,089 oz. Au; 55,000 tonnes Zn; 20,000 tonnes Pb
- Mine life from only reserves is expected to be to 2031.
- Leading the way for Hecla because of low costs per ounce silver.
- In 2020, began accessing the East Ore Zone and Upper Plate reserves at shallow depths in the mine with nearby infrastructure.

Exploration:
- Expanding and upgrading resources in the Upper Plate, 9A, and Northwest West ore zones
- Surface drill testing the Lil’Sore and 5250 targets

Data from Hecla Mining, 2020
**Sediment-hosted Zn-Pb-Ag deposit**

- Open pit; Began operating in 1989
- Underlying landowner: NANA Regional Corp.

**2021 Production Estimates:**
- 510,000 to 530,000 tonnes Zn;
- 90,000 to 100,000 tonnes Pb

- VIP2 mill-upgrade project was commissioned in 2020
- Expected to improve throughput by ~15%
- Advanced grinding control realized a ~9% increase in production rates
- Increased spending on tailing-related projects

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**Dec. 31, 2020**

<table>
<thead>
<tr>
<th></th>
<th>Million Tonnes</th>
<th>Zn %</th>
<th>Pb %</th>
<th>Ag g/T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves</td>
<td>46.0</td>
<td>12.9</td>
<td>3.6</td>
<td>67.5</td>
</tr>
<tr>
<td>Measured &amp; Indicated</td>
<td>8.5</td>
<td>7.7</td>
<td>5.3</td>
<td>92.0</td>
</tr>
<tr>
<td>Inferred</td>
<td>9.1</td>
<td>12.5</td>
<td>4.5</td>
<td>88.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63.6</strong></td>
<td><strong>12.1</strong></td>
<td><strong>4.0</strong></td>
<td><strong>73.5</strong></td>
</tr>
</tbody>
</table>

Data from Teck, 2020
Aktigiruq/Anarraaq

Sediment-hosted massive sulfide deposits
-Anarraaq inferred resource (Dec 2016): 19.44 M T @ 14.4% Zn, 4.2% Pb, 73 g/T Ag
-Aktigiruq exploration target (Sept. 2017): 80-150 M tonnes @ 16-18% Zn+Pb
-Significant potential mine-life extension in Red Dog District

2017-2019 program:
- 2016 drilling - 54.6 m @ 16.8% Zn, 3.63% Pb (DDH1737)
- Applied for permit to build road
- Resource-definition drilling at Aktigiruq and Anarraaq
- Ore bodies are 400 to 1,000 m below surface

- Drilling and exploration fieldwork resumed in 2021

Data from Teck Alaska, 2021
- 2.4-km-long, N-S-oriented, orogenic gold vein-fault system
- Mining Humboldt vein system
- Vein thickness: 0.6 m to 1.2 m (up to 1.8 m)

- Initiated production in April 2019; 50 employees
- Room-and-pillar, up-dip-jackleg-slusher underground mine
- Mill ~150 short tons/day (est.); gravity separation
- Average mill feed grade 2021 is 0.68 oz. Au/ton
- 2021 recovery averaging 86.5%
- Production: 12,400 oz. Au (as of Nov. 29, 2021)
Usibelli Coal Mine:  
- 2020 Production ~925,300 tonnes  
- Regional electrical generation
Proposed open-pit gold mine; structurally controlled, intrusion related

[50% Barrick Gold Corp./50% NovaGold Resources Inc.]
Underlying ownership: Calista Corp. & Kuskokwim Corp.

2020 Program – US$40M:
- 85 holes, 23,400-m DDH program in ACMA & Lewis areas

2021 Program – US$38M:
- 79 holes, 24,200-m DDH program in ACMA area & Divide zone
- Significant high-grade intercepts point toward potential feeder zones
  DC-1970: 92.02 m grading 7.8 g/T Au
  DC21-1963A: 40.97 m grading 10.5 g/T Au
  DC-1969: 47.78 m grading 9.0 g/T Au
- June 1, 2021 updated NovaGold NI 43-101 report

**Projected production:**
- 1.3 M oz. of Au/year
- 27-year mine life

<table>
<thead>
<tr>
<th></th>
<th>June 2021</th>
<th>Million Tonnes</th>
<th>Au (g/T)</th>
<th>Ounces (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proven &amp; Probable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proven &amp; Probable</td>
<td>504.8</td>
<td>2.09</td>
<td>33.9</td>
</tr>
<tr>
<td><strong>Resources, inclusive of reserves</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured &amp; Indicated*</td>
<td></td>
<td>541.3</td>
<td>2.24</td>
<td>39.0</td>
</tr>
<tr>
<td>Inferred</td>
<td></td>
<td>92.2</td>
<td>2.02</td>
<td>5.99</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>633.6</strong></td>
<td><strong>2.21</strong></td>
<td><strong>45.0</strong></td>
</tr>
</tbody>
</table>

Data from Donlin Gold, 2021
Metasediment-hosted, intrusion-related gold

2021 program (US$5.6M):
- Released PFS
- Waste-rock geochemical characterization
- Baseline environmental work

Oct. 2021 PFS:
- 6.43 M oz. of Au over 21-yr mine life
- 306,200 oz./yr. LOM
- 1.2 strip ratio, 65,000 tonnes/day
- CAPEX(initial) = US$1.93B
- AISC production = US$1,171/oz. Au

- Whittle & BBA collaboration on project optimization
- Detailed geological model
- Conservative resource modelling
- Robust metallurgical test work
- First-principles approach on engineering

2021 PFS Flow Sheet

<table>
<thead>
<tr>
<th>Date</th>
<th>Million Tonnes</th>
<th>Au g/T</th>
<th>Ounces (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 20, 2021</td>
<td>430</td>
<td>0.65</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>705</td>
<td>0.60</td>
<td>13.6</td>
</tr>
</tbody>
</table>

Data from ITH Mines, 2021

***Inclusive of reserves
Pebble Limited Partnership - Pebble

Porphyry Cu-Mo-Au-Ag (Re, Pd) Deposit

2021 program:
- Continue environmental baseline studies; engineering studies
- Inspection, containment, and permanent closure of select drill holes and monitoring wells to comply with State regulations

2022: USACOE ROD under appeal

<table>
<thead>
<tr>
<th></th>
<th>Dec. 2017</th>
<th>Million Tonnes</th>
<th>Cu Billion pounds</th>
<th>Cu (%)</th>
<th>Au (g/T)</th>
<th>Mo (ppm)</th>
<th>Ag (g/T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td>527</td>
<td>4</td>
<td>0.33</td>
<td>0.35</td>
<td>178</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>Indicated</td>
<td>5,929</td>
<td>53</td>
<td>0.41</td>
<td>0.34</td>
<td>246</td>
<td>1.7</td>
<td></td>
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<tr>
<td>Inferred</td>
<td>4,454</td>
<td>25</td>
<td>0.25</td>
<td>0.25</td>
<td>226</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>10,910</td>
<td>82</td>
<td>0.34</td>
<td>0.30</td>
<td>235</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

-2020 October: 2.6M kg Re (M&I) and 1.6M kg Re (Inferred)

PEA (Sept. 2021):
- Open-pit mine; ~20-year mine life; 180,000 T/day
- Long-term metal prices: IRR=15.8% & NPV(7%)=US$2.3B
- Ave. annual production: 320 M lbs. Cu, 363,000 oz. Au, 1.8 M oz. Ag, 15 M lbs. Mo, 12,000 kg Re
- Evaluates expansion scenarios and onsite gold plant
Volcanogenic massive sulfide, SE Alaska

[Constantine Metal Resources Ltd. (51%) & Dowa Metals & Mining Alaska Ltd. (49%)]

<table>
<thead>
<tr>
<th></th>
<th>Dec. 2018</th>
<th>Million Tonnes</th>
<th>Cu %</th>
<th>Zn %</th>
<th>Ag g/T</th>
<th>Au g/T</th>
<th>Barite %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicated</td>
<td></td>
<td>4.68</td>
<td>1.49</td>
<td>5.23</td>
<td>30.0</td>
<td>0.30</td>
<td>23.9</td>
</tr>
<tr>
<td>Inferred</td>
<td></td>
<td>9.6</td>
<td>0.59</td>
<td>4.95</td>
<td>69.3</td>
<td>0.39</td>
<td>27.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>14.3</td>
<td>0.89</td>
<td>5.04</td>
<td>56.6</td>
<td>0.36</td>
<td>26.5</td>
</tr>
</tbody>
</table>

2021 program (US$8.8M):
-8 DDH, 2,917 m
-Infill drilling down-dip inferred South Wall Cu-Zn-Ag-Au resource
-Geotech./enviro. drilling for planned UG exploration program & advancing project to feasibility
-6.7 line-km seismic survey & 12 sonic holes; depth to bedrock & stratigraphy Glacier Ck. valley

Data from Constantine Minerals, 2020
**Ambler Metals - Arctic**

**Volcanogenic massive sulfide, Northwest Alaska**
[50% Trilogy Metals Inc./50% South 32 Limited]

<table>
<thead>
<tr>
<th>Aug. 2020</th>
<th>Million Tonnes</th>
<th>Cu %</th>
<th>Zn %</th>
<th>Pb %</th>
<th>Au g/T</th>
<th>Ag g/T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probable Reserves</td>
<td>43.4</td>
<td>2.2</td>
<td>3.1</td>
<td>0.54</td>
<td>0.47</td>
<td>35</td>
</tr>
</tbody>
</table>

**2020 Feasibility Study**
- 3-year payback at US$3.00/lb. Cu
- After-tax NPV(8%) of US$1.1B
- 27% IRR
- 12-year mine life

**2021 program (US$27 M):**
- 18 holes, 4,131 m, infill & metallurgical drilling at Arctic
- 6 holes, 2,325 m for near-Arctic exploration, mapping & sampling
- Exploration on 3 new VMS-prospective claim blocks elsewhere

**Ambler Mining District Industrial Access Road project**
- Final EIS issued March 27, 2020 for Ambler Access Road
- Jan. 2021 AIDEA received “Rights-of-Way” from BLM & NPS
- Feb. 2021 Development Funding Agreement with AIDEA (US$13M detailed engineering for road)

Data from Trilogy Metals, 2021
Graphite One – Graphite Creek

Graphite Creek, Seward Peninsula, Alaska

Graphite:
- Large-flake graphite deposit in USA
- Naturally exhibits morphological characteristics of already processed material
- Geophysics indicates 18 km of potential

<table>
<thead>
<tr>
<th>March 2019 5% cut-off</th>
<th>Tonnes (Million)</th>
<th>Cg %</th>
<th>Graphite (Tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td>1.69</td>
<td>8.0</td>
<td>135,171</td>
</tr>
<tr>
<td>Indicated</td>
<td>9.26</td>
<td>7.7</td>
<td>715,363</td>
</tr>
<tr>
<td>Inferred</td>
<td>91.89</td>
<td>8.0</td>
<td>7,342,883</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>102.84</strong></td>
<td><strong>8.0</strong></td>
<td><strong>8,193,417</strong></td>
</tr>
</tbody>
</table>

2021 program:
- 8 holes, 1,695 m HQ core in resource area
- Core drilling for geotechnical & groundwater investigations
- 5 holes, 357 m sonic drilling in dry tailings/waste-storage area

Ongoing work:
- PFS scheduled for release in Q1 2022
- Update resource model in 2022 FS
- R&D on graphite-products (battery grade anode for EV and energy storage sectors, fire suppressant, synthetic diamond dust and gemstones, graphene, industrial graphite, etc.)

Data from Graphite One, 2021
**2021 Program:**
- XRT ore-sorting study shows up to 10X upgrade
- New Korbel Main mineral resource estimate
- Maiden resource at RPM
- Commissioned on-site prep lab (7,500 samples/mo.)

**Drilling:**
- Planned 80,000 m
- High-grade gold in Korbel feeder structure
- RPM North: 400 m @ 3.5 g/T Au; incl. 132 m @ 10.1 g/T Au

<table>
<thead>
<tr>
<th></th>
<th>Dec. 2021</th>
<th>Tonnes (millions)</th>
<th>Au (g/T)</th>
<th>Ounces (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korbel Main</td>
<td>876</td>
<td>0.3</td>
<td></td>
<td>8.1</td>
</tr>
<tr>
<td>RPM North</td>
<td>23</td>
<td>2</td>
<td></td>
<td>1.5</td>
</tr>
</tbody>
</table>

**Global Ind.+Inf Resource**
- 899 Tonnes (millions)
- 0.3 Au (g/T)
- 9.6 Ounces (million)
High grade Au-Cu-Zn-Ag-Pb polymetallic deposit, Alaska Peninsula

<table>
<thead>
<tr>
<th>JT Resource (June 2020)</th>
<th>Million Tonnes</th>
<th>Au Eq (g/T)</th>
<th>AuEq Ounces (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicated</td>
<td>2.14</td>
<td>10.93</td>
<td>0.75</td>
</tr>
<tr>
<td>Inferred</td>
<td>0.58</td>
<td>7.16</td>
<td>0.134</td>
</tr>
<tr>
<td>Total</td>
<td>2.72</td>
<td>10.1</td>
<td>0.88</td>
</tr>
</tbody>
</table>

2021 Program (US$8.2M):
-3 rigs, 20,000 m planned; 10,000 m completed as of Sept. 7
JT deposit infill drilling
-DDH JT21-125: 56.6 m @ 18.69 g/T Au, 2.43% Zn, 0.47% Cu
-Difficult Creek prospect
-6.4 m @ 578 g/T Au and 2,023 g/T Ag

-Geological mapping, sampling
-Airborne and ground geophysical surveys
-Phase 1 metallurgical program & QEMSCAN studies

-Released NI43-101 report August 9, 2021
-Updating resource in early 2022; drilled 30,000 m since maiden resource

Data from HighGold, 2021
Intrusion-related gold system - Fairbanks District

Golden Summit
+500,000 oz past production underground; grades >1 oz. Au/T
+6.75 M oz. placer Au recovered from streams draining project area

2021 Program:
Objectives:
- Testing connection between high-grade Cleary Hill Au-vein system & Dolphin intrusion-hosted Au system
- Determine orientation and extent of mineralization; remains open
- 3 drill rigs, 68 DDH, 38,000 m completed; ave. depth 600 m

Select results:
DDH GS2107: 231.3 m @ 1.22 g/T Au (N Dolphin contact)
DDH GS2111: 106.7 m @ 0.97 g/T Au (Tolovana Vein)
DDH GS2127: 9.6 m @ 0.74 g/T Au (Cleary Vein)
2.2 m @ 30.39 g/T Au (Wyoming Vein)
3 m @ 36.8 g/T Au (Wackwitz Vein)
DDH GS2017: 1.7 m @ 588 g/T Au

Shorty Creek
- 3,400 m DDH program completed
- Assays pending

Plan to update resource calculation in 2022 once 2021 DDH program completed; will incorporate drilling conducted in 2017 and 2020 as well
**AVIDIAN GOLD – GOLDEN ZONE**

**Breccia Pipe:**

<table>
<thead>
<tr>
<th>Aug. 2017</th>
<th>Tonnes</th>
<th>Au (g/T)</th>
<th>Ounces Au</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicated</td>
<td>4,187,000</td>
<td>1.99</td>
<td>267,400</td>
</tr>
<tr>
<td>Inferred</td>
<td>1,353,000</td>
<td>0.83</td>
<td>35,900</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5,540,000</strong></td>
<td><strong>1.71</strong></td>
<td><strong>303,300</strong></td>
</tr>
</tbody>
</table>

**Intrusion-related gold system Hosted by:**
- Intrusions (68 Ma)
- Skarns
- Conglomerate
- Structural zones

**Mayflower Extension Zone (MEZ):**
- 800-m-wide, NE-trending, gold-bearing structural zone NE of Breccia Pipe

**2021 Program:**
- 27 RC holes; 3,288 m; assays pending
- MEZ, Copper King, & Long Creek areas
- MEZ – Resource-expansion; now drill-defined to 600 m; open
- Copper King/Long Creek skarn; 2019 drilling yielded 9.1 m @ 8.71 g/T Au, 80.8 g/T Ag, 3.57% Cu
- 1,200 line-km drone magnetic survey
- Recon. mapping/sampling JJ-J4-MJ & Silver Kitty targets

**Data from Avidian Gold, 2021**
2021 Program:
- Regional exploration
- Tourmaline Ridge prospect trenching
- Sunrise prospect - re-analyzed historical core

East Pogo prospect:
- 12 RC holes, 1,663 m
- Testing geophysical anomalies
- Intersected altered host rocks, abundant quartz-sulfide veining; using geochemistry to vector drilling
SAM ALASKA LLC – NAOSI/MON/UNCLE SAM

Joint venture of Koza Ltd. (USA) Inc. (operator and majority interest) and Great American Minerals Exploration, Inc. (GAME)

2021 Program:
- 10,590 m resource upgrade and exploration program:
  - Naosi (58 RC, 10 DDH); Mon East (71 RC)
  - Lone Tree (7 DDH); Hope Creek (4 DDH)
- Initial metallurgical studies completed at Naosi.
- PEA for Naosi in progress
- Road access to site completed

Data courtesy Koza Ltd., 2022
Three styles of Au mineralization:
- Pogo-style high-grade Au-quartz veins (Gray Lead);
- Intrusion-hosted dissem. sulfides & stockwork Au+qtz+stib.+aspy veins (Michigan, Upper/Lower Trench)
- Fort Knox-style intrusion-hosted sheeted Au-quartz-bismuthinite veins (Jorts, Hilltop)

2021 Program:
Phase I:
- 7 DDH, 803 m; oriented core

Gray Lead:
- TBDD21-006: 6.89 m @ 5.67 g/T Au
- TBDD21-007: 5.15 m @ 12.45 g/T Au

Michigan Zone:
- TBDD21-001: 6.12 m @ 7.69 g/T Au

Phase II:
- 23 holes, 4,215 m; 5 DDH & 18 RC
- 6 targets
- Geologic mapping & rock sampling
- TITAN DCIP/MT geophysical survey

West Trench prospect:
- 600-m-long Au-in-soil anomaly
- Rock grab sample 190.4 g/T Au in Pogo-style quartz-sulfide vein

Data from Tectonic Metals, 2021
Kenorland Minerals – Healy

Pogo-style, Au-vein system

2021 Program:
- More than 10 DDH holes; > 5,000 m
- Drilling at Thor, Bronk, & Spike geochemical anomalies

Bronk:
- 2021: assays pending
- 2019: 49.4 m @ 0.42 g/T Au

Data from Kenorland Minerals, 2021
Caribou Dome: Sediment-hosted copper, central Alaska Range

2021 program:
- 8 holes, 1,259 m DDH
- 3 holes for metallurgical sampling
- New basalt-hosted copper discovery (Keweenawan type)
- Massive sulfides, disseminated, vein- and amygdule-hosted

<table>
<thead>
<tr>
<th>JORC Resource</th>
<th>Million Tonnes</th>
<th>Au (g/T)</th>
<th>% Cu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zackly (Main)</td>
<td>3.4</td>
<td>2.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Caribou Dome</td>
<td>2.8</td>
<td>3.1</td>
<td></td>
</tr>
</tbody>
</table>

Native copper in vesicules (DDH CD21-008)
Native copper in quartz vein (DDH CD21-007)
Native copper in andesite’s groundmass (DDH CD21-006)
Mesothermal gold vein system, SE Alaska

-Large “ladder-vein” system
-Gold hosted in East-West quartz veins within larger, district-scale, NW-trending shear zone

2021 program:
-May 12, 2021 New resource estimate

-2 rigs, 16 DDH, 8,150 m; step-out & infill drilling
-Focused on Primary veins, and Sleeping Giant and Ridge veins
-Acid-generating potential of waste rock found to be low, due to high carbonate, low sulfide content

<table>
<thead>
<tr>
<th>Resource (May 2020)</th>
<th>Million Tonnes</th>
<th>Au (g/T)</th>
<th>Oz Au (million)</th>
<th>Ag (g/T)</th>
<th>Oz Ag (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicated</td>
<td>3.637</td>
<td>10.23</td>
<td>1.1968</td>
<td>5.87</td>
<td>0.6867</td>
</tr>
<tr>
<td>Inferred</td>
<td>1.138</td>
<td>8.91</td>
<td>0.3259</td>
<td>4.63</td>
<td>0.1693</td>
</tr>
<tr>
<td>Total</td>
<td>4.775</td>
<td>9.92</td>
<td>1.5227</td>
<td>5.57</td>
<td>0.8560</td>
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</table>

Data from Grand Portage, 2021
Volcanogenic massive sulfide - Southeast Alaska

Blackwolf Copper and Gold Ltd. (formerly Heatherdale Resources)

2021 Program:
- Reviewed historical metallurgical results
- Commenced Phase I metallurgical-optimization program
- Rehabilitated 1 km historical UG workings
- 5 DDH holes, 1,810 m
- Lookout deposit (underground resource expansion and exploration)
  U21-227: 32.60 m @ 1.03% Cu, 1.49 g/T Au, 26.54 g/T Ag, 0.92% Zn
- Resource update planned for Q4 2021
- Staked Casey VMS & other prospects
  Hyder area, Golden Triangle

<table>
<thead>
<tr>
<th>Resource (2011)</th>
<th>Million Tonnes</th>
<th>Cu %</th>
<th>Au g/T</th>
<th>Zn %</th>
<th>Ag g/T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicated</td>
<td>5.64</td>
<td>0.95</td>
<td>1.75</td>
<td>1.73</td>
<td>29.52</td>
</tr>
<tr>
<td>Inferred</td>
<td>3.39</td>
<td>0.81</td>
<td>1.11</td>
<td>1.29</td>
<td>16.56</td>
</tr>
<tr>
<td>Total</td>
<td>9.03</td>
<td>0.9</td>
<td>1.59</td>
<td>1.56</td>
<td>25.98</td>
</tr>
</tbody>
</table>

Data from Blackwolf, 2021

Data from Blackwolf, 2021
2021 Program:

Illinois Creek mine:
- New resource of 10.14 M tonnes @ 0.21% Cu, 0.91 g/T Au, 34.66 g/T Ag
- Resource includes In-situ and historical heap leach pad resources
- 8 holes; 1,200 m
- Drilling tested E & S extensions of the resource

Honker Gold:
- Low- to intermediate-sulfidation vein system
- 6 holes, 600 m

Last Hurrah:
- Oxide and Carbonate Replacement
- 2 holes, 600 m

Waterpump Creek:
- Oxide and Carbonate Replacement
- 9 holes, 850 m
- 8.1 m @ 23.5% Zn, 16.1% Pb, 540 g/T Ag

Round Top:
- Porphyry copper (±Mo, Ag, Zn, Pb)
- Initial resource estimation underway

Data from Western Alaska Minerals, 2021
2021 Program:

**Red Mtn. VMS Project**

- **Dry Creek VMS**: 4 holes; drilled down-dip extensions to resource
  - JORC Inferred resource: 9.1 M tonnes @ 157 g/T Ag, 5.8% Zn, 2.6% Pb, 0.9 g/T Au
- **Hunter VMS**: 1 hole
  - Keevy VMS Trend: CSAMT & fixed-loop EM surveys
  - **Kiwi**: 2,000-m-long soil anomaly; drilled 2 test holes
    - Massive sulfide rock chips w/up to 16% Cu, 8% Zn, 316 g/T Ag
  - **Jack Frost**: 400-m-long soil anomaly; drilled 1 test hole
    - Massive sulfide rock chips w/up to 14% Zn, 20% Pb, 285 g/T Ag

**Last Chance Gold Project**

- 30 sq. km of Au anomalies in stream sediments
- **Pepper prospect Au discovery**: 1-km strike; open
  - Rock chip grab sample w/up to 6.5 g/T Au, 27 g/T Ag (+As, +Sb)

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**VMS Base/Precious Metals & Orogenic/Intrusion(?) Au**

**Northern Alaska Range**

Data from White Rock Minerals, 2021
Epithermal Au-Ag veins, Aleutians
- Surface outcrops of high-grade Au-Ag veins

2021 Program: 2 RC & 1 DDH rigs

SH-1 resource expansion (? DDH):
- Results pending

Historical Apollo-Sitka mine (23 RC):
- SKRC21-02: 4.57 m @ 7.98 g/T Au; 10.67 m @ 8.65 g/T Au
- APSRC21-02: 3.05 m @ 88.3 g/T Au

Aquila target (13 RC):
- AQRC21-01: 7.62 m @ 2.45 g/T

- District-scale exploration

Zachary Bay Porphyry Target, Aleutians

Zachary Bay target (2 RC):
- Early reconnaissance exploration
- Intersected Au & Cu mineralization over significant widths
- ZBRC21-01: 71.63 m @ 0.44 g/T AuEq

SH-1 Zone – Resource-expansion drilling plan

-Maiden resource SH-1 Zone (formerly Shumagin Zone):
Avg. grade of 13.8g/t Au; and Avg. grade of 35.4g/t Ag

<table>
<thead>
<tr>
<th>Resource (Feb. 2020)</th>
<th>Tonnes</th>
<th>Au (oz.)</th>
<th>Ag (oz.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inferred</td>
<td>866,015</td>
<td>384,318</td>
<td>986,321</td>
</tr>
</tbody>
</table>

Data from Heliostar Metals, 2021
Goal: Modern pre-competitive data for Alaska’s mineral belts:
- Airborne magnetics ± radiometrics
- Geological mapping (1:100,000 scale)
- Geochemical surveying
- Focus areas determined by critical and conventional mineral potential and opportunity for mineral entry
- Funding and strategic direction:
  - USGS Earth MRI program & State of Alaska
  - Major funding increase in recent U.S. infrastructure bill

<table>
<thead>
<tr>
<th>Data type</th>
<th>Percent completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic</td>
<td>33 %</td>
</tr>
<tr>
<td>Radiometric</td>
<td>3 %</td>
</tr>
<tr>
<td>Electromagnetic</td>
<td>16 %</td>
</tr>
<tr>
<td>Geology</td>
<td>32 %</td>
</tr>
<tr>
<td>Geochemistry</td>
<td>17 %</td>
</tr>
</tbody>
</table>
- Initial focus area: Yukon-Tanana Upland
- 1:100,000 scale geologic mapping progressing from the Yukon border towards the northwest
- First geologic map published in 2021
- Expanded funding: Develop a second mapping team to double output
Geoologic Mapping – Before / After

Existing 1960’s reconnaissance mapping:

- **Mzg** = undifferentiated Mesozoic granitic rocks
- **PzPCb** = undifferentiated gneiss and schist
- “?” = Area not visited

DGGS 2019 map of the same area:

- Breaks out many different intrusive units, each with different mineral potential
- Faults are now mapped (may control mineralization)

Oreo prospect

**Oreo Cu-Mo porphyry prospect**
DGGS and USGS are flying modern, fixed-wing aeromagnetic data over prospective regions of Alaska
400m line spacing, ~300m ground clearance

Eagle and White Mountains blocks
Flown by MPX (Canada)
Now Published

Central YTU & Lower Tanana
MAGSPEC (Australia) flying in 2022
Has faced issues with COVID and international travel

Next regions: Kuskokwim Mountains
Seward Peninsula

Airborne EM may be possible in the future, depending on funding

Prior completed surveys shown in green
USGS and DGGS are reanalyzing archived stream sediment samples with modern, high-sensitivity methods.

• Focusing on Alaska’s critical mineral belts

• Ongoing, accelerating program

• Visualize data with new Exploration Geochemistry Web App via DGGS website
**Alaska Information and Data**

**Division of Geological & Geophysical Surveys**
http://dggs.alaska.gov/
- Geochemistry
- Geophysics
- Geology Maps
- Elevation Data
- Mineral Report
- Mineral Occurrences

**Geologic Materials Center**
http://dggs.alaska.gov/gmc/
- Core Repository
- Indoor core viewing
- Surface samples
- Geochemistry pulps
- Online Inventory
- Confidential storage and viewing

**Division of Mining, Land & Water**
http://dnr.alaska.gov/mlw/
- Land status
- Mining claims
- Mine Permitting
- Mine Regulation

**Office of Project Management and Permitting**
http://dnr.alaska.gov/opmp/
- Project and mine permit coordination

Check our website for the Annual Mineral Report and a digital copy of this presentation

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