



The House Committee on
Transportation & Infrastructure

"NO CURRENT PLANS..."

**Pebble LP, Sham Permitting, and False Testimony
Threatening the World's Largest Salmon Habitat**

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Chair of the House Committee on Transportation and Infrastructure

PETER A. DEFAZIO

Chair of the Subcommittee on Water Resources and Environment

GRACE F. NAPOLITANO

By Majority Staff of the

HOUSE COMMITTEE ON

TRANSPORTATION AND INFRASTRUCTURE

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I. Executive Summary

Beginning in 2007, Pebble Limited Partnership (Pebble LP) pursued efforts to develop an open pit mine for copper and other minerals on state-owned land near Bristol Bay, Alaska. Bristol Bay is home to the largest sockeye salmon run in the world, and the health of the bay and its watershed are key to the viability of the region, including indigenous communities of the Yup'ik, Dena'ina, and Alutiiq peoples. The Pebble mining effort attracted an enormous amount of opposition and concern from the impacted tribes, environmentalists and scientists, political leaders, and others. As of now, the mine has not been built—in November 2020, the U.S. Army Corps of Engineers (Corps) concluded the proposed mine would harm the public interest due to its projected environmental impact.

The U.S. House of Representatives Committee on Transportation and Infrastructure (committee) has oversight over aspects of the Pebble Mine project through the Subcommittee on Water Resources and Environment. On October 23, 2019, the Subcommittee on Water Resources and Environment held a public hearing titled “Pebble Mine: Process and Potential Impacts.” During that hearing, former Pebble LP Chief Executive Officer (CEO) Tom Collier was adamant in his testimony that Pebble LP intended to only build a scaled-back version of the mine, which differed from the initial proposal, and that Pebble LP had “no current plans, in this application or in any other way, for expansion.” In May 2022, after the late 2020 revelations contained in “The Pebble Tapes,” the committee obtained internal company documents that reveal Mr. Collier knew his October 2019 testimony to Congress was false. At the same time that Mr. Collier told Congress that he was pursuing a modest 20-year mining effort with smaller environmental impacts, the company was actively seeking to develop and operate an expanded mine—and touting that larger vision in pitches to potential investors. These actions appear to be an attempt to circumvent the goals of the Clean Water Act’s Section 404 permitting process which requires accurate information regarding proposed discharge of fill material to examine potential impacts on aquatic resources and the National Environmental Policy Act, which requires the federal government to consider the effects of major decisions on the environment.

On November 24, 2020, Pebble LP’s permitting process came to a halt when the Corps recognized the mine’s construction and operation would result in significant degradation to the aquatic ecosystem and concluded that issuing the mine permits would be contrary to the public interest. In May 2022, the Environmental Protection Agency published a Proposed Determination under the Clean Water Act, known as a 404(c) veto, which halted development of the Pebble project for now. But the Pebble project’s future remains unknown—in July 2022, the project received a \$12 million infusion from an unnamed investor. Therefore, it continues to remain critical to monitor and carefully scrutinize any development efforts that could undermine Alaska’s Bristol Bay natural resources.

This report details false testimony given by Pebble LP CEO Tom Collier to the Subcommittee on Water Resources and Environment, misrepresentations of fact and deceptions by Pebble LP during the permitting process, and proposes recommendations to both protect the Bristol Bay watershed and make the permitting process more transparent to better serve the public interest.

II. Key Findings

The committee’s investigation identified several disturbing findings:

- Since at least early 2019, Pebble LP planned to build a mine with a lifespan longer than 20 years.
- Pebble LP’s former CEO Tom Collier lied to Congress when he testified at a hearing before the Subcommittee on Water Resources and Environment that Pebble LP had “no current plans, in this application or in any other way, for expansion” of the mine beyond 20 years—this was likely criminal conduct.
- Pebble LP deliberately sought to mislead regulators regarding the mine’s planned scope in order to avoid more robust environmental and public review processes.

III. Background

a. Bristol Bay

The Bristol Bay and its watershed is an exceptional, aquatic natural resource in southwest Alaska, most famously hosting the world’s largest sockeye salmon fishery, with almost half of the Earth’s population of wild sockeye salmon, along with four other salmon species and numerous freshwater fish species.¹ Surface and ground waters are interconnected, enabling hydrologic flow between wetlands, ponds, and rivers and thus increasing the stability of fish-supporting habitats.² In 2018, a record 62.3 million salmon returned to spawn in the watershed, with about half of the sockeye salmon traversing the Nushagak and Kvichak rivers, the two biggest rivers flowing into Bristol Bay.³ The populations, unlike any other in the world, thrive in the undeveloped watershed’s diverse aquatic habitats.⁴

The abundance of fish is vital to the region’s larger ecosystem as well as to the economy of the area. The watershed produces 29 percent of Alaska’s subsistence harvest for more than 40 native Alaskan communities, entices over 20,000 recreational anglers to the region annually, supports a terrestrial ecosystem of abundant brown bears, among other large mammals, and attracts tens of thousands of tourists to several regional parks.⁵ Notably, the Bristol Bay watershed’s indigenous

¹ “An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska,” Executive Summary, EPA 910-R-14-001ES, January, 2014, accessed here: https://www.epa.gov/sites/default/files/2015-05/documents/bristol_bay_assessment_final_2014_es.pdf; “About Bristol Bay,” Environmental Protection Agency, accessed here: <https://www.epa.gov/bristolbay/about-bristol-bay>.

² “An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska,” Executive Summary, EPA 910-R-14-001ES, January, 2014, p. 8, accessed here: https://www.epa.gov/sites/default/files/2015-05/documents/bristol_bay_assessment_final_2014_es.pdf.

³ Avery Dill, “62.3 million: Bristol Bay’s 2018 salmon season is the largest ever,” *KDLG, Alaska Public Media*, October 11, 2018, accessed here: <https://alaskapublic.org/2018/10/11/62-3-million-bristol-bays-2018-salmon-season-the-largest-ever/>; “About Bristol Bay, EPA, accessed here: <https://www.epa.gov/bristolbay/about-bristol-bay>.

⁴ “An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska,” Executive Summary, EPA 910-R-14-001ES, January, 2014, p. 7-8, accessed here: https://www.epa.gov/sites/default/files/2015-05/documents/bristol_bay_assessment_final_2014_es.pdf.

⁵ “New Study Updates Economic Importance of Bristol Bay, Underscores Urgency in Protecting the Region,” Bristol Bay Regional Seafood Development Association, March 18, 2021, accessed here:

Yup'ik and Dena'ina people are two of the few remaining salmon-based cultures in the world who, along with Bristol Bay's native Alutiiq inhabitants, practice a subsistence lifestyle that goes back over 4000 years.⁶ The annual economic benefits of the Bristol Bay watershed's ecological resources are estimated to exceed \$2.2 billion and generate more than 15,000 jobs in the area, primarily in commercial fishing, with over \$800 million in economic multiplier impacts reaching the Pacific Northwest beyond Alaska.⁷

b. Pebble Deposit

The Bristol Bay watershed also contains valuable mineral deposits, including copper, gold, and other rare metals. One concentration of minerals, known as the Pebble deposit, is estimated to hold 57 billion pounds of copper, 3.4 billion pounds of molybdenum, 70 million ounces of gold, and 344 million ounces of silver.⁸ It is estimated that if mined to exhaustion, the value of the extracted minerals could exceed \$500 billion, potentially creating a peak of 2,500 jobs during construction and over 1,000 long-term jobs at the mine during operation.⁹ Even though these numbers may seem high, the Pebble deposit is considered a low-grade deposit, with relatively small amounts of metals given the amount of ore and would likely only be profitably if mined through land-intensive methods that would result in the production of a significant amount of waste material.¹⁰

The Pebble deposit is within the headwaters of the Nushagak and Kvichak rivers.¹¹ The land under which the deposit rests is roughly 200 miles southwest of Anchorage and 60 miles inland from the Cook Inlet. The Pebble deposit sits beneath an area of rolling hills and low mountains separated by wide, shallow valleys blanketed with glacial deposits that contain numerous small, shallow lakes and several major meandering streams.¹²

<https://www.bbrsda.com/updates/2021/3/18/new-study-updates-economic-importance-of-bristol-bay-underscores-urgency-in-protecting-the-region>.

⁶ "An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska," Executive Summary, EPA 910-R-14-001ES, January, 2014, p. 8-9, accessed here: https://www.epa.gov/sites/default/files/2015-05/documents/bristol_bay_assessment_final_2014_es.pdf.

⁷ "New Study Updates Economic Importance of Bristol Bay, Underscores Urgency in Protecting the Region," Bristol Bay Regional Seafood Development Association, March 18, 2021, accessed here: <https://www.bbrsda.com/updates/2021/3/18/new-study-updates-economic-importance-of-bristol-bay-underscores-urgency-in-protecting-the-region>.

⁸ "Pebble Project: Project Overview" Northern Dynasty Minerals Ltd., accessed here: <https://northerndynastyminerals.com/pebble-project/project-overview/>.

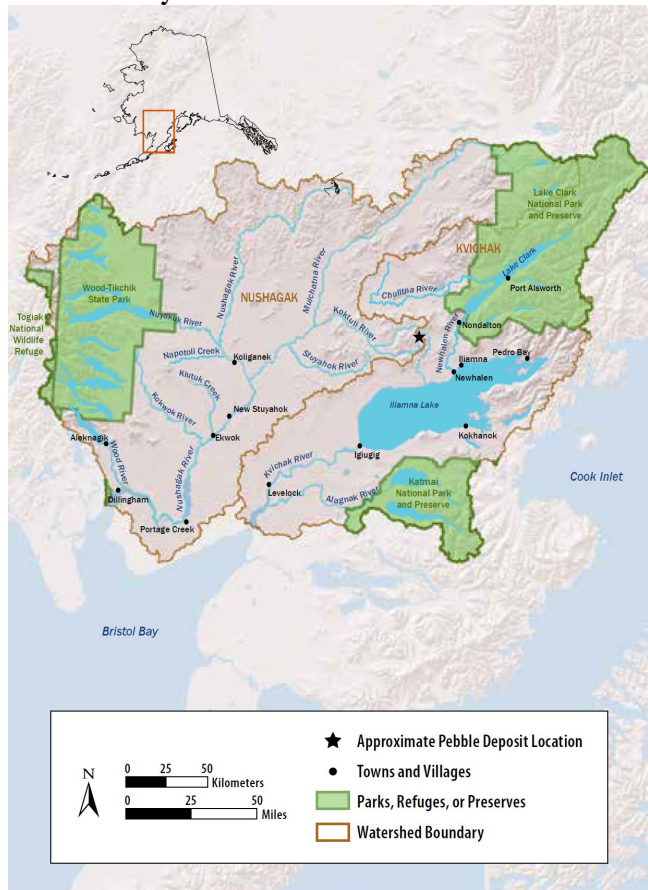
⁹ "Preliminary Assessment of the Pebble Project: Southwest Alaska," Northern Dynasty Minerals Ltd., February 15, 2011, p. 517, accessed here: https://pebblewatch.com/wp-content/uploads/2017/05/Pebble_Project_Preliminary-Assessment-Technical-Report_February-17-2011.pdf.

¹⁰ "About Bristol Bay," U.S. Environmental Protection Agency, accessed here: <https://www.epa.gov/bristolbay/about-bristol-bay>.

¹¹ "Salmon Ecosystems and the Pebble Mine: Key Considerations for a Large-Scale Mine Proposal, Chapter 2," Wild Salmon Center, January, 2012, p. 15, accessed here: <https://www.wildsalmoncenter.org/wp-content/uploads/2016/02/PM-Ch2.pdf>.

¹² "Preliminary Assessment of the Pebble Project: Southwest Alaska," Northern Dynasty Minerals Ltd., p. 101, February 15, 2011, accessed here: https://pebblewatch.com/wp-content/uploads/2017/05/Pebble_Project_Preliminary-Assessment-Technical-Report_February-17-2011.pdf.

Bristol Bay Watershed and Pebble Mine Site¹³



The proposed Pebble Mine is surrounded by a state park and two national parks in a region with pristine natural habitat.

c. Pebble LP Corporate Structure and the Initial Pebble Mine Proposals

In 2007, two foreign corporations created the Pebble Limited Partnership (Pebble LP) in Anchorage, Alaska, intending to mine the Pebble deposit.¹⁴ The partnership initially formed with a 50-50 split ownership between Anglo-American PLC, a British-based mining company, and Northern Dynasty Minerals Limited (Northern Dynasty), a Canadian-based mining company.¹⁵ In 2013, Anglo-American PLC withdrew from Pebble LP and left Northern Dynasty as the sole owner of Pebble LP, despite having to pay a \$300 million impairment charge to Northern Dynasty to do so.¹⁶ In withdrawing, Anglo-American explained that the Pebble project suffered an insufficient value to risk prospect.¹⁷

¹³ “An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska,” Executive Summary, EPA 910-R-14-001ES, January 2014, p. 2, accessed here: https://www.epa.gov/sites/default/files/2015-05/documents/bristol_bay_assessment_final_2014_es.pdf.

¹⁴ Alaska Journal of Commerce, “Pebble group partners with Anglo American,” October 13, 2007, <https://www.alaskajournal.com/community/2007-10-14/pebble-group-partners-anglo-american/>; “Pebble Partnership,” Northern Dynasty Minerals Ltd., accessed here: <https://northerndynastyminerals.com/about-us/pebble-partnership/>.

¹⁵ “Developers,” Pebble Watch: Pebble Project, accessed here: <https://pebblewatch.com/projects/developers/>.

¹⁶ Cecilia Jamasmie, “Anglo American abandons Alaskan copper project Pebble,” *Mining.com*, September 16, 2013, accessed here: <https://www.mining.com/anglo-american-abandons-alaskan-copper-project-pebble-75602/>.

¹⁷ Id.

From 2014 until September 2020, Pebble LP was led by CEO Tom Collier, a former chief of staff in the U.S. Department of the Interior and attorney with decades of expertise in federal environmental permitting.¹⁸ Since September 2020, former Pebble LP CEO John Shively has served as interim CEO.¹⁹ In addition to engineering, design, and mine planning, Pebble LP describes itself as “overseeing a robust program of activities in the areas of mineral exploration, environmental/socioeconomic studies, stakeholder relations and public affairs.”²⁰

Northern Dynasty, owner of Pebble LP as well as the holder of the mineral rights to the Pebble deposit, is based in Vancouver, Canada.²¹ Ron Thiessen is Northern Dynasty’s President and CEO, focusing on corporate development and financing activities.²² Mr. Thiessen is also a director of Pebble LP.²³ Northern Dynasty describes its corporate mission as an effort to “develop the Pebble Project: a strategic resource of copper, gold, molybdenum and silver, representing the future of U.S. mining and metals.”²⁴

While the mineral deposit is beneath land owned by the state of Alaska, by 2011 Northern Dynasty and Pebble LP had secured mineral rights to not only the land containing the Pebble deposit itself, but also to over 592 square miles in the vicinity.²⁵ This area extends to an area significantly larger than the potential footprint of the mine operating site, extending over 15 miles south to Lake Iliamna.²⁶ The area also covers other mineral deposits identified as potential targets for exploitation by a long-term mining effort.²⁷ In 2011, Northern Dynasty commissioned an

¹⁸ “Shively Board Chair and Collier CEO,” Pebble Partnership Press Release, February 3, 2014, accessed here: <https://pebblepartnership.com/press-releases/2014/2/3/shively-board-chair-and-collier-ceo>; Tom Collier, “Executive Overreach at the EPA? The Pebble Mine Clean Water Act Dispute,” The Federalist Society Environmental Law and Property Rights Practice Group Teleforum, June 14, 2018, accessed here: <https://fedsoc.org/contributors/tom-collier>; Manuel Quinones, “Battle-tested Pebble CEO earned his chops as Clinton Interior official,” *E&E News Greenwire*, January 16, 2015, accessed here: <https://www.eenews.net/articles/battle-tested-pebble-ceo-earned-his-chops-as-clinton-interior-official/>.

¹⁹ Alex Guillen, “Pebble CEO resigns after secret recordings,” *Politico*, September 24, 2020, accessed here: <https://www.politico.com/news/2020/09/24/pebble-ceo-resigns-after-secret-recordings-420992>. Mr. Shively’s own work in Alaska goes back decades and witnessed significant ethical lapses. See “1979-1984 John Shively,” University of Alaska Regents biography, accessed here: <https://www.alaska.edu/uajourney/regents/1979-1984-john-shively>; “Alaska’s Watergate begins,” *The Stanford Daily*, July 23, 1985, accessed here: <http://stanforddailyarchive.com/>; “Shively Contends: Didn’t Break Laws,” *Associated Press (AP)*, published in *The Daily Sentinel*, July 2, 1985.

²⁰ “Our Commitment,” Pebble Partnership, accessed here: <https://pebblepartnership.com/our-commitment>.

²¹ “About Us: A World-Class Resource,” Northern Dynasty Minerals Ltd., accessed here: <https://northerndynastyminerals.com/about-us/a-world-class-resource/>.

²² “About Us: Management,” Northern Dynasty Minerals Ltd., accessed here: <https://northerndynastyminerals.com/about-us/management/>; Bloomberg Profiles, accessed here: <https://www.bloomberg.com/profile/person/1505107>.

²³ “About Us: Board of Directors,” Northern Dynasty Minerals Ltd., accessed here: <https://northerndynastyminerals.com/about-us/board-of-directors/>.

²⁴ “About Us: Mission and Vision,” Northern Dynasty Minerals Ltd., accessed here: <https://northerndynastyminerals.com/about-us/mission-and-vision/>.

²⁵ “Preliminary Assessment of the Pebble Project: Southwest Alaska,” Northern Dynasty Minerals Ltd., February 15, 2011, p. 19, accessed here: https://pebblewatch.com/wp-content/uploads/2017/05/Pebble_Project_Preliminary-Assessment-Technical-Report_February-17-2011.pdf.

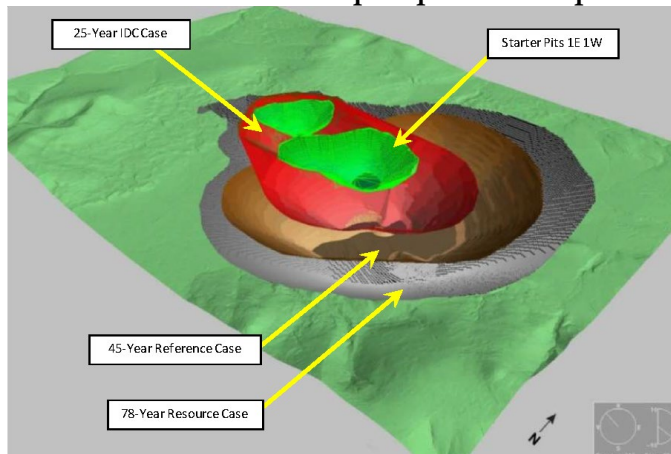
²⁶ “Preliminary Assessment of the Pebble Project: Southwest Alaska,” Northern Dynasty Minerals Ltd., February 15, 2011, p. 20, accessed here: https://pebblewatch.com/wp-content/uploads/2017/05/Pebble_Project_Preliminary-Assessment-Technical-Report_February-17-2011.pdf.

²⁷ *Id.* p. 26.

independent review and analysis of a potential Pebble Mine. Performed by Wardrop Engineering Inc., this review, the “Preliminary Assessment of the Pebble Project, Southwest Alaska,” is also sometimes referred to as the Wardrop Report.²⁸

The Wardrop Report presented three development cases derived from engineering work done by Northern Dynasty: 25-years, 45-years, and 78-years.²⁹ The first case is a 25-year open pit mine referred to as the initial phase of mining “upon which a decision to initiate mine permitting, construction and operations may be based” but was “not considered ideal for assessing the potential long-term economic value of the project.”³⁰ The second case, a 45-year open pit mine, entailed similar engineering efforts as the first case, but would involve “detailed engineering associated with tailing storage” after 25 years of operations to process 3.8 billion tons of ore.³¹ Finally, a 78-year case assessed the long-term value of the Pebble Mine and the assessment analysis found the longest mining case offered the highest net present value and shortest capital payback period.³²

Pit Shells for Three 2011 Wardrop Report Development Cases³³



A 20-year mine would tarnish the pristine natural environment, degradation that would continue with additional expansions.

The proposed 78-year Pebble Mine would have included one of the world’s biggest open pit mines and could have easily held all other Alaskan mines within it.³⁴ The mine would have required the construction of its own 378 MW gas-fired power plant, a new deep-water port along the Cook Inlet and a supporting 8 MW power plant, an electric utility corridor, and an 86-mile-long, two-lane road designed for overweight loads and paralleled by pipelines for diesel fuel, natural gas, and mining slurry connecting with the new port.³⁵ The new road would have crossed over and impacted approximately 120 waterways, most supporting sensitive fish habitat, with frequent truck traffic

²⁸ Id. p. 1.

²⁹ Id. p. 4.

³⁰ Id. pp. 4, 491.

³¹ Id. p. 470.

³² Id. p. 517.

³³ Id. p. 34.

³⁴ Edward Lempinen, “Proposed Pebble Mine has Alaskan Community Focused on Critical Science and Policy Issues,” American Association for the Advancement of Science, October 18, 2011, accessed here:

<https://www.aaas.org/news/proposed-pebble-mine-has-alaskan-community-focused-critical-science-and-policy-issues>.

³⁵ “Preliminary Assessment of the Pebble Project: Southwest Alaska,” Northern Dynasty Minerals Ltd., February 15, 2011, pp. 8-10, accessed here: https://pebblewatch.com/wp-content/uploads/2017/05/Pebble_Project_Preliminary-Assessment-Technical-Report_February-17-2011.pdf.

hauling ore processing chemicals and extracted minerals.³⁶ Immediately around the open pit mine would have been one or more tailing ponds, each eventually holding hundreds of millions of tons of mine waste and contaminated water behind containment embankments reaching heights of 685 feet or more.³⁷

d. Pebble Mine Permitting Efforts Up to 2019

Since the 2007 creation of Pebble LP and the proposal of the Pebble Mine, there has been intense public debate and government review about its risks and benefits.³⁸ In 2014, after significant analysis and in anticipation of the Pebble Mine's Clean Water Act (CWA) discharge permit application, the Regional Administrator for Region 10 (which includes Alaska) of the Environmental Protection Agency (EPA) issued a Proposed Determination under Section 404(c) of the Clean Water Act.³⁹ The 2014 Proposed Determination restricted the discharge of dredged or filled material into the waterways surrounding the Pebble deposit associated with construction of a proposed mine, putting the burden on Pebble LP to demonstrate how its mining efforts could be carried out without adverse effects to the Bristol Bay watershed.⁴⁰ In response, Pebble LP filed suit to challenge the EPA's decision.⁴¹ In November 2014, a federal judge in Alaska issued a preliminary injunction ordering EPA to pause its actions while litigation was ongoing.⁴²

Federal litigation in Alaska continued until 2017.⁴³ In May 2017, following the inauguration of President Donald J. Trump, the EPA reversed course and opted to settle the federal lawsuit.⁴⁴ EPA agreed to withdraw its proposed determination and to allow Pebble LP at least two years to proceed through the federal National Environmental Policy Act (NEPA) process before taking any further action under Section 404(c) of the CWA, and Pebble LP agreed to file its discharge permit application within 30 months of the settlement and end its litigation efforts against EPA.⁴⁵ In

³⁶ Edward Lempinen, "Proposed Pebble Mine has Alaskan Community Focused on Critical Science and Policy Issues," American Association for the Advancement of Science, October 18, 2011, accessed here: <https://www.aaas.org/news/proposed-pebble-mine-has-alaskan-community-focused-critical-science-and-policy-issues>; "Preliminary Assessment of the Pebble Project: Southwest Alaska," Northern Dynasty Minerals Ltd., February 15, 2011, p. 17, accessed here: https://pebblewatch.com/wp-content/uploads/2017/05/Pebble_Project_Preliminary-Assessment-Technical-Report_February-17-2011.pdf.

³⁷ Id. pp. 349-54, 360.

³⁸ "FACTBOX-History of Alaska's Pebble Mine project; a long-running saga," *Reuters*, August 25, 2020, accessed here: <https://www.reuters.com/article/usa-alaska-pebblemine-history-idUSL1N2FR1JK>.

³⁹ "2014 Propose Determination Pursuant to Section 404c on the Clean Water Act for Pebble Deposit Area, Southwest Alaska," U.S. EPA, July 2014, accessed here: <https://www.epa.gov/bristolbay/2014-proposed-determination-pursuant-section-404c-clean-water-act-pebble-deposit-area>.

⁴⁰ "Proposed Determination of the U.S. Environmental Protection Agency Region 10 Pursuant to Section 404(c) of the Clean Water Act Pebble Deposit Area, Southwest Alaska" EPA, July 2014, accessed here: https://www.epa.gov/sites/default/files/2014-07/documents/pebble_es_pd_071714_final.pdf.

⁴¹ Elwood Brehmer, "Pebble sues EPA over attempt to veto mine," *Alaska Journal of Commerce*, May 22, 2014, accessed here: <https://www.alaskajournal.com/business-and-finance/2014-05-22/pebble-sues-epa-over-attempt-veto-mine>.

⁴² Josh Edge, "Judge temporarily halts EPA's 404(c) process on Pebble Mine," *Alaska Public Radio*, November 24, 2014, accessed here: <https://alaskapublic.org/2014/11/24/judge-temporarily-halts-epas-404c-process-on-pebble-mine/>.

⁴³ "EPA and Pebble Limited Partnership Reach Settlement Agreement," U.S. EPA News Release, May 12, 2017, accessed here: <https://archive.epa.gov/epa/newsreleases/epa-and-pebble-limited-partnership-reach-settlement-agreement.html>.

⁴⁴ Id.

⁴⁵ Id.

October 2017, Mr. Collier explained, “Part of the plan was not to hold out until there was an election in November, and to have Mr. Trump elected President. But that is the way it played out.”⁴⁶

In December 2017, Pebble LP submitted its discharge permit application to the Alaska District of the U.S. Army Corps of Engineers (Corps) requesting authorization to discharge fill material, build mining support structures, and conduct operations in the water of the United States.⁴⁷ The proposed Pebble Mine described by the permit would have required four years to construct, spurred 20 years of mining activity, and resulted in 1.2 billion tons of mined material.⁴⁸

As the lead federal agency for the permitting, the Corps determined that the preparation of an Environmental Impact Statement (EIS) was necessary to inform the permit decisions for the project due to its potential significant environmental impacts.⁴⁹ Under NEPA, an EIS is the government document that comprehensively outlines the impact of a proposed project—including examination of the purpose and need of the project, alternatives considered, a description of the affected environment, environmental consequences, and mitigation options for projected environmental harms.⁵⁰ Several federal, state, and Tribal organizations served as cooperating agencies for the development of the Pebble Mine EIS.⁵¹

In March 2019, the Corps and cooperating agencies first released the Draft EIS for public comment and published a public solicitation for comments on Pebble LP’s permit application.⁵² From March 1, 2019, to July 1, 2019, the public offered comments on both the Draft EIS and Pebble LP’s permit application. Over 311,000 comments came in from the public critiquing the Pebble project.⁵³ Other federal agencies also expressed significant concerns with the Draft EIS, with the U.S. Department of the Interior stating that “the [Draft EIS] is so inadequate that it precludes meaningful analysis” and that it relied on “subjective, and unsupported claims” from Pebble LP.⁵⁴

⁴⁶ “RDC Breakfast 10/5: Featuring Tom Collier, Pebble Partnership,” *Vimeo*, accessed here: <https://vimeo.com/236963415>.

⁴⁷ Pebble Mine Discharge Permit, POA-2017-217, December 2017, available in Appendix 2.

⁴⁸ “Proposed Plan Features Reduced Footprint,” Pebble Partnership, January 6, 2018, accessed here:

<https://pebblepartnership.com/press-releases/2018/6/6/plan-features-reduced-footprint-and-increased-safeguards>.

⁴⁹ “Record of Decision for Application Submitted by Pebble Limited Partnership to: The United States Army Corps of Engineers (Department of the Army Permit POA-2017-271),” November 20, 2020, accessed here:

https://www.nationalparkstraveler.org/sites/default/files/attachments/army_corps-pebble_mine_rod_11-20-20.pdf.

⁵⁰ Tiffany Middleton, “What is an Environmental Impact Statement?,” American Bar Association, March 2, 2021, accessed here: https://www.americanbar.org/groups/public_education/publications/teaching-legal-docs/teaching-legal-docs--what-is-an-environmental-impact-statement/.

⁵¹ “Record of Decision for Application Submitted by Pebble Limited Partnership to: The United States Army Corps of Engineers (Department of the Army Permit POA-2017-271),” November 20, 2020, p. 1, accessed here:

https://www.nationalparkstraveler.org/sites/default/files/attachments/army_corps-pebble_mine_rod_11-20-20.pdf.

⁵² “Draft EIS Information Package,” Department of the Army Permit Application, POA-2017-271, accessed here: <https://pebblewatch.com/wp-content/uploads/2020/12/Draft-EIS-Information-Package.pdf>.

⁵³ “Corps Releases Final Environmental Impact Statement,” PebbleWatch, July 24, 2020, accessed here: <https://pebblewatch.com/corps-releases-final-environmental-impact-statement/>.

⁵⁴ Letter from Philip Johnson, Regional Environmental Officer – Alaska, U.S. Department of the Interior to Shane McCoy, Program Manager, Regulatory Division, U.S. Army Corps of Engineers, Alaska Division, July 1, 2019 accessed here: https://legacy-assets.eenews.net/open_files/assets/2019/07/22/document_gw_04.pdf.

IV. Committee Oversight of Pebble LP and the Pebble Mine and Further Developments

a. Key Excerpts from the October 2019 Subcommittee Hearing

Prompted by deep concerns about the environmental risks posed by Pebble Mine, as well as the questions surrounding the economic viability of a mine with a 20-year operating life, the Subcommittee on Water Resources and Environment held a hearing on October 23, 2019, titled “The Pebble Mine Project: Process and Potential Impacts.”⁵⁵ The witnesses included Dennis McLerran, environmental attorney at the Cascadia Law Group; Tom Collier, CEO of Pebble LP; Richard Borden, owner of Midgard Environment Services, LLC; Alannah Hurley, Executive Director of the United Tribes of Bristol Bay; Brian Kraft, owner of Alaska Sportsman’s Lodge; Mark Niver, a Bristol Bay driftnet permit holder, and Anisa Kamadoli Costa, Chief Sustainability Officer at Tiffany & Co.

Subcommittee Chairwoman Grace Napolitano summed up the purpose of the hearing as follows:

“While the topic of the Pebble Mine project may seem local to Alaska, the impacts of a mining project in Bristol Bay may be felt as far away as Washington, Oregon, California—states with a robust salmon fishing industry—and the rest of the world. . . . It is for these reasons it is important that the Pebble Mine Project be examined thoroughly with the best science—before it proceeds. Today, we will talk about the process for permitting the Pebble Mine Project. Like any process, the outcome of it is as good as the inputs.”⁵⁶

In his opening statement, committee Chair Peter DeFazio called specific attention to concerns that the mining plan offered by Pebble LP was not accurate and raised the urgent need to critically examine Pebble LP’s expanded mine plan before any mining permits should be approved:

“[L]et’s talk about the shell game that is going on with attempts to get approval of a project that just doesn’t pencil out—unless you plan to come back and build the rest later . . . [Hearing testimony shows] the current mining proposal being advocated by the Pebble Partnership and under review by the U.S. Army Corps of Engineers, is a sham. This testimony demonstrates what I have been hearing all along—that this “smaller, smarter mine”, as Mr. Collier describes it, is not economically feasible[.]”⁵⁷

Mr. Borden, a mining expert and environmental scientist with over 30 years of experience in the mining industry, including 23 years with Rio Tinto, one of the world’s largest metals and mining corporations, testified:

⁵⁵ “The Pebble Mine Project: Process and Potential Impacts,” Hearing, Committee on Transportation and Infrastructure, Subcommittee on Water Resources and Environment, October 23, 2019, p. 20, accessed here: <https://www.govinfo.gov/content/pkg/CHRG-116hhrg41942/pdf/CHRG-116hhrg41942.pdf>.

⁵⁶ Id. p. 2.

⁵⁷ Id. p. 7.

“Based upon a careful review of the available financial data, it is my professional opinion that the [Pebble] mine plan being evaluated by the EIS [Environmental Impact Statement] is, most certainly, not economically feasible. I have estimated the proposed project to have a net present value of approximately negative \$3 billion.”⁵⁸

Mr. Borden also highlighted concerns with Mr. Collier’s written testimony submitted to Congress, pointing out that it did not comment at all on the economics of their new, smaller proposal, adding that such a mine “will almost certainly lose billions of dollars without a major expansion.”⁵⁹ In addition, he said, “In fairness to the EIS process, the investment community, and local stakeholders, I would urge the Pebble Limited Partnership to clearly demonstrate that the 20-year mine plan detailed in the EIS is financially viable.”⁶⁰

Mr. Borden expressed the concerns shared by others, that the mine that Pebble was proposing, in the form they were proposing, didn’t make financial sense.⁶¹ Chair DeFazio followed up on this point, asking Mr. Collier if Pebble LP had submitted documentation showing the financial viability of the mine.

Mr. DEFAZIO. All right. Now I have a question, Mr. Collier. Have you submitted a document on this much smaller mine showing it is financially viable to the Corps of Engineers that is a certifiable, real analysis? Yes or no?

Mr. COLLIER. No.⁶²

Following up on this exchange a few minutes later, Mr. Collier said, "If it is not financially viable, it is not going to be built. And if it is not going to be built, what the hell are we doing here today?"⁶³

This comment highlighted, likely unintentionally, a key issue the committee was trying to reconcile. If the smaller Pebble Mine proposal was not financially viable, why invest so many resources in a 20-year project that experts identified as lacking financial viability? However, despite this lack of financial viability for the 20-year proposal, Pebble LP continued moving full-steam ahead with the Pebble Mine. Such a course of action made little sense, unless Pebble LP and its leadership had unspoken plans for the Pebble Mine, plans more in alignment with the Wardrop Report’s vision of a profit-maximizing mine operating for significantly longer than the two decades covered by the Pebble LP permit request to the Corps.

⁵⁸ Id. p. 30.

⁵⁹ Id.

⁶⁰ Id.

⁶¹ Joel Reynolds, “Pebble Mine Fails Feasibility Analysis,” Natural Resources Defense Council, March 28, 2019, accessed here: [https://www.nrdc.org/experts/joel-reynolds/pebble-mine-fails-financial-feasibility-analysis#:~:text=Former%20Rio%20Tinto%20permitting%20expert,value%20of%20-%243%20billion](https://www.nrdc.org/experts/joel-reynolds/pebble-mine-fails-financial-feasibility-analysis#:~:text=Former%20Rio%20Tinto%20permitting%20expert,value%20of%20-%243%20billion;); Stephen Lee, “Pebble Mine’s Canadian Owner Rebuffs U.S. Financial Queries,” *Bloomberg*, October 3, 2018, accessed here: <https://news.bloomberglaw.com/environment-and-energy/pebble-mines-canadian-owner-rebuffs-us-financial-queries>.

⁶² Hearing, *supra* note 55, at p. 58.

⁶³ Id. p. 59.

The disconnect between Pebble LP’s public statements and proposed investments in the project versus the mine’s questionable financial viability led to increased concerns about what information Pebble LP was sharing and whether it was being forthcoming in its plans for the Pebble Mine and the Bristol Bay region.⁶⁴ Despite these concerns being raised at the hearing, Mr. Collier offered no equivocation in his statements regarding Pebble LP’s mining plans. In his written opening statement, he testified:

One of my fellow panelists today ... has called Pebble’s permit application the ‘camel’s nose under the tent,’ which I suppose means that he believes that Pebble plans on shoehorning in a larger project despite the fact that we have scaled back the footprint in the mine plan currently before the Corps of Engineers. I have several responses.

First, I believe it shows the level of desperation that the Pebble opposition has reached. Think about it: to oppose this permit application, they are forced to argue that it must in fact be far different than what is actually proposed. In other words, they are struggling to find problems with what is currently pending before the Corps.

*Pebble has no current plans, in this application or in any other way, for expansion.*⁶⁵ (emphasis added).

Pebble LP CEO Tom Collier Testifying to Congress in 2019



⁶⁴ Kerrisdale Capital report on value of Northern Dynasty Minerals Ltd., (NAK), February 2017, accessed here: <https://www.kerrisdalecap.com/wp-content/uploads/2017/02/Northern-Dynasty-Minerals-NAK.pdf>.

⁶⁵ Hearing, supra note 55, at p. 20.

Mr. Collier went on to highlight the smaller size and short timeframe for the new Pebble proposal repeatedly during the hearing. For example, Mr. Collier discussed the changes with then-Subcommittee Ranking Member Bruce Westerman:

Mr. WESTERMAN. Can you talk more about the differences that are in the application you supplied versus what was reviewed in 2014? I know you have talked about that some, but it is almost as if a case is being built that what was denied in 2014 is the exact project that is being proposed now.

Mr. COLLIER. No. . . . There are a number of significant changes in that project. The first one, of course, is that it is smaller.⁶⁶

Further review of Pebble LP records and internal communications reveal that Mr. Collier did not testify truthfully to the subcommittee when he offered that the company had “no current plans, in this application or in any other way, for expansion.”⁶⁷

b. Committee Investigation Following the October 2019 Hearing

While the permitting process for the Pebble Mine continued following the October 2019 hearing, so did Congressional scrutiny and public debate about the merits of the mine. Particular attention was paid to the conflict between Mr. Collier’s claim that Pebble LP had no plans for expansion beyond the 20 years of operations requested in its permits and statements that Pebble LP leaders were making to investors and others.⁶⁸

To better examine the merits of Mr. Collier’s October 2019 testimony, Chair DeFazio and Subcommittee Chairwoman Napolitano sent an oversight letter in November 2020 requesting records from Pebble LP. The two chairs wrote:

“[I]t seems as though Pebble [has been] dealing with two sets of facts, one to lure potential investors to the Pebble project and one to alleviate fears of Alaskan Natives, the U.S. Congress and Federal agencies of potential adverse environmental impacts from the mine.”⁶⁹

In particular, the chairs requested copies of Pebble LP’s records related to the intended, anticipated, or potential length, capacity, size, or scope of the Pebble Mine as well as similar records from the Corps.⁷⁰ In addition, committee staff also explored in-depth the records of communications between Pebble LP and the Corps. Of all the documents produced by Pebble LP and the Corps, it is the internal emails authored or received by Mr. Collier and Mr. Thiessen that

⁶⁶ Id. p. 75.

⁶⁷ Id. p. 20.

⁶⁸ Press Release, Transportation and Infrastructure Committee, November 20, 2020, accessed here: <https://transportation.house.gov/news/press-releases/tandi-chairs-press-pebble-limited-partnership-and-army-corps-for-records-after-secret-pebble-tapes-reveal-companys-contradictory-claims-about-the-mine-projects-size-and-duration>.

⁶⁹ Id.

⁷⁰ Id.

prove most damaging and provide deeply concerning insight into the true intentions of those wanting to develop Pebble Mine.

c. Pebble LP Documents Show Tom Collier’s Testimony to be False

A review of internal communications and documents from 2019 demonstrate that testimony offered by Mr. Collier to the subcommittee was not truthful. Specifically, Mr. Collier’s claim that “Pebble has no current plans, in this application or in any other way, for expansion” beyond its reduced-scope Pebble Mine with an operating life of 20 years cannot be reconciled with Pebble’s contemporaneous communications, both internally within Pebble LP and Northern Dynasty as well as externally with investors.

In a glaring example, in the same week that Mr. Collier told the subcommittee that Pebble LP had no plans for expansion beyond a 20 year mine, he and other members of Pebble LP leadership, including Mr. Thiessen, pitched a much longer-term Pebble Mine to investors.⁷¹ In a presentation slide deck circulated internally at Pebble LP and shared with investors in late October 2019, Pebble LP officials were pitching “Development Alternatives.”⁷² In an email between Northern Dynasty officials requesting the slide deck, Mr. Collier is specifically mentioned as one of the Pebble LP leaders “sitting down” with possible investors to make the pitch in Melbourne, Australia.⁷³



Pebble LP executives delivered investor pitches in October 2019, within days of Mr. Collier testifying to Congress that there were no current plans for mine expansion.

The slide deck described the 20-year Pebble Mine plan then moving through the federal permitting process and labeled that plan the “Permitting Case.”⁷⁴ The presentation explained the Permitting Case was a “Smaller Project” created by Pebble LP, “to respond to public concerns.”⁷⁵

⁷¹ Slide deck, PLP_HCTI0143021-0143049, available in Appendix.

⁷² Id.

⁷³ PLP_HCTI0143019, available in Appendix.

⁷⁴ PLP_HCTI0143032-0143036, available in Appendix.

⁷⁵ PLP_HCTI0143034, available in Appendix.

Permitting Case

- Developed case to respond to public concerns
- **Smaller project**
 - 1.3 billion tons milled, 0.1:1 strip ratio
 - No permanent waste dumps
 - No secondary gold recovery plant
 - Pyritic tails and PAG waste returned to the open pit
- **Processing**
 - 180,000 tpd (66 million tons/a)
 - Approximate annual Cu-Au concentrate production – 660,000 tons
 - Approximate annual Mo concentrate production – 16,000 tons
- **Infrastructure**
 - Road and lake ferry to Cook Inlet
 - Offshore lightering of concentrate to bulk carriers
 - Gas pipeline from Anchor Point (190 miles)
 - 270 megawatt gas fired power plant

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pebble

PLP_HCTI0143034

Investor materials reveal Pebble LP’s strategy to mislead the public with a smaller initial mine before long-term expansion.

The other “Alternative Plans” presented in the slide deck described massively expanded mining operations.⁷⁶ Specifically, the alternatives included three plans that went significantly beyond what Mr. Collier shared with the subcommittee during his written and oral testimony when he explained that Pebble LP had no current plans for expansion. The plans were titled the “Transition Alternative,” the “Expanded Alternative,” and the “Ultimate Pit Alternative.”⁷⁷ Notably, these plans were not expansions of the Pebble Mine to be considered after the 20-year permitted mining operations had elapsed, but rather expansions to occur *as early as three years* from the initial operation of the Pebble Mine.⁷⁸ Even though the first slide carried caveats about the slide deck’s information,⁷⁹ the labeling of the expansion concepts in the presentation as “plans” is explicit and clear.

⁷⁶ PLP_HCTI0143038, available in Appendix.

⁷⁷ Id.

⁷⁸ Id.

⁷⁹ PLP_HCTI0143022, available in Appendix.

Other Alternatives (Open Pit)

- Continuing to evaluate alternate plans to optimize value
 - Transition from Permitting Case
- **Transition Alternative**
 - Open pit extended to 3.1 billion tons
 - Mining rate increased to 386 million tons per year in Year 3
 - Secondary gold plant installed in Year 3
- **Expanded Alternative**
 - Open pit extended to 3.5 billion tons
 - Commence with Transition Alternative
 - Process plant expanded to 240,000 tons per day in Year 5
- **Ultimate Pit Alternative**
 - Similar to 2014 iPEA scenario
 - Would extend mine life to 80 plus years
 - Approximately 75% of the resource
 - Extend from Transition alternative

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 PLP_HCTI0143038

Pebble LP planned multiple long-term alternatives, including an “Ultimate Pit Alternative.”

Among the plans, the “Ultimate Pit Alternative” created the largest pit in the Bristol Bay watershed, extending the Pebble Mine life to more than 80 years, 400 percent longer than the mine’s lifespan Mr. Collier discussed with Congress.⁸⁰ The “Transition Alternative,” the first step in expansion beyond the permitting case, included an additional secondary gold plant, and the “Expanded Alternative” extended the open pit to 3.5 billion tons, more than twice that of the mine under permitting consideration.⁸¹ The slide deck also noted that the concepts behind some of the alternative plans were not new but were “incorporated as an option in the 2011 [Wardrop Report],”⁸² therefore their details would have been well-known to Pebble LP officials.

In addition to the specific alternative plans, the slide deck highlighted a mineral exploration potential that covered a far greater geographic area than the surveyed Pebble deposit itself, and went far beyond the publicly proposed footprint of the permitted Pebble Mine site.⁸³ Describing the exploration potential of the Pebble Mine region, Pebble LP’s slides compared the mining possibilities as analogous to massive mining operations in Mongolia and Chile, with potential deposits to be explored situated throughout much more of the Bristol Bay’s watershed than the mine permit application envisioned.⁸⁴ The potential risks and certain harms to the watershed from

⁸⁰ PLP_HCTI0143038, available in Appendix.

⁸¹ Id.

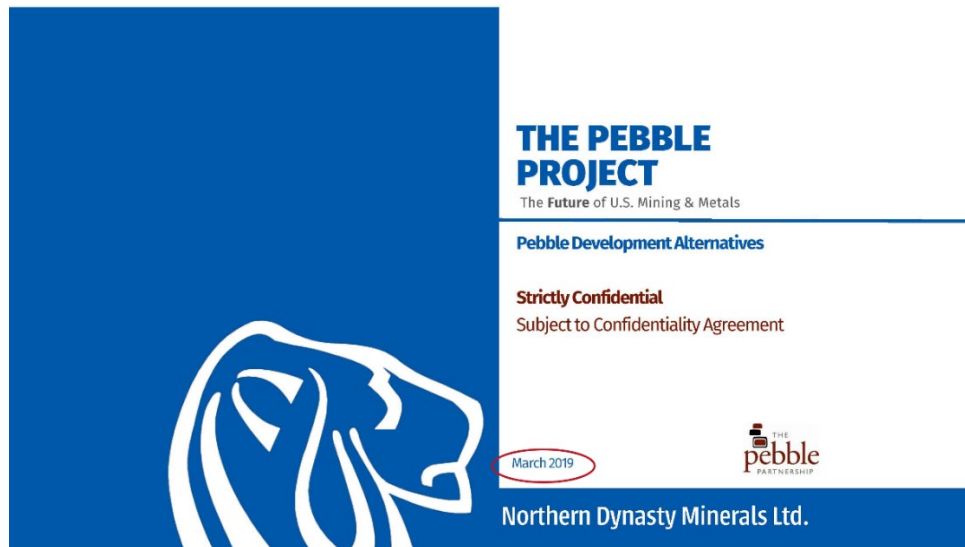
⁸² PLP_HCTI0143044, available in Appendix.

⁸³ PLP_HCTI0143029-0143030, available in Appendix.

⁸⁴ PLP_HCTI0143030, available in Appendix. The Oyu Tolgoi copper-gold mine operation in Mongolia has introduced volatile economic growth, significant ground water disruptions, and transformed the environment, economy, and social order around the mine. See Emily Kwong, “Mongolia’s Long Road to Mining Wealth,” *NPR-WAMU*, July 31, 2019, accessed here: <https://www.npr.org/2019/07/31/741798613/mongolias-long-road-to-mining-wealth>. Companies have exploited copper at the Chuquicamata mine site in Chile, the second deepest open pit mine in the world, for well over a century. See “Chuquicamata Copper Mine,” *Mining Technology*, June 11, 2014, accessed here: <https://www.mining-technology.com/projects/chuquicamata-copper/>. The Andina-Los Bronces-Los Sulfatos copper mining operation has continued for over 150 years and is criticized for its impacts on air quality and water used by the local community from a nearby glacier, a source of local drinking water. Chile recently rejected the expansion of the mining operations citing those environmental concerns. See Cecilia Jamasmie, “Chile rejects Anglo American’s \$3 billion Los Bronces expansion,” *Mining.com*, May 3, 2022, accessed here: <https://www.mining.com/chile-rejects-anglo-americans-3-billion-los-bronces-expansion/#:~:text=The%20asset%2C%20one%20of%20Anglo,extending%20its%20life%20through%202036>.

mine operations along the line of what these slides proposed had never been raised, much less considered, in any of the previous federal permitting processes.⁸⁵

Further investigation by committee staff confirmed that the Pebble LP alternative plans were not new initiatives or ideas in October 2019. Rather, Pebble LP leaders had been pitching the plans to investors for months, as seen in a nearly identical investor slide deck presentation laying out the development alternatives, including the “Ultimate Pit Alternative,” from March 2019.⁸⁶ Additional communications indicate that Pebble LP was still presenting the slide deck to investors in February 2020.⁸⁷



As early as March 2019, Pebble LP was pitching alternative plans for the size and scope of the expanded Pebble Mine.

Pebble LP’s clear desire to expand Pebble Mine included more than just PowerPoint slides dating back to March 2019. Examination of records produced by Pebble LP identified detailed financial analysis behind the alternative plans from that same time frame.⁸⁸ In internal emails, a Northern Dynasty employee requested “the three spreadsheets that discuss the alternatives for the permitting cases” and in response received three excel spreadsheets, marked “strictly private and confidential – subject to confidentiality agreement,” for mining operations extending for five decades.⁸⁹ Notably, graphical timeframes in the spreadsheets extended financial analysis out to more than 81 years.⁹⁰

Emails among Pebble LP’s leadership and others show that plans for an expanded mine operating beyond the 20-year plan were common knowledge among Pebble LP’s leadership. Emails described the October 2019 slide deck presentation as a “group effort” capturing data dating back to Spring 2019.⁹¹ It is also clear that at the time he testified before the subcommittee, Mr. Collier was

⁸⁵ See, e.g., “Pebble Final Environmental Impact Statement,” U.S. Army Corps of Engineers, July 2020, accessed here: <https://www.dropbox.com/sh/qs6t0skk4hdybm9/AADtHeB7R3EuC1qOTSVE9PtRa?dl=0>.

⁸⁶ PLP_HCTI011470-0111498, available in Appendix.

⁸⁷ PLP_HCTI0134981, available in Appendix.

⁸⁸ PLP_HCTI0140235-0140243, available in Appendix.

⁸⁹ PLP_HCTI0140234, available in Appendix.

⁹⁰ See, e.g., PLP_HCTI0140235, available in Appendix.

⁹¹ PLP_HCTI0143018, available in Appendix.

fully aware of the alternative plans; in an email dated September 26, 2019, Mr. Collier asked about the naming conventions used by Mr. Thiessen for the alternative plans to the permitting case.⁹² He even went as far as to offer to draft a memo on Pebble LP's alternative plans.⁹³ This email exchange between Mr. Collier and Mr. Thiessen discussing Pebble LP's alternative plans occurred one month before Mr. Collier testified to the subcommittee that Pebble LP had no such plans.

On Sep 26, 2019, at 5:37 PM, Tom Collier <tomcollier@pebblepartnership.com> wrote:

I asked Steve to define the alternatives you and he have been discussing, see below. Assuming this is correct, I'd be doing a memo on the extension and expansion alternatives. Would you also like a bolt on gold plant addressed as an alternative?

Sent from my iPhone

Moreover, Mr. Collier's direct involvement in developing the alternative Pebble Mine plans appears to go back months before September 2019, as demonstrated in an email to another Pebble employee.⁹⁴ When offered detailed information on how the permitted Pebble Mine could be transitioned to the "Extended Alternative" mine operation after three years and the Pebble Mine life could be extended out to 49 years, Collier responded, "We looked at this months ago. I've got a few outstanding questions to the lawyers[.]"⁹⁵ This information all shows that Mr. Collier knew of the existence of alternative Pebble Mine plans when he testified before the subcommittee in October 2019.

V. Legal Issues Presented by Tom Collier's and Pebble LP's Conduct

a. Potential Criminal Liability

Mr. Collier's testimony to Congress in October 2019 was demonstrably false and raises potential criminal liability. To fully evaluate the potential legal repercussions of Mr. Collier's false testimony it is necessary to explore the mindset with which he offered that testimony. Under Section 1001 of Title 18, United States Code, anyone who "knowingly and willfully (1) falsifies, conceals, or covers up by any trick, scheme, or device of material fact; (2) makes any materially false, fictitious, or fraudulent statement or representation; or (3) makes or uses any false writing or document knowing the same to contain any materially false, fictitious, or fraudulent statement or entry; shall be fined under this title, and/or imprisoned not more than 5 years" if the matter at issue falls under specific categories of Congressional activity.⁹⁶ These activities include "any investigation or review,

⁹² PLP_HCTI0141836, available in Appendix.

⁹³ PLP_HCTI0153169, available in Appendix.

⁹⁴ PLP_HCTI0153363-0153364, available in Appendix.

⁹⁵ Id.

⁹⁶ 18 U.S.C. § 1001, available at: <https://www.law.cornell.edu/uscode/text/18/1001>. Lying to Congress, either in writing and orally, can be enforced under this statute and has been in the recent past. *See, e.g.*, Danny Cevallos, "Cohen's Guilty Plea Offers Stark Reminder: Lying to Congress Can Be a Crime," *NBC News*, November 30, 2018, accessed here: <https://www.nbcnews.com/politics/politics-news/cohen-s-guilty-plea-offers-stark-reminder-lying-congress-can-n942136>; *see also* Helen Klein Murillo, "The Law of Lying: Perjury, False Statements, and Obstruction," *Lamfare*, March 22, 2017, accessed here: <https://www.lawfareblog.com/law-lying-perjury-false-statements-and-obstruction>; "Roger Stone Found Guilty of Obstruction, False Statements, and Witness Tampering," United States Attorney's Office for the District of Columbia Press Release, November 15, 2019, accessed here: <https://www.justice.gov/usao-dc/pr/roger-stone-found-guilty-obstruction-false-statements-and-witness-tampering>.

conducted pursuant to the authority of any committee [or] subcommittee ... of the Congress[.]”⁹⁷ Criminal liability may exist for an individual if the elements of the statute are met, which include the materiality of the statement and the knowledge/willfulness with which the potential defendant acted in making his or her statement.⁹⁸ This statutory language is included on the Corps’ permit application form submitted by Pebble LP.⁹⁹

In considering whether criminal liability can be attached to Mr. Collier’s false statement about Pebble LP’s lack of plans for expansion of the Pebble Mine, the law does not require that the false statement be made with an intent to defraud to be a violation of the statute.¹⁰⁰ Rather if the statement was offered when Mr. Collier possessed knowledge or awareness of the statement’s falsity and Mr. Collier also made the statement voluntarily and willfully, he may be criminally liable.¹⁰¹

Among the documents produced in response to the chairs’ November 2020 letter, Pebble LP did not produce documents that would have offered insight into Collier’s mindset, namely any contemporaneous records and communications related to the preparation, delivery, and follow-up to Collier’s 2019 testimony. Committee staff received no such documents or communications.¹⁰²

b. Sham Permitting/Segmentation

Separately, the communications of others at Pebble LP, especially Northern Dynasty CEO and Pebble LP board member Ron Thiessen, further demonstrate Pebble LP’s deceptive permitting strategy. That strategy is effectively captured in an email from Mr. Thiessen on September 17, 2019, one month before Mr. Collier’s false testimony.¹⁰³

Initially, Mr. Thiessen shared Pebble LP’s plans with an investor regarding “3 principal scenarios,” which he called the “permitting case,” “extended mine life case,” and an “expanded mill and mine life case.”¹⁰⁴ He later attached and sent the slide deck previously referenced in this report.¹⁰⁵ Mr. Thiessen candidly offered to the investor his following observation:

“I think the most important element is that we get through permitting with the Permitting case and then once we have a track

⁹⁷ 18 U.S.C. § 1001, available at: <https://www.law.cornell.edu/uscode/text/18/1001>.

⁹⁸ “Elements of 18 U.S.C. § 1001” Criminal Resource Manual 908, U.S. Department of Justice, accessed here: <https://www.justice.gov/archives/jm/criminal-resource-manual-908-elements-18-usc-1001>.

⁹⁹ Pebble Mine Discharge Permit, POA-2017-271, December 2017, available in Appendix 2.

¹⁰⁰ See “Knowing and Willfully” Criminal Resource Manual 910, U.S. Department of Justice, accessed here: <https://www.justice.gov/archives/jm/criminal-resource-manual-910-knowingly-and-willfully>. The false statement does not need to be made with an intent to defraud if there is an intent to mislead or to induce belief in its falsity.

¹⁰¹ Id.

¹⁰² Committee staff asked Pebble LP’s attorney why the relevant records were not produced. In explanation, on August 18, 2022, an attorney coordinating document production for Pebble LP at Squire Patton Boggs, explained:

“Pebble had its lawyers review the emails from the period of time that Tom Collier’s testimony before the House Transportation and Infrastructure Committee was under preparation. As you can understand, that undertaking took significant effort and expense. All the emails that were responsive to your latest inquiry were communications that are covered by attorney-client and/or work-product privileges. Therefore we cannot share those emails with the Committee.”

¹⁰³ PLP_HCTI0111469, available in Appendix.

¹⁰⁴ Id.

¹⁰⁵ Id.

record of responsible profitable for all operations we can undertake the alternatives.”¹⁰⁶

These internal messages about the prospect of Pebble Mine’s future expansion sharply conflicted with Pebble LP’s aggressive marketing campaign going on at the same time trying to persuade Alaskans that the Pebble Project was environmentally safe and in the public’s financial interest. For example, Pebble LP produced glossy multi-page brochures which they mailed to approximately 250,000 Alaska households in November 2018, followed by another to the same households in November 2019.¹⁰⁷ Along with the promise of jobs and minimal environmental concerns, Pebble LP assured Alaskans that the mine “[f]ootprint will equal only 5.3 square miles” and it “will NOT be the largest mine in Alaska.”¹⁰⁸ Such assurances ignored the expansion plans being contemporaneously promoted to investors for a much larger, longer-lived mine, including the “Ultimate Pit Alternative” plan.¹⁰⁹ Pebble LP’s assurances also ignored a 2014 EPA report finding that the Pebble Mine open pit alone could cover more than 6.8 square miles, a 30 percent larger area, with a waste rock pile and three tailings ponds covering an additional 27.5 square miles.¹¹⁰

November 2018 Pebble LP Brochure Entitled “A New Path Forward”

“HOW BIG IS IT?”

There’s no question Pebble is a substantial project. But you might be surprised how small it will be.

KEY FACTS

- Footprint will equal only 5.3 square miles
- No facilities in the Upper Talarik drainage
- Will NOT be the largest mine in Alaska

MINE AREA BRISTOL BAY SOCKEYE ESCAPEMENT

Koktuli Drainage:	
South Fork	0.06%
North Fork	0.02%
TOTAL	0.08%

THIS IS THE PEBBLE DEPOSIT

The mine footprint will not have an adverse effect on fish productivity. Our science proves it. The purpose of permitting is to validate it.

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Pebble LP brochures went to roughly 250,000 Alaskan households, misleading local residents on the probable size and scope of the Pebble Mine. PLP HCTI0137317

Notably, however, these glossy brochures included disclaimers in dense legal prose that its “statements should not be in any way be construed as guarantees of the ultimate size ... of the Pebble Project” and that Pebble LP “continues to consider various development options[.]”¹¹¹ Unlike Mr. Collier’s October 23, 2019, testimony to the subcommittee, in these brochures Pebble LP’s deceptive representations left wiggle room for the company to later ignore its assurances to a quarter million Alaskan households. The use of flagrantly deceptive practices like fine print to

¹⁰⁶ Id.

¹⁰⁷ PLP_HCTI0137312-45, available in Appendix.

¹⁰⁸ PLP_HCTI0137317, available in Appendix.

¹⁰⁹ PLP_HCTI0143038, available in Appendix.

¹¹⁰ “An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska,” Executive Summary, EPA 910-R-14-001ES, January 2014, p. 11, accessed here: https://www.epa.gov/sites/default/files/2015-05/documents/bristol_bay_assessment_final_2014_es.pdf.

¹¹¹ PLP_HCTI0137324, available in Appendix.

obscure clear, alternative corporate plans does not inspire confidence in the trustworthiness of a company seeking stewardship of American natural resources.¹¹²

Even today, Northern Dynasty’s website allows for the possibility of a step-by-step permitting effort to ease the challenging nature of winning approval for a mine footprint with the size, duration, and corporate profitability envisioned by the 2011 Wardrop Report and the 2019 investor slide deck.¹¹³ The website states that Northern Dynasty is “committed to designing a project that is responsive to Alaskan input and needs” and asserts its 2017 permitting plan aims to “reduce the [Pebble] project’s footprint and significantly enhance environmental safeguards” but then cautions specifically “that this may not be the ultimate development plan for the Project.”¹¹⁴

Internal corporate emails show that leadership at Northern Dynasty and Pebble LP understood that the deceptive effort of moving from an initial permitted plan as submitted to regulators to a larger, far longer-lived mine exposed Pebble LP to legal risks.¹¹⁵ For example, in early 2020, a Pebble employee forwarded a news article discussing litigation around a proposed copper-nickel mine in northern Minnesota to Mr. Thiessen.¹¹⁶ The litigation centered on a practice described by the EPA as “sham permitting.”¹¹⁷

In the context of the Clean Air Act, sham permitting is when a source of air pollution, such as a mine, pushes to expedite construction by securing a status as a minor air pollution source through permits containing operational restrictions from which the mine intends to free itself after completion of construction and commencement of operation.¹¹⁸ Such attempts can be treated as unlawful circumvention of the EPA’s preconstruction review requirements.¹¹⁹ In identifying sham permits, the EPA explains it “look[s] to objective indicia to identify circumvention situations . . . which include: the filing of [federal and state pollution permits with conflicting information]; the economic realities surrounding a transaction; and projected levels of operation as portrayed to lending institutions and other records of projected demand and output.”¹²⁰

In the Minnesota litigation highlighted among leaders within the Pebble project, the throughput of a copper-nickel mine, as reflected in permitting requests to the EPA, did not align

¹¹² See, e.g., Dylan Brown, “Did Pebble ‘de-risk’ Alaska’s Most Controversial Mine?” *E&E News Greenwire*, April 9, 2019, accessed at: <https://subscriber.politicopro.com/article/eenews/1060144971>; “Bristol Bay Tribes Shocked at depth of Pebble’s deception, efforts to rig the process,” United Tribes of Bristol Bay News Release, September 22, 2020, accessed here: <https://indiancountrytoday.com/the-press-pool/bristol-bay-tribes-shocked-at-depth-of-pebbles-deception-efforts-to-rig-the-process>.

¹¹³ “Pebble Project: Project Overview,” Northern Dynasty Minerals Ltd., accessed here: <https://northerndynastyminerals.com/pebble-project/project-overview/>.

¹¹⁴ Id.

¹¹⁵ PLP_HCTI0121493-94, available in Appendix.

¹¹⁶ Id.

¹¹⁷ Terrell E. Hunt and John S. Seitz, “Guidance on Limiting Potential to Emit in New Source Permitting,” U.S. EPA, June 13, 1989, accessed here: https://www3.epa.gov/airtoxics/pte/june13_89.pdf; see also Requirements for the Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans, 54 Fed. Reg. 27, 274, 27, 280–81 (June 28, 1989) (codified at 40 C.F.R. pts. 51, 52), accessed here: <https://www.law.cornell.edu/cfr/text/40/part-51> and <https://www.law.cornell.edu/cfr/text/40/part-52>.

¹¹⁸ Id. p. 13.

¹¹⁹ Id.

¹²⁰ “Applicability of New Source Review Circumvention Guidance to 3M – Maplewood, Minnesota,” EPA, June 23, 1993, accessed here: <https://www.epa.gov/sites/default/files/2015-07/documents/maplwood.pdf>.

with the significantly larger capacity of the mine’s operating equipment.¹²¹ The permit for a less impactful mine, with infrastructure capable of supporting a larger mining operation, seemed to be masking a planned mine expansion.¹²² As explained by the state appellate court decision circulated within Pebble LP:

“[I]f expansion is the current intent, the time to comply with [the applicable expanded mine permitting] requirements is now. Of course, once a project is operating, expansion proposals may be viewed more favorably by regulators. If that is the true course being charted [by this mine], then there is merit to [the] argument that the ... permit is a sham.”¹²³

Mr. Thiessen attempted to differentiate the Pebble Mine from the Minnesota mine in litigation, writing in email:

“Our examination of alternatives in the main does not involve trying to make something from inefficient to efficient ... there could be very different methods of mining or processing beyond 20 years. In my mind the mine life extension isn’t something which can technically be answered today, in any event. ... That is basically the view of Tom [Collier]. But he is thinking more about it to ensure we do not run afoul.”¹²⁴

Running afoul of the EPA and being identified as engaging in sham permitting could inflict a significant cost on a corporation like Pebble LP.¹²⁵ When sham permitting occurs, federal regulations empower the EPA to penalize bad faith actors who intentionally hide their expansion intentions.¹²⁶ If bad faith is demonstrated, the EPA may deem a mine or mine expansion to have been a major source of pollution from the outset, and it can then seek injunctive relief, civil penalties, and criminal

¹²¹ JT Haines, “A tale of two mine plans: Why did PolyMet tell Minnesotans one thing, and investors another?” *MinnPost*, April 22, 2020, accessed here: <https://www.minnpost.com/community-voices/2020/04/a-tale-of-two-mine-plans-why-did-polymet-tell-minnesotans-one-thing-and-investors-another/>; Walter Orenstein, “Why 2022 could be a critical year for the controversial PolyMet mining project in northern Minnesota,” *MinnPost*, January 5, 2022, accessed at: <https://www.minnpost.com/greater-minnesota/2022/01/why-2022-could-be-a-critical-year-for-the-controversial-polymet-mining-project-in-northern-minnesota/>.

¹²² Id.

¹²³ *In the Matter of Issuance of Air Emissions Permit No. 13700345-101 for Polymet Mining, Inc.*, City of Hoyt Lakes, St. Louis County, Minnesota. A19-0115, A19-0134, Court of Appeals, March 23, 2020, p. 20, accessed here: <https://mn.gov/law-library-stat/archive/ctappub/2020/OPa190115-032320.pdf>.

¹²⁴ PLP_HCTI0121493, available in Appendix.

¹²⁵ As observed by the Minnesota Supreme Court when reviewing the Minnesota mine litigation at issue, civil penalties alone for such a violation could be substantial. Under the Clean Air Act, a permit violation can result in a civil penalty as high as \$100,000 per day per violation. If a mine were caught violating just one operating condition of its permit five years after receiving a sham permit, the civil penalties could amount to nearly \$200 million. Further, under federal law, the EPA could seek an injunction forcing the mine to cease operations until it enacts best available control technology. Notably, the Minnesota Supreme Court reversed the appellate court decision, finding that though the state regulators were allowed to examine a mine’s filings for evidence of sham permitting, regulators were not required to do so, as environmental lawyers had argued in the case. *See In the Matter of Issuance of Air Emissions Permit No. 13700345-101 for PolyMet Mining, Inc.*, City of Hoyt Lakes, St. Louis County, Minnesota, 955 N.W.2d 258 (Minn. 2021), accessed here: <https://mn.gov/law-library-stat/archive/supct/2021/OPA190115-022421.pdf>.

¹²⁶ Id. pp. 16-17.

sanctions dating back to the beginning of actual mine construction.¹²⁷ Essentially, this enforcement alternative allows the EPA to look back to the first day of construction and view a mine as having been in violation of its permit because it was, in fact, a major pollution source.¹²⁸

In the case of Pebble LP, not only does the evidence suggest bad faith in permitting, but so does the questionable economics as explored in the committee’s October 23, 2019, hearing. Though the sham permitting concept was developed in the context of the Clean Air Act, this legal construct could be broadly applicable to other types of permitting. Certainly, there are potential applications within the context of the Clean Water Act which, under Section 404, requires a great deal of specificity in discharge permits for the type of dredged material at issue in the proposed Pebble Mine.¹²⁹ Permitting efforts that, in bad faith, inaccurately, or deceptively misrepresent the actual plans of permit applicants, could also fairly be described as sham permits, and could problematically circumvent the regulatory review of the Corps and EPA.

Pebble LP’s mine permitting effort also raises potential issues in terms of unlawful segmentation under NEPA.¹³⁰ Under NEPA, a mine or other project subject to federal environmental impact review must be examined with careful consideration of the cumulative impacts of the entire project, rather than the project’s discrete stages.¹³¹ NEPA regulations require that any EIS cover the entire scope of a proposed project, considering all connected, cumulative, and similar actions in a single, comprehensive document.¹³² This prevents segmentation or “piecemealing” which occurs when a project is divided into component parts, each involving less significant environmental effects such that the overall project evades the intended federal scrutiny of its full environmental impact.¹³³

When Mr. Thiessen wrote in 2019, “[T]he most important element is that we get through permitting with the Permitting case and then ... we can undertake the alternatives,” he signaled an intent to evade federal scrutiny of the environmental impact of the entirety of the Pebble Mine actively under consideration by Pebble LP.¹³⁴ By providing the Corps and other reviewing agencies with only the initial stage—the “Permitting case”—of the fully scoped Pebble Mine, it appears Pebble LP thought it could avoid consideration of the full impact of potential environmental harms caused by the mine, in contravention of federal law.¹³⁵

¹²⁷ Id.

¹²⁸ Id.

¹²⁹ “Obtain a Permit,” U.S. Army Corps of Engineers, accessed here: <https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Obtain-a-Permit/>.

¹³⁰ See, e.g., *Huntington v. Marsh*, 859 F.2d 1134, 1142 (2d Cir. 1988) (finding that the NEPA mandate required the Corps to consider the cumulative impacts, not the discrete stages of the so-called leasing phase and permitting phase of a proposed waste disposal lease in a part of the Long Island Sound); see also Erica Novack, *Segmentation of Environmental Review: Why Defenders of Wildlife v. U.S. Navy Threatens the Effectiveness of NEPA and the ESA*, 42 B.C. Env’tl. Aff. L. Rev. 243 (2015).

¹³¹ *Huntington*, supra note 131, at 1142-43; *Thomas v. Peterson*, 753 F.2d 754, 758–59 (9th Cir. 1985) (striking down separate environmental reviews of timber sales and related road construction because the actions were “connected” and “cumulative” and therefore must be considered together).

¹³² 40 C.F.R. § 1508.25 (2013).

¹³³ *Huntington*, supra note 131, at 1142.

¹³⁴ PLP_HCTI0111469, available in Appendix.

¹³⁵ Id.

Though additional factual exploration and analysis would be appropriate to definitively determine if Pebble LP's actions constituted segmentation, emails and statements of Pebble LP leaders suggest that they may have undertaken such an effort in relation to the Pebble Mine.¹³⁶ Notably, the federal appellate court with jurisdiction over Alaska has held that re-conducting the EIS process can be required as an appropriate remedy when segmentation occurs in federal permitting.¹³⁷

Ultimately, whether called sham permitting or segmentation, deception and misrepresentation have no place in the federal permitting process; on the contrary, transparency is key for legislators and regulators so they can weigh the difficult tradeoffs between conservation and development.

VI. Post-Hearing Pebble Mine Developments

a. Pebble Mine's Permitting Efforts Through the End of the Trump Administration and the Release of the "Pebble Tapes"

In December 2019 and again in June 2020, Pebble LP updated its CWA discharge permit applications for the Corps with revisions and refinements to the project design and footprint following the public comments received regarding the mine proposal.¹³⁸ However, the Corps determined that Pebble LP proposed no changes to the project that resulted in significant new circumstances or information related to environmental concerns, and therefore the Corps made no supplement to the much-criticized Draft EIS.¹³⁹ On July 24, 2020, after releasing a preliminary version, the Corps made the Final EIS (FEIS) publicly available.¹⁴⁰

Objections to the FEIS sprung from many quarters. The president of the Bristol Bay Native Association summarized the concerns of many, stating that "[i]t remains clear the Corps didn't take seriously the concerns from state, federal and tribal cooperating agencies, the public or Congress, as the document remains virtually the same as early drafts of the EIS" and would "dangerously" underestimate and ignore Pebble's devastating regional effects.¹⁴¹ Chairs DeFazio and Napolitano also condemned the incomplete effort to address important environmental concerns in the EIS.¹⁴²

¹³⁶ Id.

¹³⁷ See, e.g., *Thomas*, supra note 132, at 760 ("A central purpose of an EIS is to force the consideration of environmental impacts in the decisionmaking process. . . and the purpose cannot be fully served if consideration of the cumulative effects of successive, interdependent steps is delayed until the first step has already been taken.").

¹³⁸ Record of Decision, Army Corps of Engineers, November 20, 2020, p 1-1, accessed here:

https://www.nationalparkstraveler.org/sites/default/files/attachments/army_corps-pebble_mine_rod_11-20-20.pdf.

¹³⁹ Id.

¹⁴⁰ "Corps Release Pebble Final Environmental Impact Statement" Corps News Release, July 24, 2020, accessed here: <https://www.poa.usace.army.mil/Media/News-Releases/Article/2287716/corps-releases-pebble-final-environmental-impact-statement/>; see also "Pebble Final Environmental Impact Statement," U.S. Army Corps of Engineers, July 2020, accessed here: <https://www.dropbox.com/sh/qs6t0skk4hdybm9/AADtHeB7R3EuC1qOTSVE9PtRa?dl=0>.

¹⁴¹ Margaret Bauman, "Corps' final EIS on Pebble mine draws criticism from Native leadership," *The Cordova Times*, August 1, 2020, accessed here: <https://www.thecordovatimes.com/2020/08/01/corps-final-eis-on-pebble-mine-draws-criticism-from-native-leadership/>.

¹⁴² Press Release, "Chairs DeFazio, Napolitano Decry Trump Administration's Push to Approve Controversial Pebble Mine in Alaska's Bristol Bay," House Committee on Transportation and Infrastructure Committee, July 24, 2020, accessed here: <https://transportation.house.gov/news/press-releases/chairs-defazio-napolitano-decry-trump-administrations-push-to-approve-controversial-pebble-mine-in-alaskas-bristol-bay>.

Soon thereafter, on August 24, 2020, the Corps announced it would require changes to the Pebble Mine proposal for approval of any discharge permits.¹⁴³ However, events in September 2020 interrupted Pebble LP's permitting efforts.

On September 21, 2020, both Mr. Collier and Mr. Thiessen became subjects of significant media attention after environmental activists posing as potential investors recorded and publicly released conversations with them related to the Pebble Mine—the so-called “Pebble Tapes.”¹⁴⁴ Their descriptions of the mining project's future plans, Pebble LP's manipulation of the regulatory and political systems, and other controversial content led directly to Mr. Collier's resignation as Pebble LP CEO and caused Mr. Thiessen to offer his “unreserved apology to all those who were hurt or offended, and all Alaskans.”¹⁴⁵

Notably, statements made by Mr. Collier in the Pebble Tapes dramatically contradict his October 2019 testimony before the subcommittee. In the hearing, Mr. Collier stated:

“If expansion did become feasible, new permits would be required. The permit applicant would have to go through the same rigorous procedure that Pebble is now going through. Any concerns with scope or environmental risk can be addressed in that new permitting process. If the Corps grants Pebble's current permit application, nothing in that permit suggests a carte blanche to expand. Any future mining projects in the area would therefore be evaluated on their own merits based on then-existing conditions when and if future applications are submitted to the relevant permitting agencies.”¹⁴⁶

As mentioned previously, when Mr. Collier believed he was speaking privately with potential investors, he told a different story about how Pebble Mine expansion would occur, describing the process to obtain subsequent permits as “less intense.”¹⁴⁷

Tom Collier: This is a well-worn path that we're following to build something that allows us to show the community and the state that we can do it, we can do it well, that it's not dangerous and then we'll come in at some point in the future and request an extension of the time and probably an expansion of how much we are producing on a daily basis.

Investigator: So the likelihood is pretty much 100 percent almost?

¹⁴³ “Army finds Pebble Mine project cannot be permitted as proposed,” U.S. Army Public Affairs, August 24, 2020, accessed here:

https://www.army.mil/article/238426/army_finds_pebble_mine_project_cannot_be_permitted_as_proposed.

¹⁴⁴ “The Pebble Tapes,” Environmental Investigation Agency, September 21, 2020, accessed here:

<https://us.eia.org/report/20200921-the-pebble-tapes/>.

¹⁴⁵ Alex DeMarban, “Pebble CEO Collier resigns after release of tapes,” *Alaska Journal of Commerce*, September 24, 2020, accessed here: <https://www.alaskajournal.com/2020-09-24/pebble-ceo-collier-resigns-after-release-tapes>.

¹⁴⁶ Hearing, *supra* note 55, at p. 20.

¹⁴⁷ Pebble Tapes 1-Scale of Mine-Transcript, Environmental Investigation Agency, accessed here: <https://static.us.eia.org/pdfs/Pebble+Tapes+1+-+Scale+of+Mine+-+Transcript.pdf>.

Tom Collier: Yes. Yes we'll need to get a federal permit and a state permit. We'll need to go through those processes, but the processes will not be as intense nor as long as this process because you can build on what we've already done.¹⁴⁸

Pebble LP leadership not only asserted that the Pebble Mine would operate beyond 20 years, they believed the mine could operate more than 200 years.¹⁴⁹ That is ten times the life of the mine as proposed and shared with the subcommittee.¹⁵⁰

Mr. Collier and Mr. Thiessen's claims in the Pebble Tapes went far beyond the permit applications submitted to the Corps and contradicted what Mr. Collier told the subcommittee at the October 23, 2019, hearing.¹⁵¹ Despite the contradictions between Mr. Collier's Congressional testimony and Mr. Thiessen and Mr. Collier's comments in the Pebble Tapes, Pebble LP's internal communications in the days following the release of the Pebble Tapes show that Mr. Thiessen believed nothing in the recording was untrue.¹⁵²

In a September 22, 2020, email from Mr. Thiessen discussing the Pebble Tapes and their embarrassing nature, Thiessen made clear that the information shared in the Pebble Tapes was accurate.¹⁵³ This information necessarily includes the repeated statements in the Pebble Tapes, from both Mr. Collier and Thiessen, that the mine expansion was a certainty and Pebble LP intended and planned for a mine lifespan well beyond 20 years.

Needless to say lots of embarrassing materials on the tapes; not any material incorrect or even non public information. But the manner in which its disclosed is not pleasant to say the least and could be damaging to relationships mainly in Alaska.

The Pebble Tapes resulted in Mr. Collier's resignation from Pebble LP. But his resignation announcement simply explained that Mr. Collier had "embellished" his relationships with Alaska's officials and representatives.¹⁵⁴ The announcement did not contradict or withdraw Mr. Collier's claims in the Pebble Tapes regarding the permitting process or Pebble LP's intentions regarding the true lifespan of the mine.¹⁵⁵

Pebble LP leaders recognized that the Pebble Tapes created contradictions with public assurances about a 20-year mine, such as those offered by Mr. Collier's October 2019 testimony. In responding to a press inquiry immediately after the release of the Pebble Tapes, internal Pebble emails between Mr. Thiessen and the Pebble LP Vice President for Strategic Communications and

¹⁴⁸ Id.

¹⁴⁹ Id.

¹⁵⁰ Hearing, *supra* note 55, at p. 20.

¹⁵¹ Id.

¹⁵² PLP_HCTI0115609, available in Appendix.

¹⁵³ Id.

¹⁵⁴ "Northern Dynasty: Pebble Partnership CEO Tom Collier Submits 'Letter of Resignation,'" *AccessWire*, September 23, 2020, accessed here: <https://www.accesswire.com/607503/Northern-Dynasty-Pebble-Partnership-CEO-Tom-Collier-Submits-Letter-of-Resignation>.

¹⁵⁵ Id.

Public Affairs shows a back-and-forth between Pebble LP leaders struggling to explain the contradiction:

“At this time there is no **definitive** plan for subsequent phases of development, although the Pebble deposit would certainly support a longer mine life. What we have said consistently ... is the operator of the Pebble mine may decide at some **undetermined(remove)** point in the future to propose additional phases of development, but that no such formal plan or intention to do so exists today.

To create a definitive plan an extensive amount of additional work would have to be undertaken to evaluate the feasibility, differences, opportunities and impacts of underground mining v continued open pit mining. (Or is this just an opportunity for someone/USACE to say go back and do that additional work? We know that for the first +1B tones the open pit alternative is the best and works, financially...¹⁵⁶ (highlighting and coloring in original)

This draft response demonstrates that even as Pebble LP attempted to craft a public denial of what constitutes “definitive” or “formal” plans to expand the Pebble Mine in the wake of the Pebble Tapes, Pebble LP leaders understood that Pebble Mine expansion plans existed, and that significant analysis of such plans had been completed. Moreover, Pebble LP leaders remained intent on avoiding transparency about their Pebble Mine plans and analysis.

b. Pebble Mine Developments Following the 2020 Election

In late November 2020, the Corps issued the Pebble project Record of Decision (ROD), the final governmental action prior to implementation of a proposed activity which resolves all outstanding issues for a proposed project.¹⁵⁷ For the Pebble Mine, the Corps ROD re-examined the facts and analysis from federal agencies and the FEIS, concluding that the proposed discharges requested for the Pebble Mine’s construction and operation would “result in significant degradation to the aquatic ecosystem” in violation of Clean Water Act guidelines.¹⁵⁸ The ROD further concluded that “based upon the information contained with the FEIS, the extensive public comments received, and the analysis of the public interest review factors ... the proposed project is contrary to the public interest.”¹⁵⁹ The Corps denied Pebble LP’s discharge permits.¹⁶⁰

In May 2022, the EPA published a new Proposed Determination under Section 404(c) of the CWA (also known as a 404(c) veto) to prohibit and restrict the discharge of fill material associated

¹⁵⁶ PLP_HCTI0115635, available in Appendix.

¹⁵⁷ Record of Decision, Army Corps of Engineers, November 20, 2020, accessed here:

https://www.nationalparkstraveler.org/sites/default/files/attachments/army_corps-pebble_mine_rod_11-20-20.pdf.

¹⁵⁸ Id. p. 7-1.

¹⁵⁹ Id.

¹⁶⁰ Laurel Wamsley, “Army Corps of Engineers Denies Permit to Controversial Pebble Mine in Alaska,” *NPR-WAMU*, November 25, 2020, accessed here: <https://www.npr.org/2020/11/25/939010891/army-corps-of-engineers-denies-permit-to-controversial-alaska-gold-mine>.

with the proposed Pebble Mine into certain waters in the Bristol Bay watershed.¹⁶¹ In June 2022, the EPA extended the public comment period regarding the Proposed Determination until September 6, 2022.¹⁶² With the EPA 404(c) veto in place, further development and mining of the Pebble deposit would effectively not be possible.¹⁶³

Importantly, neither the Corps' final ROD conclusion nor the EPA's May 2022 Proposed Determination are irreversible. Pebble LP filed its request to appeal the Corps' decision in early 2021, and that request remains active today.¹⁶⁴ Further, as demonstrated by the EPA's 2014 Proposed Determination, subsequent federal litigation, and the Trump administration's 2017 decision to settle with Pebble LP, federal permitting policy decisions can be subject to change.¹⁶⁵ However, restricting the development of the Pebble Mine and protecting the Bristol Bay watershed remain an important issue for Alaska and the nation.¹⁶⁶

In August 2022, a \$12 million initial investment from a "new, unnamed investor" to Northern Dynasty highlighted the continued relevance of the public debate over the development of the Pebble Mine and the need for transparency in the project.¹⁶⁷ Mr. Thiessen claimed the new financier may eventually invest up to \$60 million and described it as giving Pebble LP "the financial wherewithal to keep fighting against what we consider to be unfounded interference by the U.S. Federal Government agencies in an otherwise well-established, legal permitting process. . ."¹⁶⁸

On September 6, 2022, the EPA closed its public comment period on the 404(c) veto.¹⁶⁹ During the comment period, over 2,500 Bristol Bay residents submitted comments in support of

¹⁶¹ "2022 Proposed Determination for Pebble Deposit Area," U.S. EPA, accessed here:

<https://www.epa.gov/bristolbay/2022-proposed-determination-pebble-deposit-area#:~:text=On%20June%2024%2C%202022%20%2C%20EPA,comments%20through%20September%206%2C%202022.>

¹⁶² Id.

¹⁶³ "EPA releases new Proposed Determination that recommends protections for Bristol Bay," PebbleWatch, May 26, 2022, accessed here: <https://pebblewatch.com/epa-releases-new-proposed-determination-that-recommends-protections-for-bristol-bay/>.

¹⁶⁴ "PLP Files Request for Appeal on Corps Record of Decision for the Pebble Project," The Pebble Partnership, January 21, 2021, accessed here: <https://pebblepartnership.com/press-releases/2021/1/21/plp-files-request-for-appeal-on-usace-record-of-decision-for-the-pebble-project>.

¹⁶⁵ "EPA Withdraws Outdates, Preemptive Proposed Determination to Restrict Use of the Pebble Deposit Area as a Disposal Site," U.S. EPA News Release, July 30, 2019, accessed here: <https://www.epa.gov/newsreleases/epa-withdraws-outdated-preemptive-proposed-determination-restrict-use-pebble-deposit>.

¹⁶⁶ Liz Ruskin, "Where Alaska US House Candidates Stand on Developing Alaska's Natural Resources," *Alaska Public Media*, June 2, 2022, accessed here: <https://www.ktoo.org/2022/06/02/where-alaska-us-house-candidates-stand-on-developing-alaskas-natural-resources/>; Jason Metrokin, "How to Protect Bristol Bay's Salmon for the Long Haul," *The New York Times*, July 4, 2022, accessed here: <https://www.nytimes.com/2022/07/04/opinion/salmon-alaska-bristol-bay-pebble-mine.html>.

¹⁶⁷ Katherine Moncure, "Despite Setbacks, Pebble Mine receives new investment of \$12 million," *KDLG*, August 10, 2022, accessed here: <https://www.kdlg.org/news/2022-08-10/despite-setbacks-pebble-receives-new-investment-of-12-million>.

¹⁶⁸ "Northern Dynasty Secures Innovative Royalty Agreement for Proceeds of Up to \$60 Million on non-core metals," Northern Dynasty News Release, July 27, 2022, accessed here: https://money.tmx.com/en/quote/NDM/news/6881520621884712/Northern_Dynasty_Secures_Innovative_Royalty_Agreement_for_Proceeds_of_Up_to_60_Million_on_NonCore_Metals.

¹⁶⁹ "Bristol Bay: Revised 404(c) Proposed Determination," EPA website, September 28, 2022, accessed here: <https://www.epa.gov/bristolbay>.

comprehensive protections that would fully protect the headwaters of Bristol Bay from mining.¹⁷⁰ Altogether, Tribal groups report more than 30,000 Alaskans supported EPA’s protections, contributing to a total of half a million Americans overall who supported protections for Bristol Bay during the 2022 comment period.¹⁷¹ According to activists, more than four million people have filed public comments in support of Bristol Bay protections over the past decade.¹⁷²

Nevertheless, with corporate mining interests still pushing to exploit the Pebble deposit, and despite popular American support for recent steps by the Biden administration to protect the watershed, without further permanent action the future of the Bristol Bay region remains uncertain.

VII. Conclusion and Recommendations

Many have weighed in on the risks and benefits of the Pebble Mine since the creation of Pebble LP in 2007. Government regulators, mining experts, Tribes, and members of the public have contributed to a detailed public record exploring how and whether mining of the Pebble deposit should go forward. Overall, committee staff has found that Pebble LP’s contribution to the public discussion has been deceptive. Former Pebble LP CEO Tom Collier lied about the plans of Pebble LP in his testimony to Congress when he appeared before the subcommittee in October 2019 as he and other executives of Pebble LP were simultaneously marketing much more extensive mining plans to investors.

At present, due to the diligent work of the Corps and the EPA, lawmakers and the public recognize the economic and environmental degradation posed by the Pebble Mine and have been informed that the consequences of the Pebble project are contrary to the public interest. However, both agencies were the victims of Pebble LP’s deception and may benefit from more enforcement tools. For now, the Pebble project will not move forward. However, the deceptive permitting strategy undertaken by Pebble LP demonstrates the need for a strong and vigilant federal permitting process, with vigorous oversight, for these types of large-scale projects, especially when proposed for sensitive environmental locations.

Considering the facts above, the committee recommends that Congress:

- 1. Ensure that the Corps and other federal agencies have the authority, training, personnel, and resources for consistent and rigorous oversight throughout the permitting and environmental review process.** The Pebble project demonstrates that federal permitting cannot simply be a routinized, unresponsive paperwork march. Regulators must be unflagging and proactive in recognizing and coordinating the necessary expertise—from Tribal, state, federal or non-governmental organizations—to vigorously identify and explore the risks of harms to the public and claims made by actors requesting federal action.

¹⁷⁰ “Bristol Bay Tribes, Communities Once Again Urge EPA to Permanently Protect Bristol Bay This Year,” United Tribes of Bristol Bay Press Release, September 6, 2022, accessed here: <https://www.utbb.org/press-releases-archive/for-immediate-release-bristol-bay-tribes-communities-once-again-urge-epa-to-permanently-protect-bristol-bay-this-year>.

¹⁷¹ Id.

¹⁷² Taryn Kiekow Heimer, “Record Numbers Support EPA Veto of Pebble Mine,” Natural Resources Defense Council, September 7, 2022, accessed here: <https://www.nrdc.org/experts/taryn-kiekow-heimer/record-numbers-support-epa-veto-pebble-mine>.

2. **Reform the Corps and EPA’s project review processes to add scrutiny and ensure holistic review of cumulative impacts of projects.** The Pebble Mine’s backers tried to trick regulators by pretending to pursue a smaller project with the intention of expanding the scope and environmental effects after the project was approved. The Corps and EPA need tools to spot similar conduct in the future. The Corps’ permit application form should be updated to include questions about the envisioned full scope of a project and any anticipated additional permitting. The agencies should routinely use analytical methods like economic feasibility analysis, evaluate evidence of bad faith action by permit requestors, and coordinate fully with all state and federal authorities.
3. **Continue to exercise active Congressional oversight as well as other Congressional authorities,** especially where damage to irreplaceable ecosystems and national assets are at issue. Using oversight authority, Congressional leaders can bring attention to an issue and increase public scrutiny on controversial matters. Moreover, Congressional authority to impose accountability on those who fail to cooperate fully and transparently with Congress should be vigorously guarded to ensure continued effectiveness of legislative and regulatory oversight.
4. **Explore legislative protections for the Bristol Bay watershed beyond the 404(c) Clean Water Act actions currently under review with the EPA.** As shown by the Pebble Mine project process, while timely action by administrative agencies is essential, it can also be insufficient to fully protect the irreplaceable wonders of the nation like the Bristol Bay watershed. State or federal legislative protections could ensure that the grandeur, way of life, and abundance of the Bristol Bay region is preserved for generations to come.



The House Committee on
Transportation & Infrastructure

"NO CURRENT PLANS..."

**Pebble LP, Sham Permitting, and False Testimony
Threatening the World's Largest Salmon Habitat**

OCTOBER 2022

Prepared for

Chair of the House Committee on Transportation and Infrastructure

PETER A. DEFAZIO

Chair of the Subcommittee on Water Resources and Environment

GRACE F. NAPOLITANO

By Majority Staff of the

HOUSE COMMITTEE ON

TRANSPORTATION AND INFRASTRUCTURE

APPENDIX I

“NO CURRENT PLANS...”

Pebble LP, Sham Permitting, and False Testimony Threatening the World’s Largest Salmon Habitat

House Committee on Transportation and Infrastructure

APPENDIX 1: Selected Records and Communications from Pebble Limited Partnership

-ENCLOSURES-

- Tom Collier email exchange with Ron Thiessen discussing Pebble LP permitting risks. Sent March 30-31, 2020 (PLP_HCTI0151910-912)
- Email exchange between Ron Thiessen and others with October 2019 “Pebble Development Alternatives” slide deck attached. Sent October 27, 2019 (PLP_HCTI0143018-049)
- Ron Thiessen email to investor with March 2019 “Pebble Development Alternatives” 2019 attached. Sent September 17, 2019 (PLP_HCTI0111469-498)
- Northern Dynasty email to investors including October 2019 “Pebble Development Alternatives” slide deck attached. Sent February 27, 2020 (PLP_HCTI0134981)
- Northern Dynasty employees emailing April 2019 Development Alternatives financial analysis with attached Excel spreadsheets. Sent February 26-27, 2020 (PLP_HCTI0140234-243)
- Tom Collier emailing Pebble LP employee regarding Pebble Development Alternatives. Sent September 26, 2019 (PLP_HCTI0141836)
- Tom Collier email exchange with Ron Thiessen discussing memorandum on Pebble Development Alternatives. Sent September 27, 2019 (PLP_HCTI0153169)
- Tom Collier email exchange with Pebble LP employee regarding details of Pebble Development Alternatives. Sent September 27, 2019 (PLP_HCTI0153363-364)
- Ron Thiessen email to investor explaining Pebble mine permitting evolution from Wardrop Report. Sent January 3, 2020 (PLP_HCTI0123627)
- Ron Thiessen email to investor including Wardrop Report to explain Pebble Mine development. Sent June 29, 2020 (PLP_HCTI0120461)
- Ron Thiessen email with potential investor discussion Pebble Mine future prospects. Sent September 12, 2019 (PLP_HCTI0112115)
- Ron Thiessen email with investors discussing Wardrop Report relevance to Pebble Mine development. Sent August 4-5, 2020 (PLP_HCTI0126323-324)

- Ron Thiessen email to new Northern Dynasty employee introducing Pebble Mine project with attached Wardrop Report. Sent August 5, 2020 (PLP_HCTI0119617-618)
- Email to Ron Thiessen discussing two publicly-mailed Pebble Mine brochures: “Pebble: A New Path Forward” and “Pebble: A Clear Path Forward.” Scans of each brochures included as email attachments. Sent November 10, 2019. (LP_HCTI0137312-354)
- Ron Thiessen email with Northern Dynasty employee discussing PolyMet permit case in Minnesota state court. Sent March 24, 2020 (PLP_HCTI0121493-494)
- Investor email exchange with Ron Thiessen and Northern Dynasty employee discussing future development of Pebble Mine. Sent Oct 10-16, 2019 (PLP_HCTI0137439-440)
- Ron Thiessen email exchange with potential investor discussing Pebble Mine Development. Sent March 12-April 2, 2020 (PLP_HCTI0121712-714)
- Ron Thiessen email with Northern Dynasty regarding Pebble Tapes. Sent September 22, 2020 (PLP_HCTI0115609)
- Ron Thiessen email exchange with Tom Collier, Pebble LP, and Northern Dynasty employees discussing media response to Pebble Tapes. Sent September 22, 2020 (PLP_HCTI0115635)

Message

From: Tom Collier [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=DB8A85DDDD0049FD8D85238493B197FB-TCOLLIER]
Sent: 3/31/2020 10:46:29 AM
To: Ron Thiessen [RonThiessen@hdimining.com]
Subject: Re: NORTHERN ROUTE

I'd like to break this down into separate pieces.

First, in my opinion, this is not a snake out of the hat. This is permitting in the US. There are constant curve balls. We staffed and planned to deal with curve balls. We can deal with this one. We need @ \$1.5m to do so. And then we can keep it on track. I believe a two week quarantine will allow this work to go forward. We have planned for that. But for the \$s, we can make this happen and stay on course for all three RODs simultaneously.

Second, we should have done the surveys for the northern route last season. We had them scheduled and budgeted. We removed them during one of our forced budget reductions. We calculated that they could be done quickly, if necessitated by a Northern Route LEDPA selection. That calculation was correct. We can get this done in time.

Third, I am absolutely confident we can get ROWs for the Northern Route. And, without breaking the bank. It will take a while, and may ultimately require the use and/or threat of eminent domain, although Pedro Bay may be one we can do quickly. It may not. And remember, we will now be saving the APC ROW payments.

Fourth, I am convinced that splitting off the ROD for the gas pipeline from the other two will have a very high likelihood of delaying our USACE CWA ROD until after the election. You cannot push an entire system to the extreme at every point and then say—oh, we have changed our mind, it really isn't that important to get it all done, we are not going to allocate the resources to make it all happen, but we want to keep the pressure on on these other parts—without the entire system reacting by understanding that the pressure is off. Depending on how the election goes that is either catastrophic for the project or inconsequential.

Fifth, I believe that even suggesting the possibility of a split off for any reason creates a serious risk that we cause the momentum we now have to dissipate and could well result in us not getting our ROD this year.

Sixth, I understand you believe we won't be able to get site visits in this year. We have until October. I think we could very well make that happen. Nevertheless, assuming we cannot, we are still going to need interim financing, maybe several interim financings. Is there anyway we can concentrate solely on that immediately—something outside the box—a current shareholder or something else?.

Seventh, it seems to me that not getting our ROD this year is a killer. I don't understand why we would put that at serious risk. A Democratic President, and us without a permit, we are toast.

I guess what I am saying is that we MUST get the RODs this year for the project to have any chance of financial viability. We have literally done magic against all odds to be on the cusp of getting those RODs this year—we are so close I can smell it. I believe postponing the gas pipeline ROD, or even hinting we might do so, puts the CWA ROD at risk for this year. That's a risk we should avoid at all cost.

I totally understand this is your decision. I will obviously do what you decide.

I just want to make sure you appreciate just how STRONGLY I think this is the wrong course of action.

And, I did not leave that board meeting thinking that the board understood we would be taking an action in just a few days that, in my opinion, would seriously put at risk our chances of getting a ROD this year. Of course, the board relationship is all in your court. You may have read the meeting differently.

As usual, nothing on Pebble is easy. I have a staff wide call at 10 your time, but that should give us plenty of time to talk. I look forward to your call around 9.

Good luck with your Europe call.

Sent from my iPad

On Mar 30, 2020, at 5:11 PM, Ron Thiessen <RonThiessen@hdimining.com> wrote:

Unfortunately they let a snake out of the hat. And like when the Administrator of the EPA reversed course and blind-sided us in Jan 2018; the same has happened again. We are going to have to make the argument that the technology and the people are not available and we have to make that happen. I believe the US will go to the no domestic travel in the coming days, latest next week (just read about people trying to get out of the urban centers into the rural areas), in which case we can't bring people to Alaska.

I think you need to talk to Hobbie, and let him know what the physical challenges are in trying to do this late change to the Northern Route. Because we put everything into the lake/south route based on what we understood or were told about LEDPA the sea bed surveys didn't happen for a realignment to the northern route.

And even if we were to get the funds, the people and equipment what is to say we don't run into another physical issue as we did on the current route. The board is of the belief that we will do everything we can to keep it on track, but that means I have to say there is a prospect of finding the money and right now that doesn't exist.

BMO and Treadstone are both of the view our process is functionally gone for 2020 and best for 2021, that is if there is something to process.

So I think you should explore the fact that we could very well find ourselves without equipment and crew for the marine surveys if they designate the northern route. Plus it isn't something we can do without access and right now Pedro Bay is on record with a no, as is Igigiuk.

The only way we get this is by putting a knife to our throats and giving the farm away on all fronts, and then we will have Covid -19 crater it all.

From: Tom Collier <tomcollier@pebblepartnership.com>

Date: Monday, March 30, 2020 at 3:36 PM

To: Ronald Thiessen <RonThiessen@hdimining.com>

Subject: Re: NORTHERN ROUTE

So, here we are. At what I think is the final crossroad.

I STRONGLY believe that raising permit separation with USACE will break the otherwise unstoppable momentum we have built for an August ROD. We have pushed three permit decisions together, we have argued to not do so means we will possibly be at the mercy of a new and quite negative administration

which will not, based on past practice like the preemptive veto, treat us fairly. We have taken this argument convincingly to the Gov, through him to the President, and to USACE, DOI, EPA, members of Congress, etc. For us to back away now, to show any possible sign that we might be reconsidering, I believe, will allow the entire house of cards to crumble. If we send the signal you are asking me to send, we run a very significant risk we will get no permit before the election.

I understand that there is no money out there. But, we just need to be able to find some way to get a few more million. I must admit I don't have any ideas. But, there must be some way.

I also suggest you consider, before I raise the issue with USACE as you suggested, informing the board. My sense of where they were was believing we would do everything possible to keep this on track.

My fear here is that by simply raising the issue with USACE we may be ending our chance to get a ROD before the election. We've done an incredible job building this momentum, it can dissipate so easily. It's like a large helium balloon ready to carry us over the line, unless I stick a hole in it by raising this issue.

Please reconsider. We need to commit about \$250k in April to keep on course. And, we may be able to reduce that amount. This gives us a month to try to find the additional funds.

Available to discuss, if you would like.

Sent from my iPad

On Mar 30, 2020, at 1:02 PM, Ron Thiessen <RonThiessen@hdimining.com> wrote:

(External)

I think you best start talking to the Corps about severing the NG pipeline from the ROD. Still no financing discussions and lock downs going to persist thru end of April. So the rationale is specialized equipment and people not available timely due to Covid 19. Even Trump is on board now. All of this is going to be with us for months! Canadian PM admitted it's likely 4-6 months.

Just as an example First Quantum market cap is down to \$2B from \$20B 6 months ago. The expectations are more down legs to come, especially in commodities. Freeport is the same and so is Teck.

On Mar 30, 2020, at 12:59 PM, Tom Collier <tomcollier@pebblepartnership.com> wrote:

We have additional information indicating that the Northern Route is likely to be the LEDPA and that we should have more complete information by Wednesday.

You had requested a briefing on the Northern Route details and issues for you, Mark, Bob and maybe Russ. Attached below is an outline for that briefing. Please let us know when you would like to schedule it.

Message

From: Simon Beller [SimonBeller@hdimining.com]
Sent: 2/18/2020 10:23:03 PM
To: Ron Thiessen [RonThiessen@hdimining.com]; Doug Allen [dougallen@northerndynasty.com]; Stephen Hodgson [stephenhodgson@pebblepartnership.com]; Greg Brooks [GregBrooks@hdimining.com]
Subject: FW: Ron/Simon - Strictly Confidential
Attachments: Alt cases presentation to RT.DA 191027.pdf; Alt cases presentation to RT.DA 191027.pptx

(External)

Hi Doug, re: your email for the most up to date confidential "booklet"... all I have is a copy of the "Pebble Development Alternatives" slide presentation - see attached and email below from October... please note:

- I'm not the registered owner of this presentation (group effort) but I do provide the financial results data for pages 16, 20 and 22 regarding the Base Case and Levered Cases results for the Permitting, Transition and Expanded Development Alternatives;
- There have been no changes to the model or assumptions in almost a year thus the financial results data is unchanged. Ron/Steve should confirm no changes to assumptions for the Alternatives;
- It is important to note that the terms of the recent ANC agreements are not reflected in these financial results. I'm unaware if the terms of the various agreements have been finalized and if a reasonable set of assumptions regarding consensus ANC financial participation has been made?
- Note the presentation is dated October 2019;

Don't hesitate to give me a ring if you need to discuss.

Cheers,
Simon

Simon Beller CPA, CBV Vice President Corporate Finance



Hunter Dickinson Inc. | 15th Floor 1040 W. Georgia St. Vancouver BC V6E 4H8 Canada
Dir +1.778.373.6772 T +1.604.684.6365 F +1.604.662.8956 TF 1.800.667.2114 C +1.604.218.4483
Email: SimonBeller@hdimining.com Web: hdimining.com

From: Simon Beller
Sent: October 27, 2019 8:15 PM
To: Doug Allen <dougallen@northerndynasty.com>
Cc: Ron Thiessen <RonThiessen@hdimining.com>
Subject: RE: Ron/Simon - Strictly Confidential

Doug, please see attached.

- FYI:
- This is the same presentation I sent to Ron in September, I just changed the cover date to October;
 - o In reality the data hasn't changed since the spring;
 - I'm not sure who takes ownership for this deck, I usually just check the #s for Steve occasionally which is a small portion of the slide content;
 - o For example, I don't have all the fonts that graphics uses to make this deck so when I update it and .pdf, it probably looks a little different (obviously not a big deal);

Kind regards,
S

Simon Beller CPA, CBV Vice President Corporate Finance



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Dir +1.778.373.6772 T +1.604.684.6365 F +1.604.662.8956 TF 1.800.667.2114 C +1.604.218.4483
Email: SimonBeller@hdimining.com Web: hdimining.com

From: Doug Allen
Sent: October 27, 2019 7:43 PM
To: Simon Beller <SimonBeller@hdimining.com>
Cc: Ron Thiessen <RonThiessen@hdimining.com>
Subject: Re: Ron/Simon - Strictly Confidential

Yes please.

Kind Regards,
Doug

On Oct 28, 2019, at 1:40 PM, Simon Beller <SimonBeller@hdimining.com> wrote:

Just got this Doug. Do u still need it?

Sent from my iPhone

On Oct 27, 2019, at 3:20 PM, Doug Allen <dougallen@northerndynasty.com> wrote:

Simon or Ron,

Hi. As you know Ron, Tom Collier and I are sitting down with BHP this afternoon in Melbourne.

Will one of you please send me the very latest "Strictly Confidential" slide deck. I'm concerned that the one I have in my briefcase "December 2018" is not the most current.

Thank you....Doug

Doug Allen Vice President | Corporate Communication

<image001.jpg>

Northern Dynasty Minerals Ltd. | 15th Floor - 1040 W. Georgia St. Vancouver BC V6E 4H1 Canada
Dir +1-778-373-6966 T +1-604-684-6365 TF 800-667-2114
E DougAllen@northerndynasty.com Web www.northerndynastyminerals.com

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THE PEBBLE PROJECT

The **Future** of U.S. Mining & Metals

Pebble Development Alternatives

Strictly Confidential

Subject to Confidentiality Agreement

October 2019



Northern Dynasty Minerals Ltd.



Cautionary & Forward Looking Information

This presentation includes "forward-looking statements". All statements in this presentation, other than statements of historical facts, that address exploration drilling, exploitation activities and events or developments that Northern Dynasty Minerals Ltd. ("NDM") expects are forward-looking statements. Although NDM believes the expectations expressed in its forward-looking statements are based on reasonable assumptions, such statements should not be in any way construed as guarantees of the ultimate size, quality or commercial feasibility of the Pebble Project or of NDM's future performance or the outcome of litigation. Assumptions used by NDM to develop forward-looking statements include the following: the Pebble Project will obtain all required environmental and other permits and all land use and other licenses, studies and development of the Pebble Project will continue to be positive, and no geological or technical problems will occur. The likelihood of future mining at the Pebble Project is subject to a large number of risks and will require achievement of a number of technical, economic and legal objectives, including obtaining necessary mining and construction permits, approvals, licenses and title on a timely basis and delays due to third party opposition, changes in government policies regarding mining and natural resource exploration and exploitation, the final outcome of any litigation, completion of pre-feasibility and final feasibility studies, preparation of all necessary engineering for surface or underground mining and processing facilities and receipt of significant additional financing to fund these objectives as well as funding mine construction. Such funding may not be available to NDM on acceptable terms or on any terms at all. There is no known ore at the Pebble Project and there is no assurance that the mineralization at the Pebble Project will ever be classified as ore. The need for compliance with extensive environmental and socio-economic rules and practices and the requirement for NDM to obtain government permitting can cause a delay or even abandonment of a mineral project. NDM is also subject to the specific risks inherent in the mining business as well as general economic and business conditions. For more information, Investors should review NDM's filings with the US Securities and Exchange Commission at www.edgar.com and its home jurisdiction filings available at www.sedar.com.

This presentation also uses the terms "measured resources", "indicated resources" and "inferred resources". Although these terms are recognized and required by Canadian regulations (under National Instrument 43-101 Standards of Disclosure for Mineral Projects), the U.S. Securities and Exchange Commission does not recognize them. Investors are cautioned not to assume that any part or all of the mineral deposits in these categories will ever be converted into reserves. In addition, "inferred resources" have a great amount of uncertainty as to their existence, and economic and legal feasibility. It cannot be assumed that all or any part of an Inferred Mineral Resource will ever be upgraded to a higher category. Under Canadian rules, estimates of Inferred Mineral Resources may not form the basis of feasibility or pre-feasibility studies, or economic studies except for a Preliminary Economic Assessment as defined under NI 43-101. Investors are cautioned not to assume that part or all of an inferred resource exists, or is economically or legally mineable.

The technical information contained in this presentation has been reviewed and approved by qualified persons who are not independent of NDM. Information on geology, drilling and exploration potential was reviewed by James Lang, PGeo., Mineral Resources by David Gaunt, PGeo., and engineering and metallurgy by Stephen Hodgson, PEng.

A major part of the 2007-2013 expenditures were on exploration, resource estimation, environmental data collection and technical studies, with a significant portion spent on engineering of possible mine development models, and related infrastructure, power and transportation systems. The mine-site and infrastructure studies completed are not necessarily representative of management's current understanding of the most likely development scenario for the Project and, accordingly, NDM is uncertain whether it can realize significant value from this prior work. Environmental baseline studies and data and geological and exploration information from the period remain important information to advance the Project.

In January 2018, the US Army Corps Of Engineers (the "Corps" or "USACE") confirmed that Pebble's 404 permitting application was complete and that an Environmental Impact Statement ("EIS") is required to comply with its National Environmental Policy Act ("NEPA") review of the Pebble Project. As the NEPA EIS process requires a comprehensive "alternatives assessment" be undertaken to consider a broad range of development alternatives, the final project design and operating parameters for the Pebble Project and associated infrastructure may vary significantly from that set out in the following. As a result, we will continue to consider various development options and no final project design has been selected at this time. As this process evolves, there may be temporary differences in what is shown in our disclosure and what is on the USACE website. Information about general economic effects/contribution of a development at Pebble to Alaska and the Lake and Borough Peninsula region should not be used to evaluate the Pebble Project's impact on Northern Dynasty.





PEBBLE OPTIONALITY

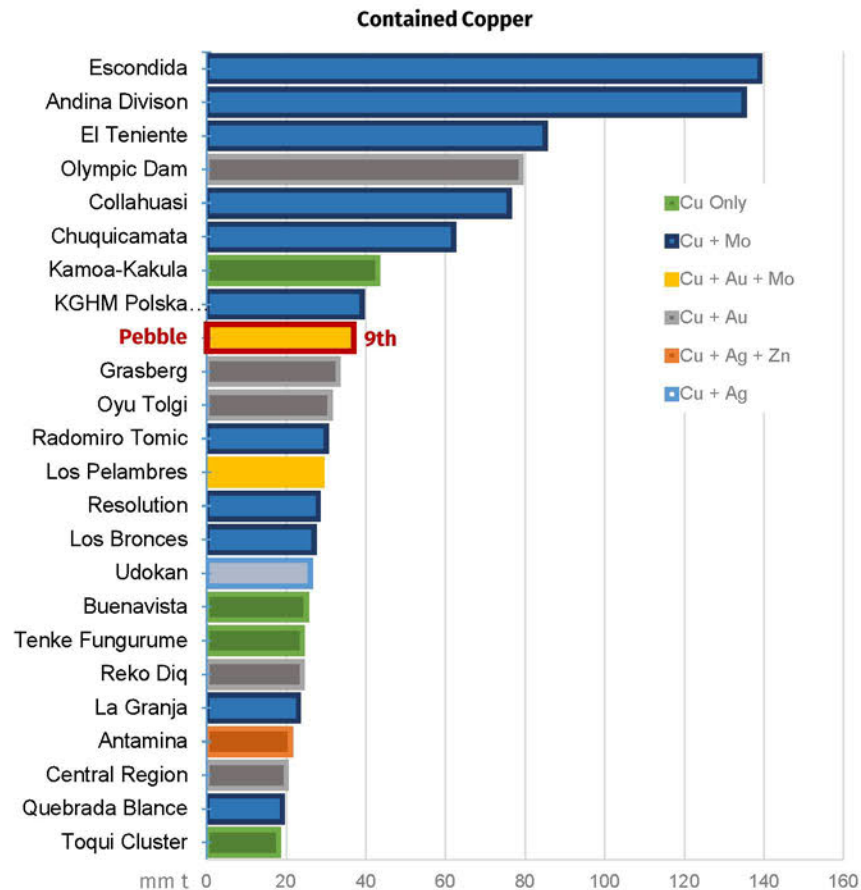
Pebble Provides Optionality

- **Unmatched scale**
- **Resource configuration**
- **Multi-metal values**
- **Exploration potential**
- **Underground development opportunity**

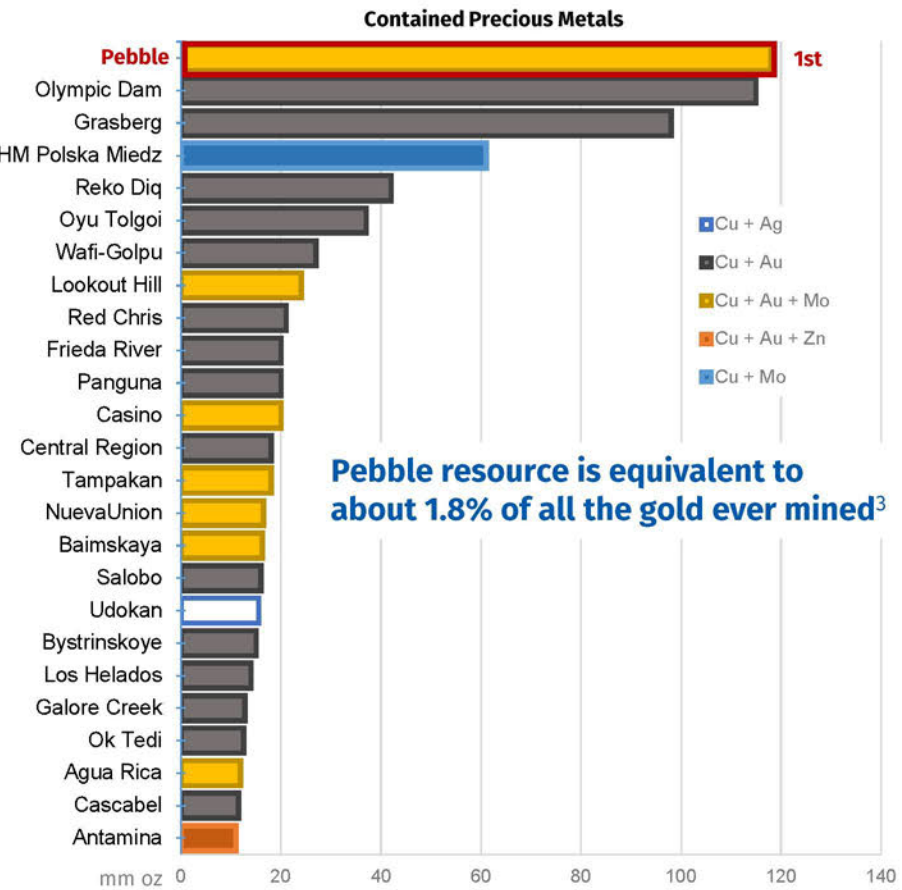


Unmatched Scale: Global Ranking of Porphyry Deposits¹ – Contained Copper and Contained Gold

Pebble is Large: A Globally Significant Undeveloped Copper *and* Gold Resource



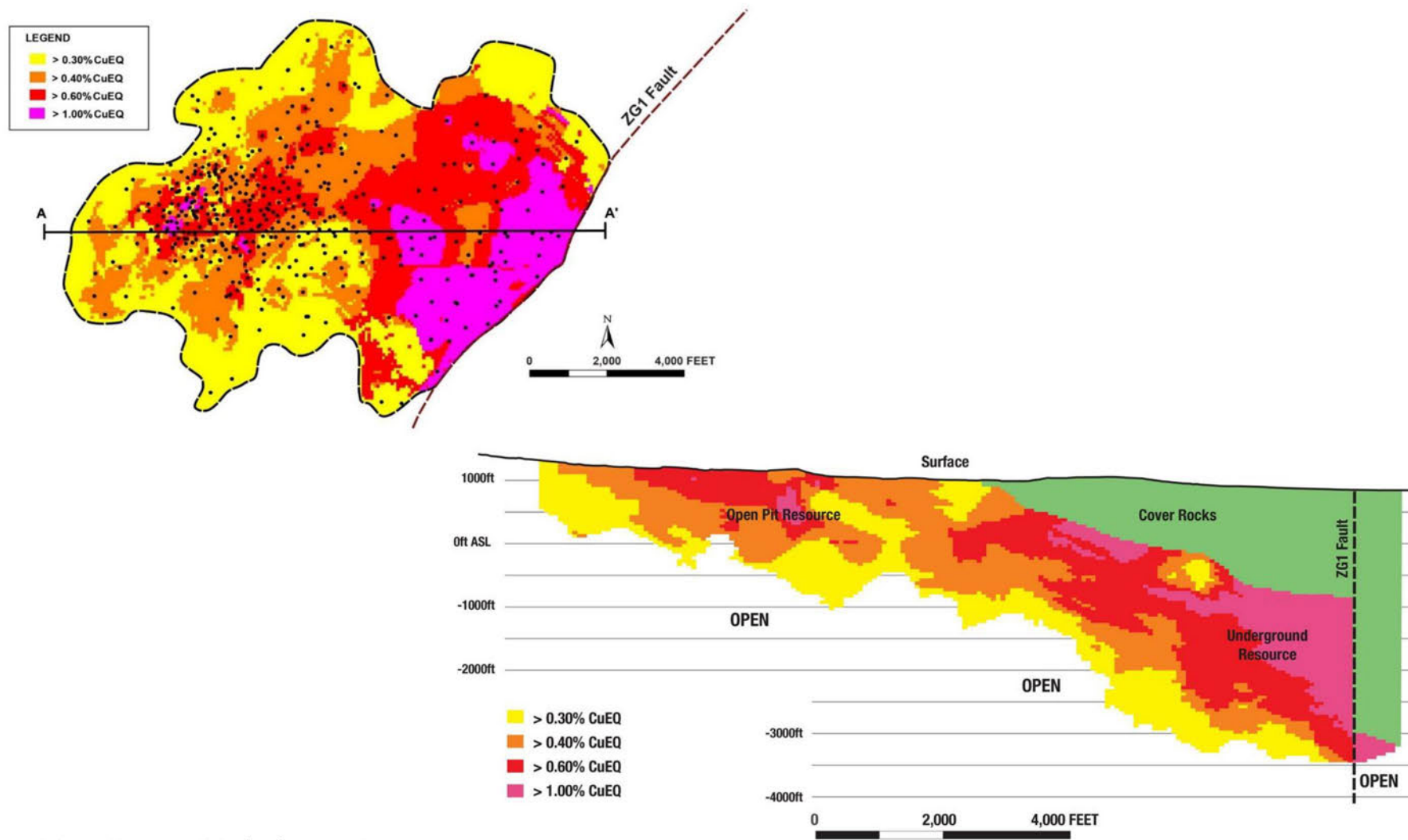
Source: Company filings, Metals Economics Group; BMO Capital Markets
 Note: Includes inferred resource.
 1. At 0.30% Cu Eq. cut-off.



**Pebble resource is equivalent to
about 1.8% of all the gold ever mined³**

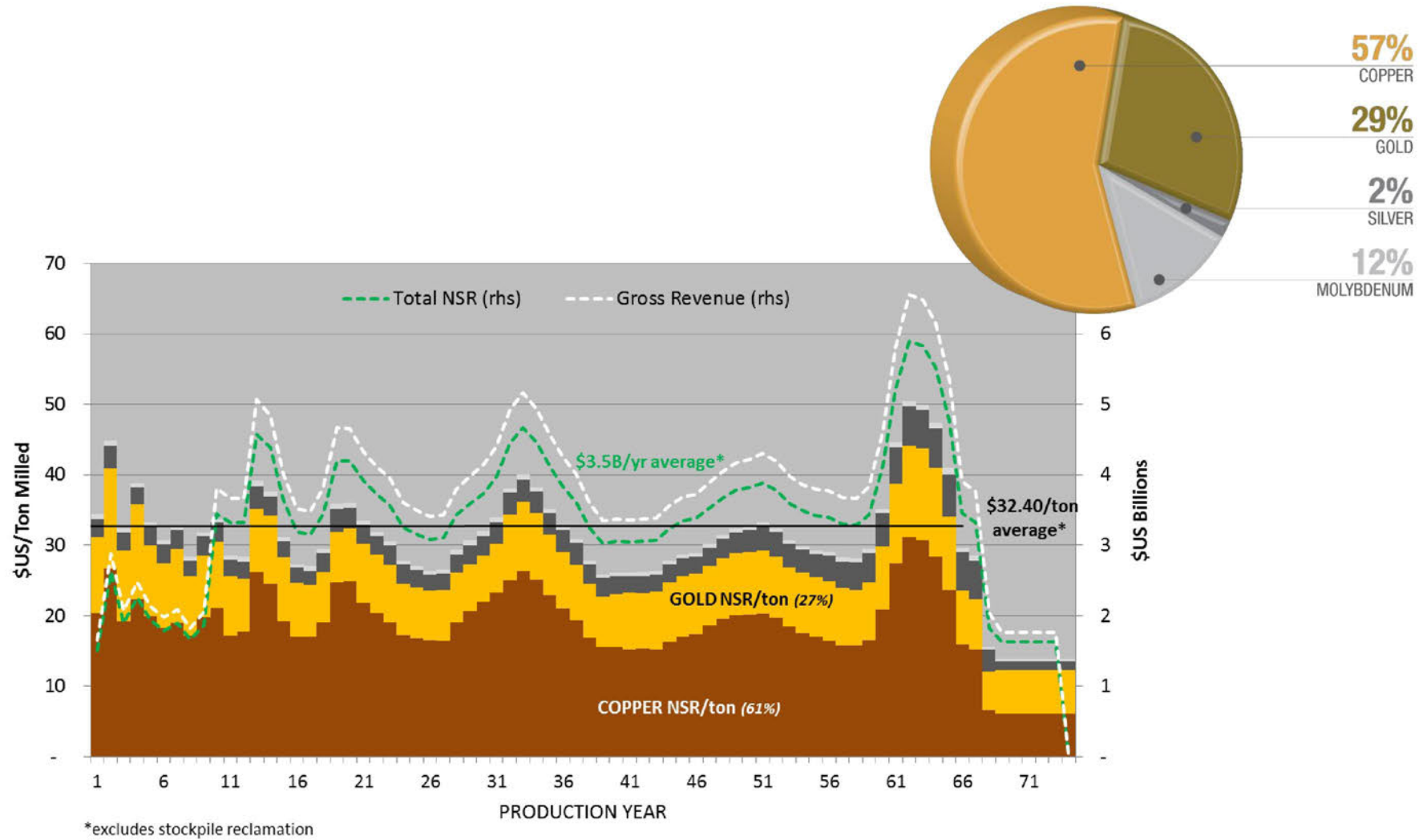
Source: Company filings, Metals Economics Group, street research; BMO Capital Markets
 Note: Includes inferred resource.
 1. Converted to Au Eq. at street consensus Au price of US\$1,300/oz and Ag price of US\$19.25/oz
 2. At 0.30% Cu Eq. cut-off.
 3. Source: World Gold Council (<https://www.gold.org/about-gold/facts-about-gold>) says that about 187,000 tonnes of gold have been mined since the beginning of civilization. Pebble resource represents 3,340 T (10,776,800,344 tonnes x 0.31 g/t = 3,340 T).

Resource Configuration Deposit Cross Section

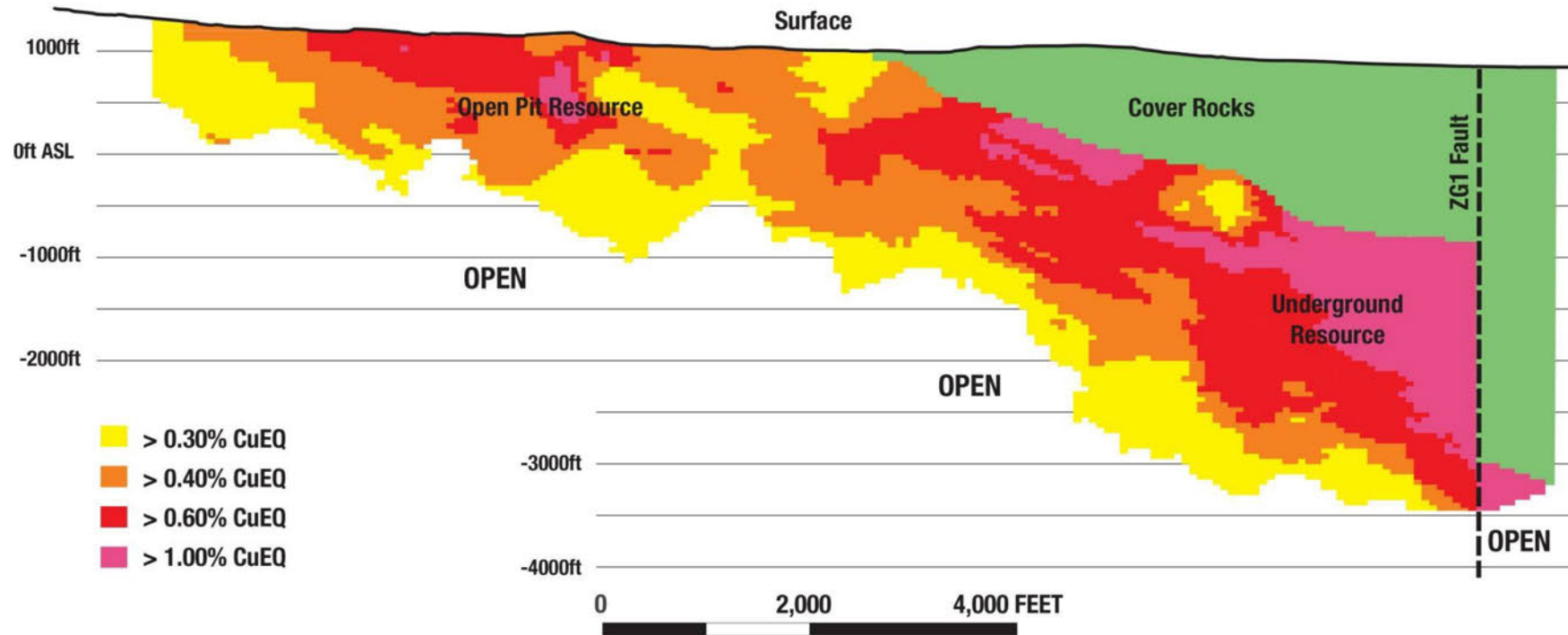


Note: Metal prices used for copper equivalent (CuEQ) are same as for resource

Multi-metal values Gross Revenue & NSR

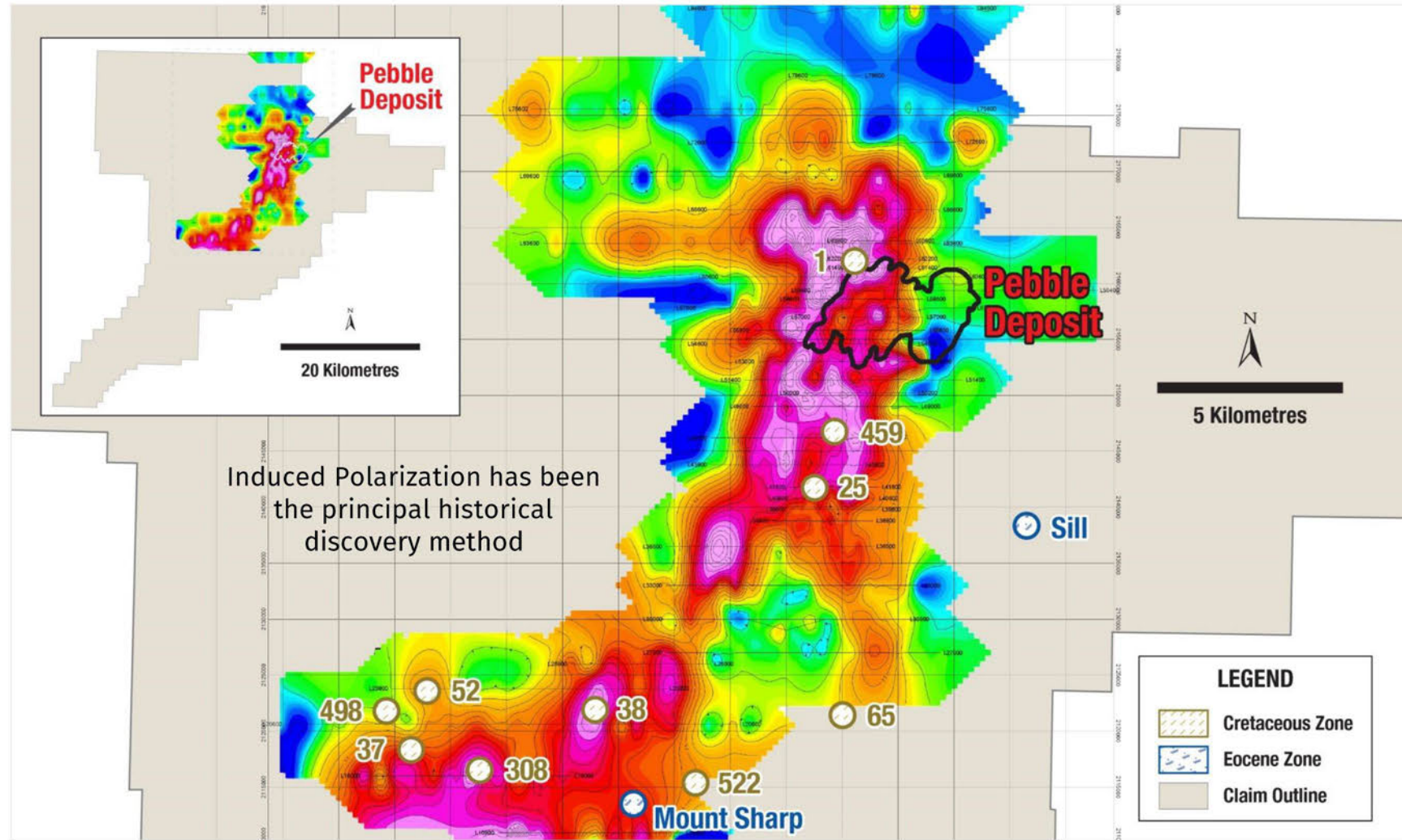


Cross-Section



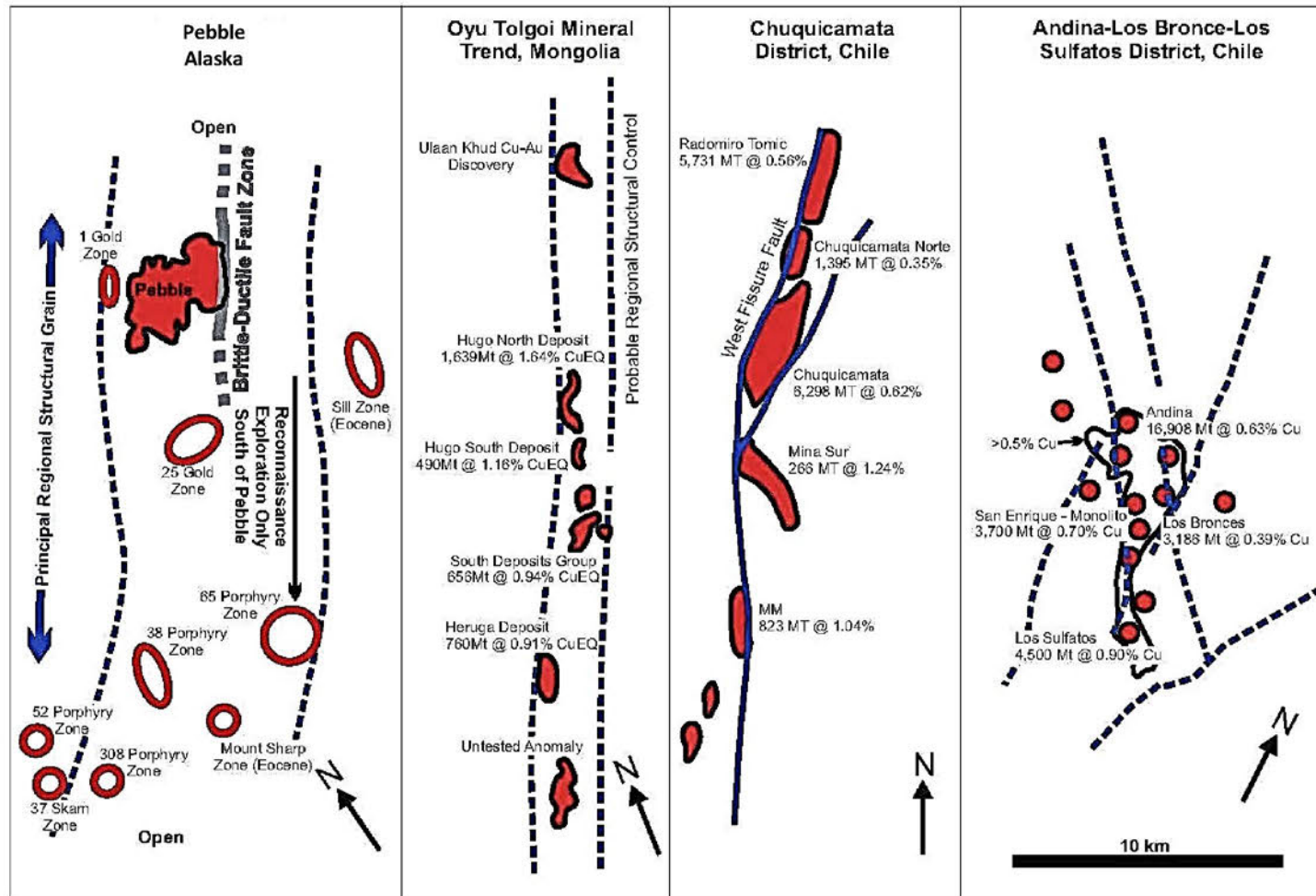
Note: Metal prices used for copper equivalent (CuEQ) are same as for resource (see page 32).

Exploration Potential Property-wide



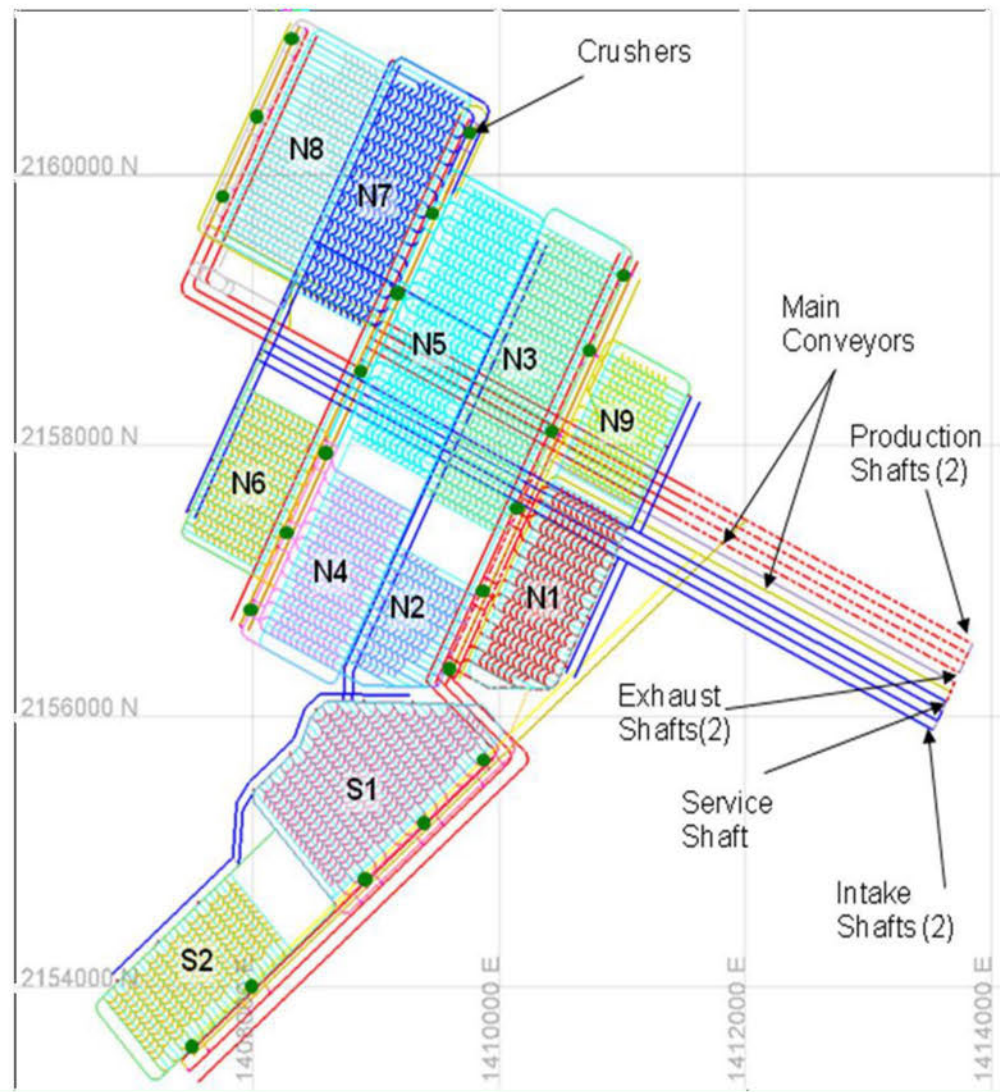
Exploration Potential Pebble May Host Other Major Deposits

- The extent of mineralization at Pebble is comparable to:
 - Oyu Tolgoi
 - Chuquicamata
 - Los Bronces/ Andina
- Exploration potential at deposit and within region is noteworthy



Each area is shown at the same scale

Underground Opportunity Possible Block Cave Layout





PERMITTING CASE

Permitting Case

- Developed case to respond to public concerns
- **Smaller project**
 - 1.3 billion tons milled, 0.1:1 strip ratio
 - No permanent waste dumps
 - No secondary gold recovery plant
 - Pyritic tails and PAG waste returned to the open pit
- **Processing**
 - 180,000 tpd (66 million tons/a)
 - Approximate annual Cu-Au concentrate production – 660,000 tons
 - Approximate annual Mo concentrate production – 16,000 tons
- **Infrastructure**
 - Road and lake ferry to Cook Inlet
 - Offshore lightering of concentrate to bulk carriers
 - Gas pipeline from Anchor Point (190 miles)
 - 270 megawatt gas fired power plant

Project Statistics

Mining

- 1.3 billion tons milled
- 0.29% Cu, 0.32 g/t Au, 154 ppm Mo (0.57% CuEq)
- 0.1:1 strip ratio

Costs

- Initial capex – \$5.2 billion
- Sustaining capex – \$0.9 billion (mining fleet, TSF)
- LOM average opex – \$7.29 /ton milled

Current metal prices

- Copper – \$3 /lb
- Gold – \$1300 /oz
- Molybdenum – \$12 /lb
- Silver – \$20 /oz

Permitting Case Financial Results

	BASE CASE	LEVERED CASE 1	LEVERED CASE 2	LEVERED CASE 3
Precious Metal Stream	No	Yes	No	Yes
Infrastructure Lease	No	No	Yes	Yes
Gold Plant	No	No	No	No
Pre-tax NPV(7) (\$US B)	2.95	2.99	2.96	2.99
Pre-tax IRR	13.1%	14.2%	15.7%	18.0%
Pre-tax Payback (yrs.)	5.8	5.4	5.0	4.4
Post-tax NPV(7) (\$US B)	1.73	1.79	1.95	2.00
Post-tax IRR	11.1%	12.0%	13.6%	15.7%
Post-tax Payback	6.1	5.6	5.3	4.6



PROJECT OPPORTUNITIES

Other Alternatives (Open Pit)

- Continuing to evaluate alternate plans to optimize value
 - Transition from Permitting Case
- **Transition Alternative**
 - Open pit extended to 3.1 billion tons
 - Mining rate increased to 386 million tons per year in Year 3
 - Secondary gold plant installed in Year 3
- **Expanded Alternative**
 - Open pit extended to 3.5 billion tons
 - Commence with Transition Alternative
 - Process plant expanded to 240,000 tons per day in Year 5
- **Ultimate Pit Alternative**
 - Similar to 2014 iPEA scenario
 - Would extend mine life to 80 plus years
 - Approximately 75% of the resource
 - Extend from Transition alternative

Transition Alternative

Mining / Milling

- 3.1 billion tons milled
 - 180,000 tons milled per day, 2.0:1 strip ratio
 - 0.51% Cu, 0.42 g/t Au, 231 ppm Mo (0.90% CuEq)
 - Stockpiling strategy
- Mining expanded to 386 million tons/a (maximum), gold plant in Year 3

Costs

- Initial capex – \$5.2 billion
- Sustaining capex – \$5.5 billion
- LOM average opex – \$12.14 /ton milled

Current metal prices

- Copper – \$3 /lb
- Gold – \$1300 /oz
- Molybdenum – \$12 /lb
- Silver – \$20 /oz

Transition Alternative Financial Results

	BASE CASE	LEVERED CASE 1	LEVERED CASE 2	LEVERED CASE 3
Precious Metal Stream	No	Yes	No	Yes
Infrastructure Lease	No	No	Yes	Yes
Gold Plant	Yes	Yes	Yes	Yes
Summary Metrics				
Pre-tax NPV(7) (\$US B)	9.47	9.59	9.48	9.58
Pre-tax IRR	16.3%	19.3%	19.3%	25.8%
Pre-tax Payback (yrs.)	5.9	4.8	5.0	3.6
Post-tax NPV(7) (\$US B)	6.17	6.36	6.47	6.65
Post-tax IRR	14.1%	16.8%	17.1%	23.3%
Post-tax Payback	6.2	5.0	5.3	3.8

Expanded Alternative

Mining / Milling

- 3.5 billion tons milled
 - 180,000 tons milled per day, expansion to 240,000 milled tons per day in Year 4
 - 0.49% Cu, 0.42 g/t Au, 222 ppm Mo (0.88% CuEq), 2.0:1 strip ratio
- Mining expanded to 386 million tons/a (maximum), gold plant in Year 3

Costs

- Initial capex – \$5.2 billion
- Sustaining capex – \$6.1 billion
- LOM average opex – \$11.48 /ton milled

Current metal prices

- Copper – \$3 /lb
- Gold – \$1300 /oz
- Molybdenum – \$12 /lb
- Silver – \$20 /oz

Expanded Alternative Financial Results

	BASE CASE	LEVERED CASE 1	LEVERED CASE 2	LEVERED CASE 3
Precious Metal Stream	No	Yes	No	Yes
Infrastructure Lease	No	No	Yes	Yes
Gold Plant	Yes	Yes	Yes	Yes
Pre-tax NPV(7) (\$US B)	11.37	11.51	11.37	11.51
Pre-tax IRR	17.5%	21.4%	20.8%	29.4%
Pre-tax Payback (yrs.)	5.5	4.5	4.8	3.7
Post-tax NPV(7) (\$US B)	7.41	7.64	7.74	7.96
Post-tax IRR	15.0%	18.6%	18.3%	26.6%
Post-tax Payback	5.9	4.7	5.0	3.8

2014 iPEA

Mining / Milling

- 8.0 billion tons milled
 - Initial 160,000 tons milled per day, expansion to 320,000 tons milled in Year 10
 - 0.41% Cu, 0.32 g/t Au, 224 ppm Mo (0.73% CuEq)
 - 1.9:1 strip ratio

Costs

- Initial capex – \$5.5 billion
- Sustaining capex – \$12.3 billion
- LOM average opex – \$12.19 /ton milled

iPEA metal prices

- Copper – \$3.00 /lb
- Gold – \$1250 /oz
- Molybdenum – \$12.00 /lb
- Silver – \$20 /oz

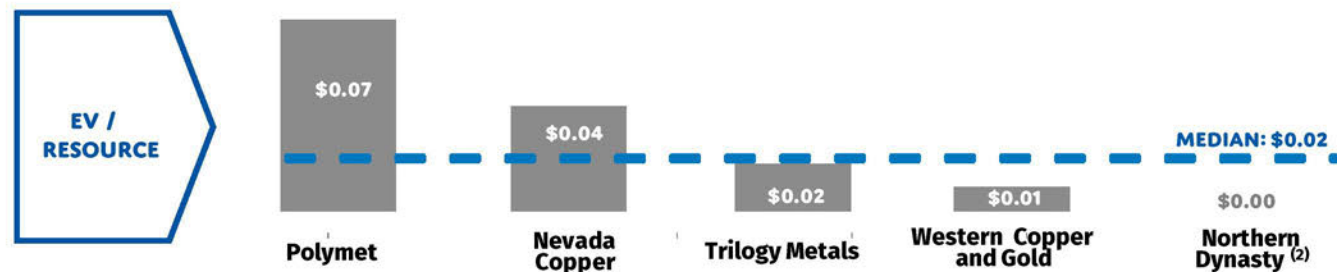
Financial results (post tax)

- Metal streaming, infrastructure lease
- NPV₇ – \$7.0 billion
- IRR – 20.8%
- Payback – 3.8 years

Other Alternatives (Underground)

- Block caving studied extensively prior to 2011
 - Case assessed in 2010/11
 - Significantly reduced footprint
- Incorporated as an option in the 2011 PEA
- 150,000 tons mined and milled per day
 - Draw level at approximately 3500 ft below surface
 - 1.5 billion tons mined over 35 year mine life
 - 0.62% Cu, 0.38 g/t Au, 287 ppm Mo (1.0% CuEq)
 - At least one additional level in existing resource
 - Likely additional opportunity east of graben fault

Comparable Companies¹



	Polymet	Nevada Copper	Trilogy Metals	Western Copper and Gold	Northern Dynasty ⁽²⁾
Primary Project	Northmet	Pumpkin Hollow	Arctic	Casino	Pebble
Location	United States	United States	United States	Canada	United States
Status	Feasibility	Permitted	Pre-Feasibility	Feasibility	Pre-Feasibility

Financial Metrics⁽³⁾

		Polymet	Nevada Copper	Trilogy Metals	Western Copper and Gold	Northern Dynasty ⁽²⁾
Market Cap	(US\$ mm)	\$248	\$228	\$193	\$97	\$179
Enterprise Value	(US\$ mm)	\$404	\$281	\$161	\$94	\$143

Life of Mine Operational Metrics (Primary Asset)

		Polymet	Nevada Copper	Trilogy Metals	Western Copper and Gold	Northern Dynasty ⁽²⁾
Mine Life	(Years)	20	14	12	22	78
Avg. Annual Production	(kt Cu)	26	23	72	78	311
C1-Cash Cost (net of by-product)	(US\$/lb)	\$0.59	\$1.69	\$0.15	(\$0.81)	\$0.21
Capex Intensity	(US\$ / mm lb Cu)	\$1.04	\$0.26	\$0.41	\$0.68	\$0.09
IRR (After-tax)	(%)	10%	25%	33%	20%	16%
NPV (After-tax)	(US\$ mm)	\$271	\$301	\$1,413	\$1,830	\$2,650
Discount Rate	(%)	7.00%	5.00%	8.00%	8.00%	7.00%
Copper Price	(US\$/lb)	\$3.22	\$3.20	\$3.00	\$3.16	\$2.50

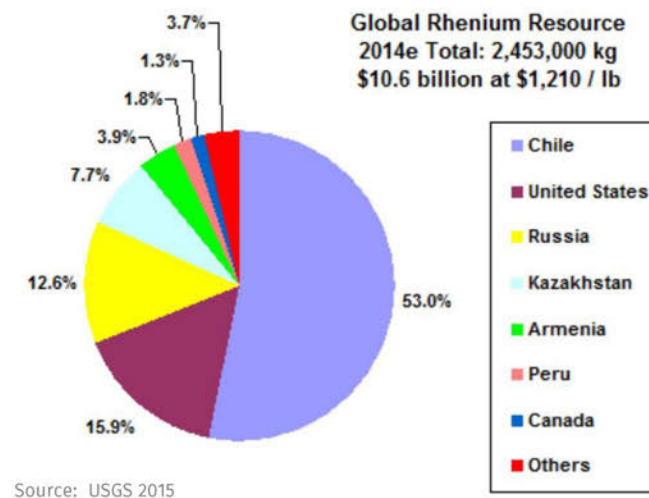
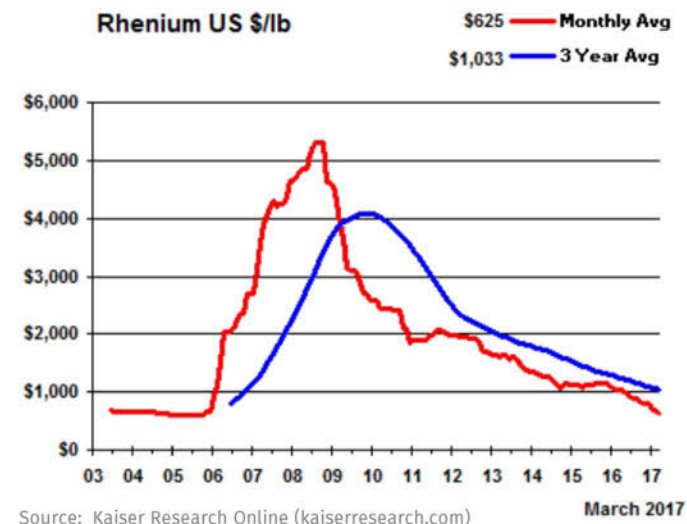
1. Source BMO Capital Markets

2. Based on LT consensus commodity prices of: copper (US\$2.50/lb), gold (US\$1,050/oz), molybdenum (US\$13.50/lb), and silver (US\$15.00/oz).

3. Market data as at June 6, 2018.

Pebble Deposit Has Rhenium

- Rhenium has been declared a strategic metal by the US Government
 - Its various uses include alloys for jet engines
- Rhenium is present in the Pebble deposit
- Significant number of assays through the resource data base
- Reports to the Molybdenum (Mo) concentrate in high quantities
 - Measured as high as 1100 ppm
- Presence should add value and marketability to the Mo concentrate



Governor Mike Dunleavy

A Changing Political Landscape in Alaska

- Alaska Governor-elect Dunleavy gave a speech at the annual Alaska Mining Association Conference on November 8.
- Very positive that he chose the AMA for his first post-election major speech. While it is sometimes very grainy, we consider the speech compelling listening. The messages are very positive.
https://m.facebook.com/story.php?story_fbid=419285398906112&id=132855062510
- Amongst his speech content:
 - A opening standing ovation from the audience
 - A well-deserved shout-out to **John Shively** (former Chief Commercial Officer of NANA Regional Native Corp – Teck partner at Red Dog Mine. **Current Chairman of PLP**) for his work at Red Dog
 - “Alaska is open for business”
 - “We could not have won this election without you folks”
 - “I want more Red Dog’s, more Pogo’s, and more Kensington’s”.
 - If Alaska opens just one new mine the mine would produce what the previous admin was wanting to take away from you in taxes
 - “I’m excited about the jobs”
 - “You’re going to have to put on your seat belts because this is not going to be a slow crawl”
 - “We’re going to be working with the industry across the board”
 - “That attitude is going to be, ‘how can we make this happen?’”
 - “My pledge to you, you’re going to have a partner that wants to create jobs and opportunities for all Alaskans”
 - **“We are not going to politicize the permitting process”.**
 - “We have the best environmental regulations on the planet”



Mike Dunleavy 2013 Op-ed¹: “Anglo American Backing Out of Pebble Should be a Wake-Up Call for Alaska”

ANCHORAGE DAILY NEWS

Anglo American backing out of Pebble should be a wake-up call for Alaska

✍ Author: Mike Dunleavy ◉ Updated: June 29, 2016 📅 Published September 27, 2013

Most Alaskans strive to grow and prosper and welcome those willing and able to invest their expertise and resources towards development of our state resources. Over the years, Alaska has developed permitting requirements that must be met before any project is allowed to proceed. Those decisions are based upon the data and science submitted to the state that allows it to then judge whether the project meets the pre-determined standards. This protects the state and provides predictability and stability for the investors.

If this permitting process is not allowed to occur, politics replaces science and an unpredictable investment environment results. Alaska will then deservedly gain a reputation in the international marketplace as a risky long-term investment.

On Sept. 16, Anglo American, the major international financial investor, announced it was withdrawing from Pebble leaving behind a huge investment and a consensus world-class mining prospect. This should raise major concerns for Alaskans.

In Alaska, in addition to the thousands of support service jobs, Pebble is anticipated to directly create 3,000 new Alaskan operational jobs each paying in excess of \$100,000 annually.

This is high scale family-wage employment, which is exactly what is needed in Alaska. Preliminary estimates are that the Pebble deposits may very well sustain decades of mining operations and may continue for the next 100 years.

To be perfectly clear, Alaska has neither endorsed nor opposed the Pebble project, nor should we until we have all of the facts, but the facts will only surface through data gathered through the permitting process. We have successfully attracted several large-scale resource projects in the past that have added greatly to the private sector of Alaska's economy. Every one of these projects was allowed to, and required to, submit its project through our comprehensive permitting process. Why should the Pebble prospect not proceed through the same scientific process?

What will Alaskans lose if that permitting process is not pursued? (1) Alaska will lose extremely valuable scientific data that would have been required during permitting and which would be of great importance to comparable future projects; (2) large-scale investors will definitely take notice and will factor this uncertainty into their initial assessment on whether Alaska provides a stable attractive investment atmosphere that bases its long-term

1. <https://www.adn.com/commentary/article/anglo-american-backing-out-pebble-should-be-wake-call-alaska/2013/09/28/>

decisions on facts rather than media advertising blitzes, personalities or politics; and (3) without any scientific or economic analysis, the State will not even be in consideration for the jobs and development that this major Pebble project may have brought to us.

One of the main reasons stated by Anglo American for withdrawing from Alaska is for them "to reduce the capital required to sustain such project during the pre-approval phases of development." Yet, the company feels compelled to walk away from over \$541 million that they have already invested into this Pebble project! I am afraid Alaska has sent the wrong message and Anglo American's response has been just as clear.

We either honor and trust our permitting system or rely upon the whim of the day. If I am asked to make an important policy decision such as Pebble, I would base that decision on science and facts rather than rely upon innuendo, mass-media advertising or political posturing.

What is surprising is the major labor and business organizations of Alaska are not speaking up. If Alaskans truly want to diversify our economy and quit relying solely upon the petroleum industry and government for creation of jobs, we need to create and maintain a healthy climate for attracting capital investments. A stable, transparent, coherent permitting process is the cornerstone of such a climate.

No one, including myself, wants to jeopardize our world-class fishery, but in order to truly understand the impact on this treasured fishery, science is essential to guide us. If we believe there are ways to improve the permitting process, then we should implement such improvements. However, Alaskans should not be afraid, and should insist that our permitting process not be short-circuited. Our economic future, and that of Alaska, will depend upon it.

Mike Dunleavy is an Alaska state senator representing the Matanuska-Susitna Valley as a Republican.

The views expressed here are the writer's own and are not necessarily endorsed by Alaska Dispatch, which welcomes a broad range of viewpoints. To submit a piece for consideration, e-mail [commentary\(at\)alaskadispatch.com](mailto:commentary(at)alaskadispatch.com).

Websites

www.northerndynastyminerals.com

www.pebblepartnership.com

www.pebbleresearch.com



Contact Information

General Office

15th Floor

1040 W. Georgia Street

Vancouver, BC

Canada V6E 4H1

Investor Relations

info@northerndynasty.com

Tel: 604.684.6365

TF: 800.667.2114



3201 C Street, Suite 505

Anchorage, AK 99503

Phone: (907) 339-2600

Fax: (907) 339-2601

Northern Dynasty Minerals Ltd.

The **Future** of U.S. Mining & Metals

Message

From: Ron Thiessen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=952FB143BD9C47F88914E612C9C0A02E-RON THIESSE]
Sent: 9/17/2019 10:53:00 PM
To: [REDACTED]
Subject: Re: Strictly Confidential
Attachments: NDMAIt cases presentation 15-07-07.update190425.sb.pdf.pdf

Forgot the attachment! Here it is.

On Sep 17, 2019, at 4:50 PM, Ron Thiessen <RonThiessen@hdimining.com> wrote:

Norman

Attached is a presentation which sets out project economics for 3 principal scenario's:

1. Permitting Case
2. Extended Mine Life Case
3. Expanded Mill and Mine Life case.

I think the title page in each instance provides a good summary of what the various metrics are in relation to the "alternative case" being studied. In each instance there is also a page with a matrix of economic outcomes on it, Pre-tax and Post-tax NAV IRR and payback, plus 4 scenarios labeled Base Case and Levered case 1, 2 and 3. Base case is as implied no leverage, and in the Permitting case no secondary recovery gold plant. We have not included a gold plant in the Permitting base case scenario due to the desire to remove consideration of cyanide as a luxuriant. We do believe that there will be alternative luxiviants in the near future which would allow a secondary gold plant, which will then increase gold recoveries by 10%. Hopefully these economic analysis tables/matrices are self explanatory.

I think the most important element is that we get through permitting with the Permitting case and then once we have a track record of responsible profitable for all operations we can undertake the alternatives. The Extended Mine Life case would see to be the easiest as all we are doing is adding already existing mineral reserves to the mine plant, undertaking "mine cutoff strategy" which will stock pile low grade material for future processing, and adding to the mining (shovel and truck) equipment to account for the increase in mining volumes.

The question is what kind of permitting is contemplated for these changes, and they range from state level authorizations to supplemental EIS. If the low grade stock piles are to be deposited on jurisdictional wet lands then that is likely the supplemental EIS process.

Tom Collier CEO Pebble LP (Alaska based permitting team) is a lawyer by profession and permitting specialist; he has and extensive career in resource permitting and development, he was the principal external permitting legal advisor to Conoco Phillips and Anadarko on their Alaska permitting initiatives, he was also the Chief of Staff of the Dept. of Interior under Clinton/Gore/Babbit. So he has experience on both sides.

Again I'd be pleased to respond to any questions you have or discuss the materials at your convenience.

Regards

Ron

THE PEBBLE PROJECT

The **Future** of U.S. Mining & Metals

Pebble Development Alternatives

Strictly Confidential

Subject to Confidentiality Agreement

March 2019



Northern Dynasty Minerals Ltd.



Cautionary & Forward Looking Information

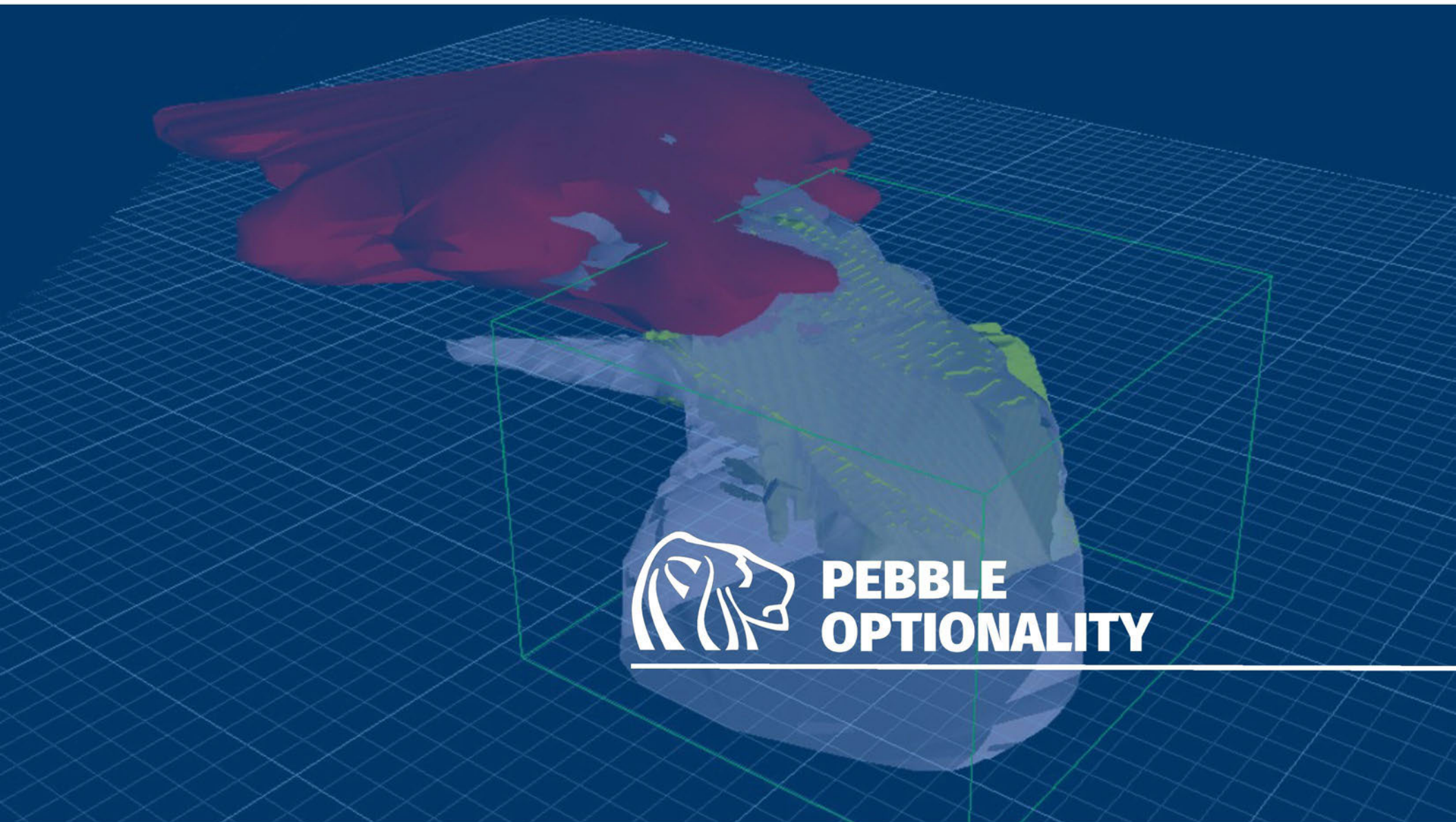
This presentation includes "forward-looking statements". All statements in this presentation, other than statements of historical facts, that address exploration drilling, exploitation activities and events or developments that Northern Dynasty Minerals Ltd. ("NDM") expects are forward-looking statements. Although NDM believes the expectations expressed in its forward-looking statements are based on reasonable assumptions, such statements should not be in any way construed as guarantees of the ultimate size, quality or commercial feasibility of the Pebble Project or of NDM's future performance or the outcome of litigation. Assumptions used by NDM to develop forward-looking statements include the following: the Pebble Project will obtain all required environmental and other permits and all land use and other licenses, studies and development of the Pebble Project will continue to be positive, and no geological or technical problems will occur. The likelihood of future mining at the Pebble Project is subject to a large number of risks and will require achievement of a number of technical, economic and legal objectives, including obtaining necessary mining and construction permits, approvals, licenses and title on a timely basis and delays due to third party opposition, changes in government policies regarding mining and natural resource exploration and exploitation, the final outcome of any litigation, completion of pre-feasibility and final feasibility studies, preparation of all necessary engineering for surface or underground mining and processing facilities and receipt of significant additional financing to fund these objectives as well as funding mine construction. Such funding may not be available to NDM on acceptable terms or on any terms at all. There is no known ore at the Pebble Project and there is no assurance that the mineralization at the Pebble Project will ever be classified as ore. The need for compliance with extensive environmental and socio-economic rules and practices and the requirement for NDM to obtain government permitting can cause a delay or even abandonment of a mineral project. NDM is also subject to the specific risks inherent in the mining business as well as general economic and business conditions. For more information, Investors should review NDM's filings with the US Securities and Exchange Commission at www.edgar.com and its home jurisdiction filings available at www.sedar.com.

This presentation also uses the terms "measured resources", "indicated resources" and "inferred resources". Although these terms are recognized and required by Canadian regulations (under National Instrument 43-101 Standards of Disclosure for Mineral Projects), the U.S. Securities and Exchange Commission does not recognize them. Investors are cautioned not to assume that any part or all of the mineral deposits in these categories will ever be converted into reserves. In addition, "inferred resources" have a great amount of uncertainty as to their existence, and economic and legal feasibility. It cannot be assumed that all or any part of an Inferred Mineral Resource will ever be upgraded to a higher category. Under Canadian rules, estimates of Inferred Mineral Resources may not form the basis of feasibility or pre-feasibility studies, or economic studies except for a Preliminary Economic Assessment as defined under NI 43-101. Investors are cautioned not to assume that part or all of an inferred resource exists, or is economically or legally mineable.

The technical information contained in this presentation has been reviewed and approved by qualified persons who are not independent of NDM. Information on geology, drilling and exploration potential was reviewed by James Lang, PGeo., Mineral Resources by David Gaunt, PGeo., and engineering and metallurgy by Stephen Hodgson, PEng.

A major part of the 2007-2013 expenditures were on exploration, resource estimation, environmental data collection and technical studies, with a significant portion spent on engineering of possible mine development models, and related infrastructure, power and transportation systems. The mine-site and infrastructure studies completed are not necessarily representative of management's current understanding of the most likely development scenario for the Project and, accordingly, NDM is uncertain whether it can realize significant value from this prior work. Environmental baseline studies and data and geological and exploration information from the period remain important information to advance the Project.

In January 2018, the US Army Corps Of Engineers (the "Corps" or "USACE") confirmed that Pebble's 404 permitting application was complete and that an Environmental Impact Statement ("EIS") is required to comply with its National Environmental Policy Act ("NEPA") review of the Pebble Project. As the NEPA EIS process requires a comprehensive "alternatives assessment" be undertaken to consider a broad range of development alternatives, the final project design and operating parameters for the Pebble Project and associated infrastructure may vary significantly from that set out in the following. As a result, we will continue to consider various development options and no final project design has been selected at this time. As this process evolves, there may be temporary differences in what is shown in our disclosure and what is on the USACE website. Information about general economic effects/contribution of a development at Pebble to Alaska and the Lake and Borough Peninsula region should not be used to evaluate the Pebble Project's impact on Northern Dynasty.



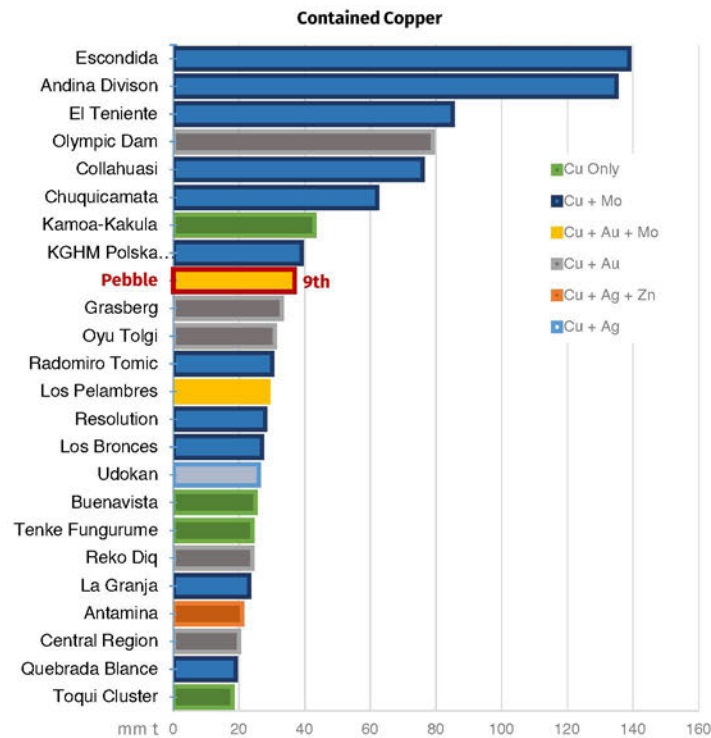
**PEBBLE
OPTIONALITY**

Pebble Provides Optionality

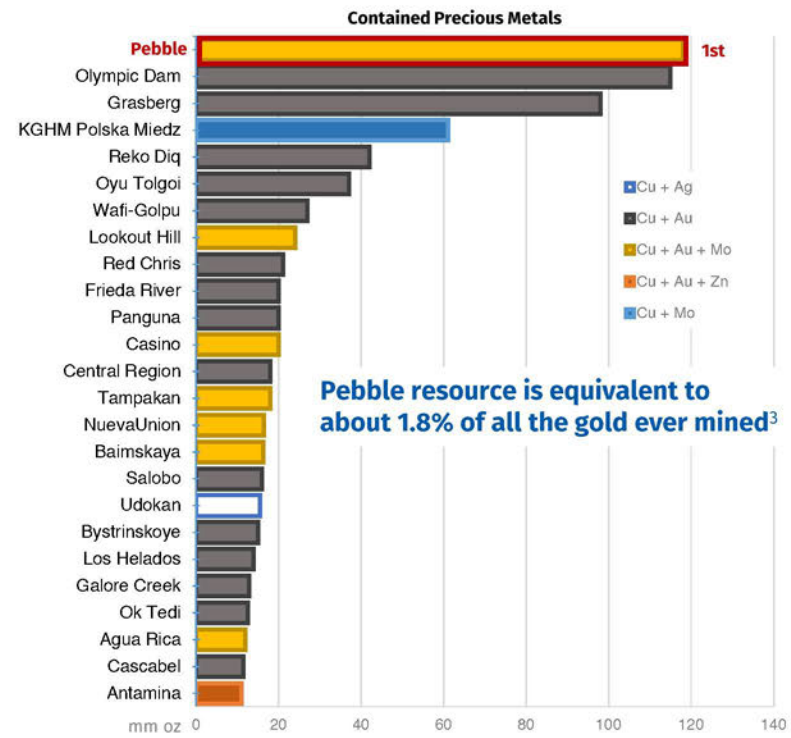
- **Unmatched scale**
- **Resource configuration**
- **Multi-metal values**
- **Exploration potential**
- **Underground development opportunity**

Unmatched Scale: Global Ranking of Porphyry Deposits¹ – Contained Copper and Contained Gold

Pebble is Large: A Globally Significant Undeveloped Copper *and* Gold Resource



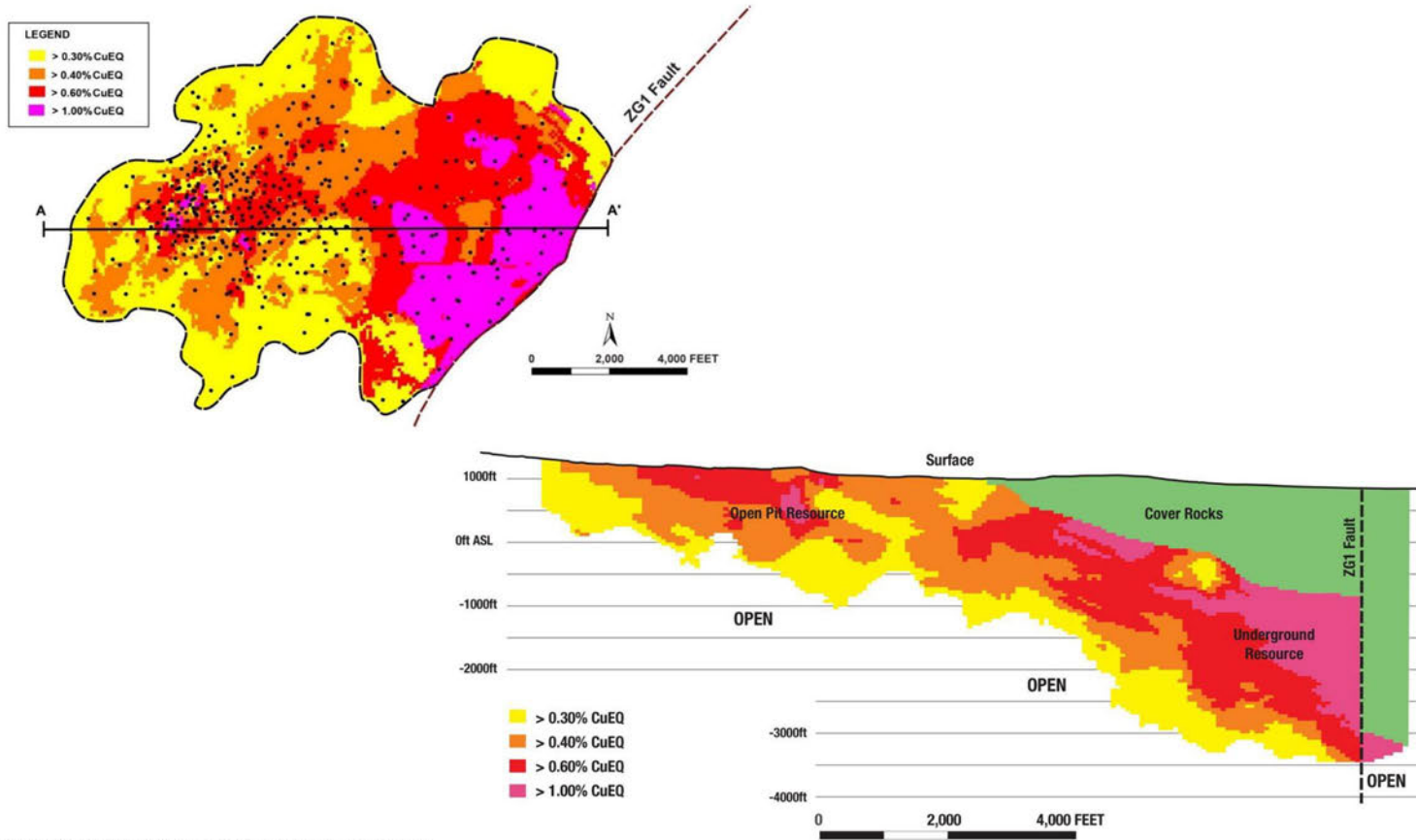
Source: Company filings, Metals Economics Group; BMO Capital Markets
 Note: Includes inferred resource.
 1. At 0.30% Cu Eq. cut-off.



Pebble resource is equivalent to about 1.8% of all the gold ever mined³

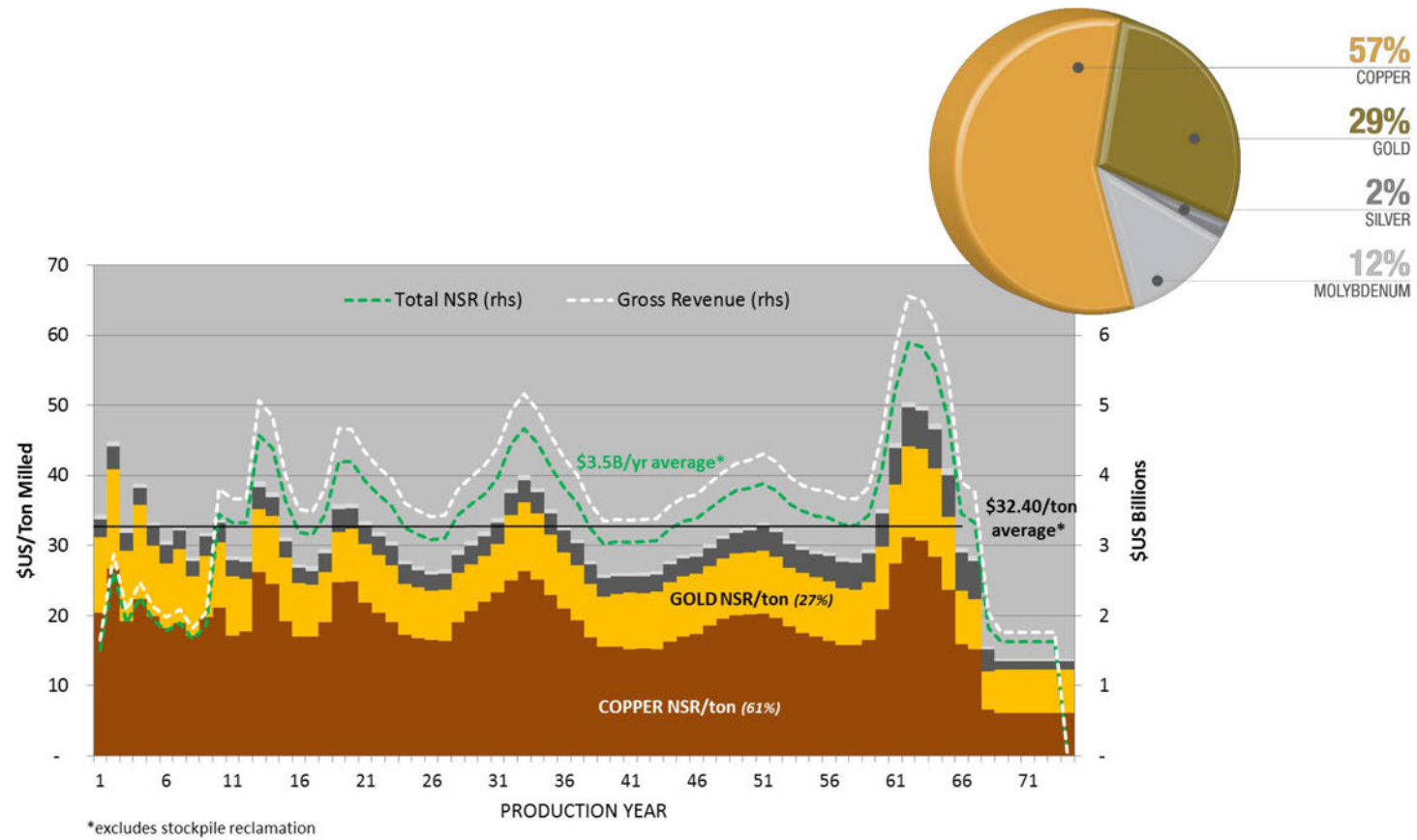
Source: Company filings, Metals Economics Group, street research; BMO Capital Markets
 Note: Includes inferred resource.
 1. Converted to Au Eq. at street consensus Au price of US\$1,300/oz and Ag price of US\$19.25/oz
 2. At 0.30% Cu Eq. cut-off.
 3. Source: World Gold Council (<https://www.gold.org/about-gold/facts-about-gold>) says that about 187,000 tonnes of gold have been mined since the beginning of civilization. Pebble resource represents 3,340 T (10,776,800,344 tonnes x 0.31 g/t = 3,340 T).

Resource Configuration Deposit Cross Section



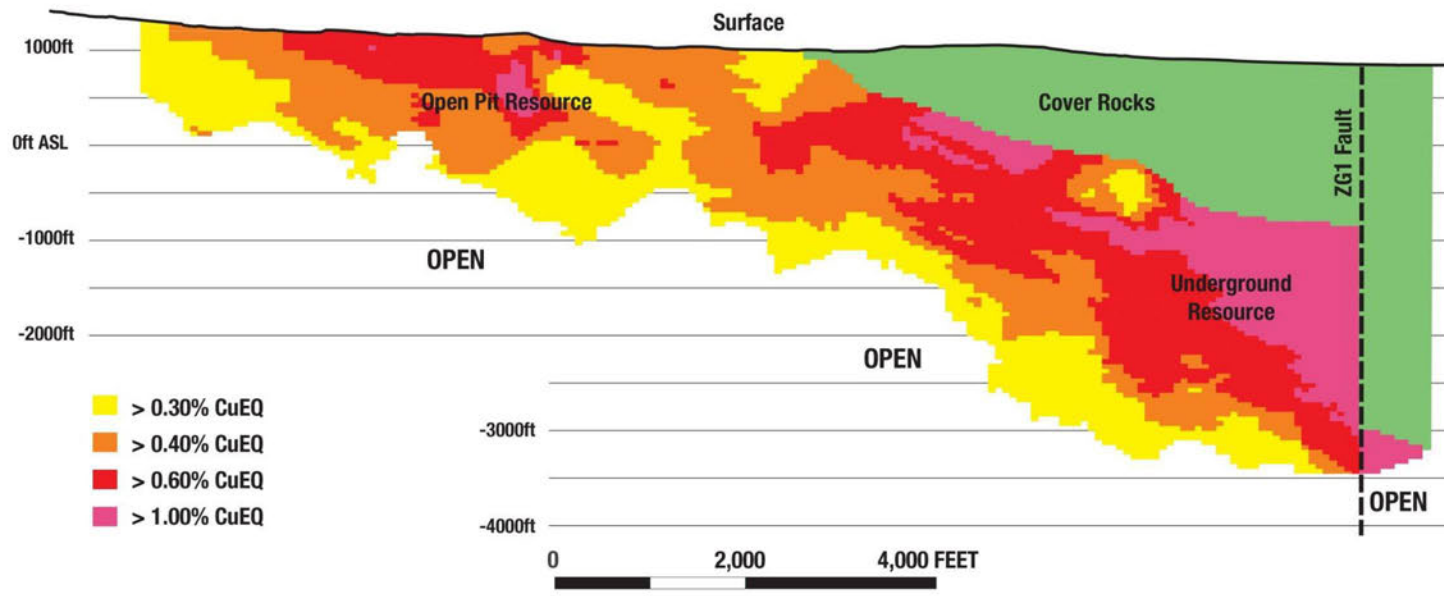
Note: Metal prices used for copper equivalent (CuEQ) are same as for resource

Multi-metal values Gross Revenue & NSR



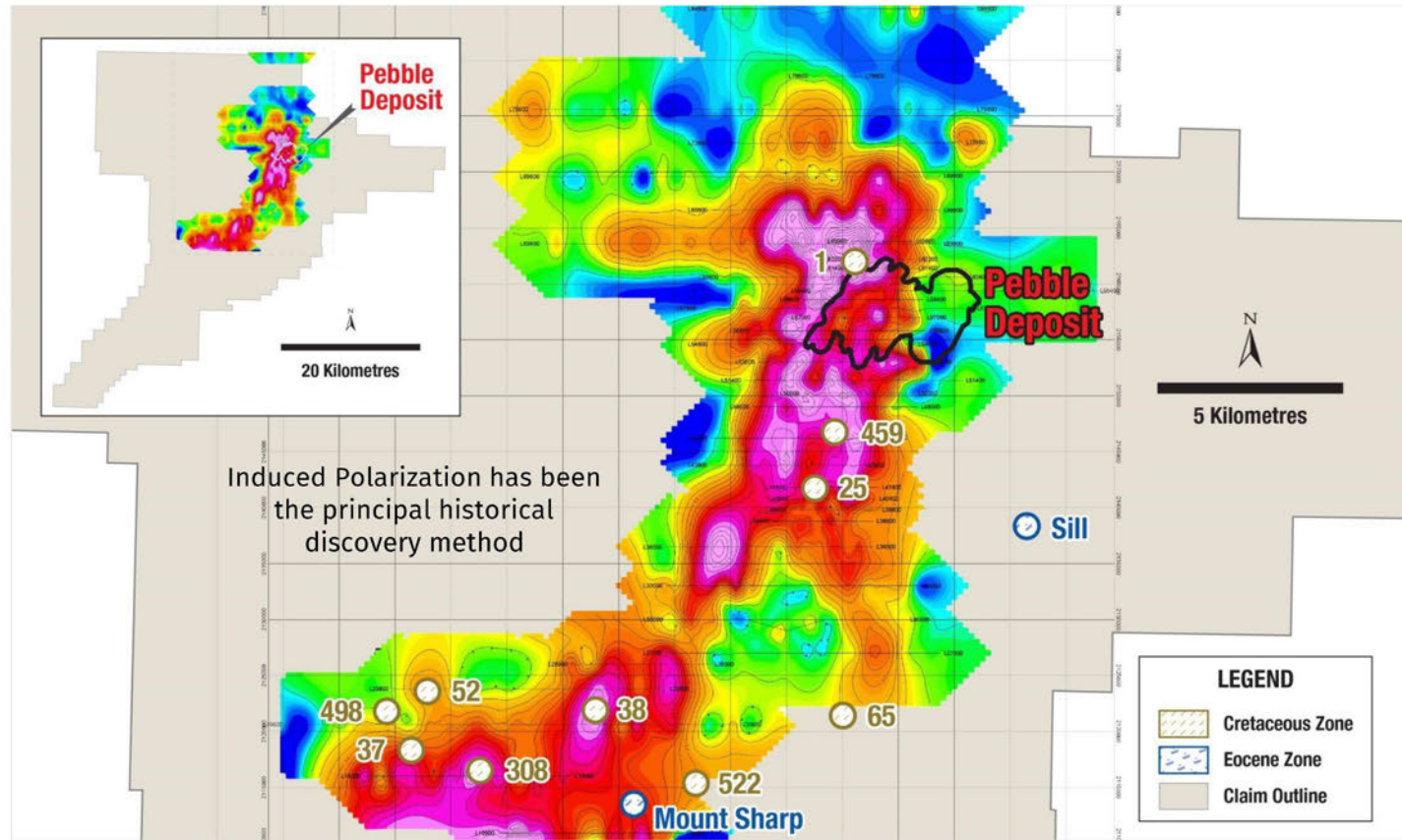
*excludes stockpile reclamation

Cross-Section



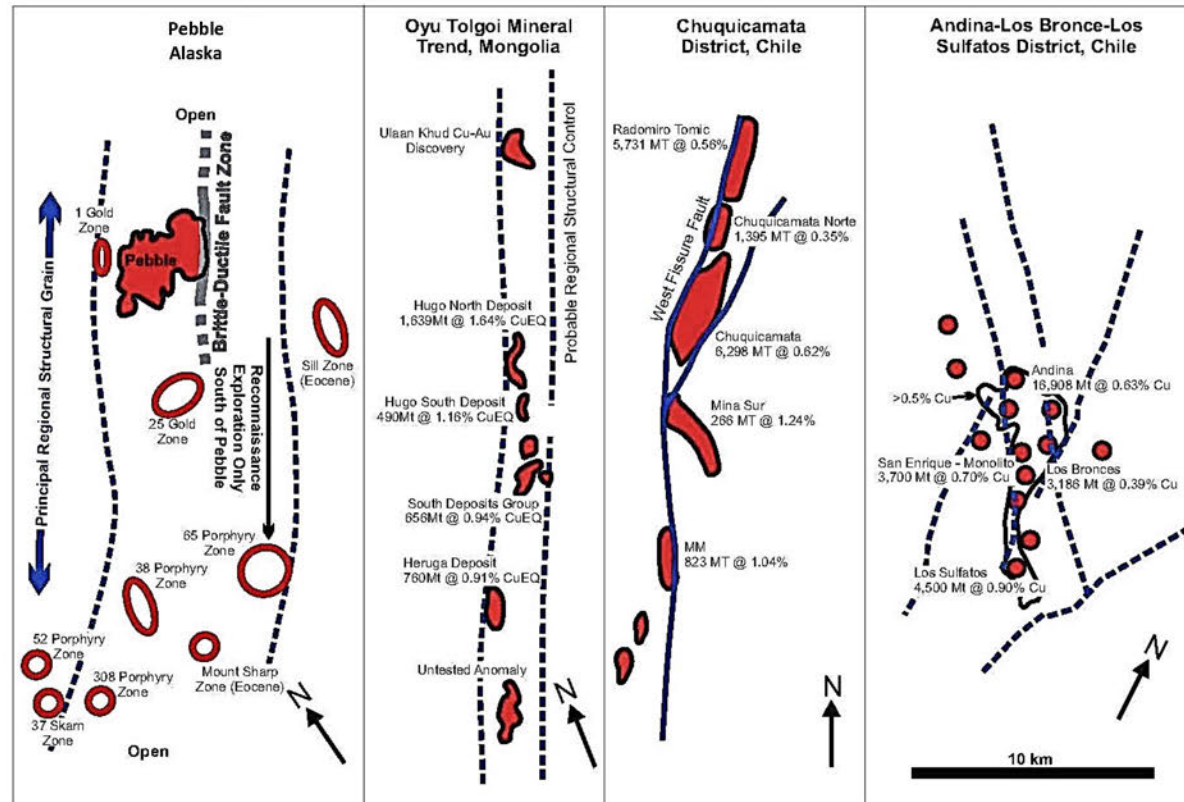
Note: Metal prices used for copper equivalent (CuEQ) are same as for resource (see page 32).

Exploration Potential Property-wide



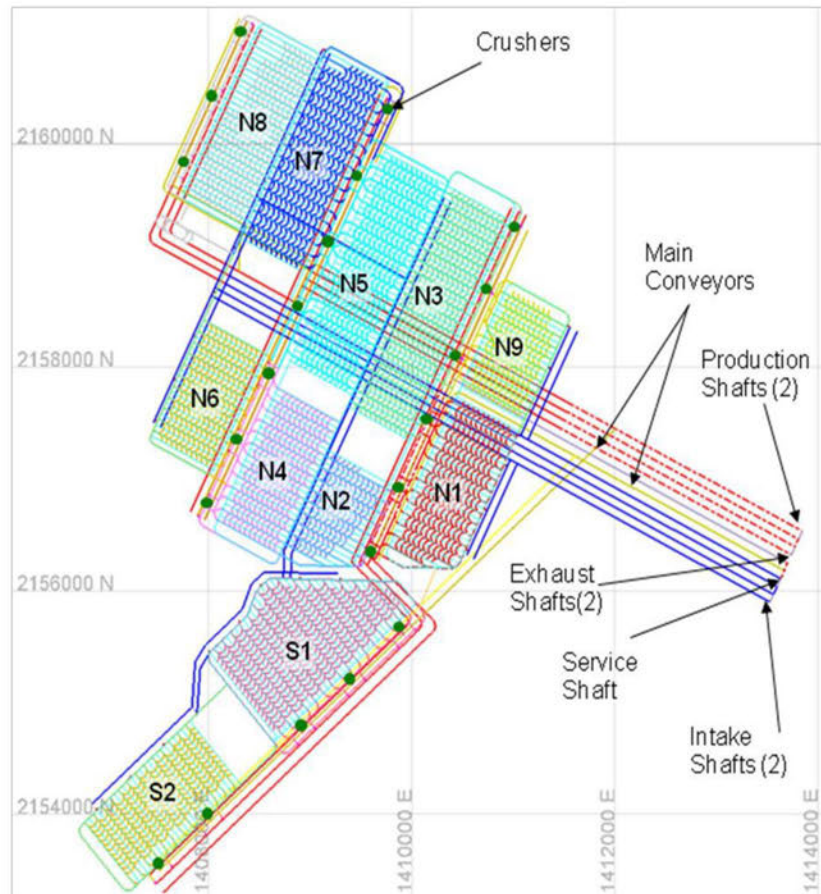
Exploration Potential Pebble May Host Other Major Deposits

- The extent of mineralization at Pebble is comparable to:
 - Oyu Tolgoi
 - Chuquicamata
 - Los Bronces/ Andina
- Exploration potential at deposit and within region is noteworthy



Each area is shown at the same scale

Underground Opportunity Possible Block Cave Layout





PERMITTING CASE

Permitting Case

- Developed case to respond to public concerns
- **Smaller project**
 - 1.3 billion tons milled, 0.1:1 strip ratio
 - No permanent waste dumps
 - No secondary gold recovery plant
 - Pyritic tails and PAG waste returned to the open pit
- **Processing**
 - 180,000 tpd (66 million tons/a)
 - Approximate annual Cu-Au concentrate production – 660,000 tons
 - Approximate annual Mo concentrate production – 16,000 tons
- **Infrastructure**
 - Road and lake ferry to Cook Inlet
 - Offshore lightering of concentrate to bulk carriers
 - Gas pipeline from Anchor Point (190 miles)
 - 270 megawatt gas fired power plant

Project Statistics

Mining

- 1.3 billion tons milled
- 0.29% Cu, 0.32 g/t Au, 154 ppm Mo (0.57% CuEq)
- 0.1:1 strip ratio

Costs

- Initial capex – \$5.2 billion
- Sustaining capex – \$0.9 billion (mining fleet, TSF)
- LOM average opex – \$7.29 /ton milled

Current metal prices

- Copper – \$3 /lb
- Gold – \$1300 /oz
- Molybdenum – \$12 /lb
- Silver – \$20 /oz

Permitting Case Financial Results

	BASE CASE	LEVERED CASE 1	LEVERED CASE 2	LEVERED CASE 3
Precious Metal Stream	No	Yes	No	Yes
Infrastructure Lease	No	No	Yes	Yes
Gold Plant	No	No	No	No
<hr/>				
Pre-tax NPV(7) (\$US B)	2.95	2.99	2.96	2.99
Pre-tax IRR	13.1%	14.2%	15.7%	18.0%
Pre-tax Payback (yrs.)	5.8	5.4	5.0	4.4
Post-tax NPV(7) (\$US B)	1.73	1.79	1.95	2.00
Post-tax IRR	11.1%	12.0%	13.6%	15.7%
Post-tax Payback	6.1	5.6	5.3	4.6



PROJECT OPPORTUNITIES

Other Alternatives (Open Pit)

- Continuing to evaluate alternate plans to optimize value
 - Transition from Permitting Case
- **Transition Alternative**
 - Open pit extended to 3.1 billion tons
 - Mining rate increased to 386 million tons per year in Year 3
 - Secondary gold plant installed in Year 3
- **Expanded Alternative**
 - Open pit extended to 3.5 billion tons
 - Commence with Transition Alternative
 - Process plant expanded to 240,000 tons per day in Year 5
- **Ultimate Pit Alternative**
 - Similar to 2014 iPEA scenario
 - Would extend mine life to 80 plus years
 - Approximately 75% of the resource
 - Extend from Transition alternative

Transition Alternative

Mining / Milling

- 3.1 billion tons milled
 - 180,000 tons milled per day, 2.0:1 strip ratio
 - 0.51% Cu, 0.42 g/t Au, 231 ppm Mo (0.90% CuEq)
 - Stockpiling strategy
- Mining expanded to 386 million tons/a (maximum), gold plant in Year 3

Costs

- Initial capex – \$5.2 billion
- Sustaining capex – \$5.5 billion
- LOM average opex – \$12.14 /ton milled

Current metal prices

- Copper – \$3 /lb
- Gold – \$1300 /oz
- Molybdenum – \$12 /lb
- Silver – \$20 /oz

Transition Alternative Financial Results

	BASE CASE	LEVERED CASE 1	LEVERED CASE 2	LEVERED CASE 3
Precious Metal Stream	No	Yes	No	Yes
Infrastructure Lease	No	No	Yes	Yes
Gold Plant	Yes	Yes	Yes	Yes
<hr/>				
Pre-tax NPV(7) (\$US B)	9.47	9.59	9.48	9.58
Pre-tax IRR	16.3%	19.3%	19.3%	25.8%
Pre-tax Payback (yrs.)	5.9	4.8	5.0	3.6
Post-tax NPV(7) (\$US B)	6.17	6.36	6.47	6.65
Post-tax IRR	14.1%	16.8%	17.1%	23.3%
Post-tax Payback	6.2	5.0	5.3	3.8

Expanded Alternative

Mining / Milling

- 3.5 billion tons milled
 - 180,000 tons milled per day, expansion to 240,000 milled tons per day in Year 4
 - 0.49% Cu, 0.42 g/t Au, 222 ppm Mo (0.88% CuEq), 2.0:1 strip ratio
- Mining expanded to 386 million tons/a (maximum), gold plant in Year 3

Costs

- Initial capex – \$5.2 billion
- Sustaining capex – \$6.1 billion
- LOM average opex – \$11.48 /ton milled

Current metal prices

- Copper – \$3 /lb
- Gold – \$1300 /oz
- Molybdenum – \$12 /lb
- Silver – \$20 /oz

Expanded Alternative Financial Results

	BASE CASE	LEVERED CASE 1	LEVERED CASE 2	LEVERED CASE 3
Precious Metal Stream	No	Yes	No	Yes
Infrastructure Lease	No	No	Yes	Yes
Gold Plant	Yes	Yes	Yes	Yes
Summary Metrics				
Pre-tax NPV(7) (\$US B)	11.37	11.51	11.37	11.51
Pre-tax IRR	17.5%	21.4%	20.8%	29.4%
Pre-tax Payback (yrs.)	5.5	4.5	4.8	3.7
Post-tax NPV(7) (\$US B)	7.41	7.64	7.74	7.96
Post-tax IRR	15.0%	18.6%	18.3%	26.6%
Post-tax Payback	5.9	4.7	5.0	3.8

2014 iPEA

Mining / Milling

- 8.0 billion tons milled
 - Initial 160,000 tons milled per day, expansion to 320,000 tons milled in Year 10
 - 0.41% Cu, 0.32 g/t Au, 224 ppm Mo (0.73% CuEq)
 - 1.9:1 strip ratio

Costs

- Initial capex – \$5.5 billion
- Sustaining capex – \$12.3 billion
- LOM average opex – \$12.19 /ton milled

iPEA metal prices

- Copper – \$3.00 /lb
- Gold – \$1250 /oz
- Molybdenum – \$12.00 /lb
- Silver – \$20 /oz

Financial results (post tax)

- Metal streaming, infrastructure lease
- NPV₇ – \$7.0 billion
- IRR – 20.8%
- Payback – 3.8 years

Other Alternatives (Underground)

- Block caving studied extensively prior to 2011
 - Case assessed in 2010/11
 - Significantly reduced footprint
- Incorporated as an option in the 2011 PEA
- 150,000 tons mined and milled per day
 - Draw level at approximately 3500 ft below surface
 - 1.5 billion tons mined over 35 year mine life
 - 0.62% Cu, 0.38 g/t Au, 287 ppm Mo (1.0% CuEq)
 - At least one additional level in existing resource
 - Likely additional opportunity east of graben fault

Comparable Companies¹



	Northmet	Pumpkin Hollow	Arctic	Casino	Pebble
Primary Project					
Location	United States	United States	United States	Canada	United States
Status	Feasibility	Permitted	Pre-Feasibility	Feasibility	Pre-Feasibility

Financial Metrics⁽³⁾

		Northmet	Pumpkin Hollow	Arctic	Casino	Pebble
Market Cap	(US\$ mm)	\$248	\$228	\$193	\$97	\$179
Enterprise Value	(US\$ mm)	\$404	\$281	\$161	\$94	\$143

Life of Mine Operational Metrics (Primary Asset)

		Northmet	Pumpkin Hollow	Arctic	Casino	Pebble
Mine Life	(Years)	20	14	12	22	78
Avg. Annual Production	(kt Cu)	26	23	72	78	311
C1-Cash Cost (net of by-product)	(US\$/lb)	\$0.59	\$1.69	\$0.15	(\$0.81)	\$0.21
Capex Intensity	(US\$ / mm lb Cu)	\$1.04	\$0.26	\$0.41	\$0.68	\$0.09
IRR (After-tax)	(%)	10%	25%	33%	20%	16%
NPV (After-tax)	(US\$ mm)	\$271	\$301	\$1,413	\$1,830	\$2,650
Discount Rate	(%)	7.00%	5.00%	8.00%	8.00%	7.00%
Copper Price	(US\$/lb)	\$3.22	\$3.20	\$3.00	\$3.16	\$2.50

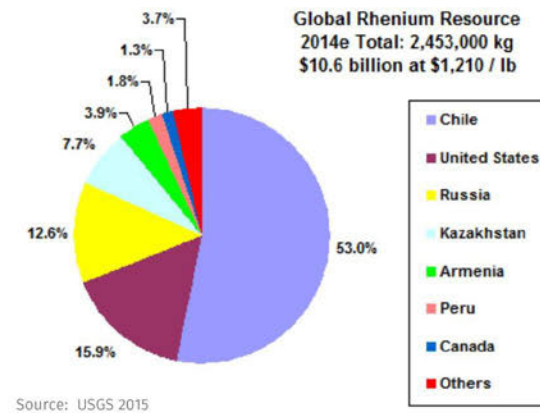
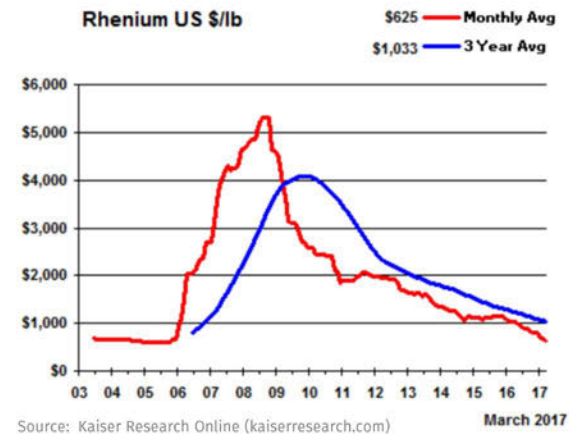
1. Source BMO Capital Markets

2. Based on LT consensus commodity prices of: copper (US\$2.50/lb), gold (US\$1,050/oz), molybdenum (US\$13.50/lb), and silver (US\$15.00/oz).

3. Market data as at June 6, 2018.

Pebble Deposit Has Rhenium

- Rhenium has been declared a strategic metal by the US Government
 - Its various uses include alloys for jet engines
- Rhenium is present in the Pebble deposit
- Significant number of assays through the resource data base
- Reports to the Molybdenum (Mo) concentrate in high quantities
 - Measured as high as 1100 ppm
- Presence should add value and marketability to the Mo concentrate



Governor Mike Dunleavy

A Changing Political Landscape in Alaska

- Alaska Governor-elect Dunleavy gave a speech at the annual Alaska Mining Association Conference on November 8.
- Very positive that he chose the AMA for his first post-election major speech. While it is sometimes very grainy, we consider the speech compelling listening. The messages are very positive.
https://m.facebook.com/story.php?story_fbid=419285398906112&id=132855062510
- Amongst his speech content:
 - A opening standing ovation from the audience
 - A well-deserved shout-out to **John Shively** (former Chief Commercial Officer of NANA Regional Native Corp – Teck partner at Red Dog Mine. **Current Chairman of PLP**) for his work at Red Dog
 - “Alaska is open for business”
 - “We could not have won this election without you folks”
 - “I want more Red Dog’s, more Pogo’s, and more Kensington’s”.
 - If Alaska opens just one new mine the mine would produce what the previous admin was wanting to take away from you in taxes
 - “I’m excited about the jobs”
 - “You’re going to have to put on your seat belts because this is not going to be a slow crawl”
 - “We’re going to be working with the industry across the board”
 - “That attitude is going to be, ‘how can we make this happen?’”
 - “My pledge to you, you’re going to have a partner that wants to create jobs and opportunities for all Alaskans”
 - **“We are not going to politicize the permitting process”.**
 - “We have the best environmental regulations on the planet”



Mike Dunleavy 2013 Op-ed¹: “Anglo American Backing Out of Pebble Should be a Wake-Up Call for Alaska”

ANCHORAGE DAILY NEWS

Most Alaskans strive to grow and prosper and welcome those willing and able to invest their expertise and resources towards development of our state resources. Over the years, Alaska has developed permitting requirements that must be met before any project is allowed to proceed. Those decisions are based upon the data and science submitted to the state that allows it to then judge whether the project meets the pre-determined standards. This protects the state and provides predictability and stability for the investors.

If this permitting process is not allowed to occur, politics replaces science and an unpredictable investment environment results. Alaska will then deservedly gain a reputation in the international marketplace as a risky long-term investment.

On Sept. 16, Anglo American, the major international financial investor, announced it was withdrawing from Pebble leaving behind a huge investment and a consensus world-class mining prospect. This should raise major concerns for Alaskans.

In Alaska, in addition to the thousands of support service jobs, Pebble is anticipated to directly create 3,000 new Alaskan operational jobs each paying in excess of \$100,000 annually.

This is high scale family-wage employment, which is exactly what is needed in Alaska. Preliminary estimates are that the Pebble deposits may very well sustain decades of mining operations and may continue for the next 100 years.

To be perfectly clear, Alaska has neither endorsed nor opposed the Pebble project, nor should we until we have all of the facts, but the facts will only surface through data gathered through the permitting process. We have successfully attracted several large-scale resource projects in the past that have added greatly to the private sector of Alaska's economy. Every one of these projects was allowed to, and required to, submit its project through our comprehensive permitting process. Why should the Pebble prospect not proceed through the same scientific process?

What will Alaskans lose if that permitting process is not pursued? (1) Alaska will lose extremely valuable scientific data that would have been required during permitting and which would be of great importance to comparable future projects; (2) large-scale investors will definitely take notice and will factor this uncertainty into their initial assessment on whether Alaska provides a stable attractive investment atmosphere that bases its long-term

1. <https://www.adn.com/commentary/article/anglo-american-backing-out-pebble-should-be-wake-call-alaska/2013/09/28/>

Anglo American backing out of Pebble should be a wake-up call for Alaska

✍ Author: Mike Dunleavy 🕒 Updated: June 29, 2016 📅 Published September 27, 2013

decisions on facts rather than media advertising blitzes, personalities or politics; and (3) without any scientific or economic analysis, the State will not even be in consideration for the jobs and development that this major Pebble project may have brought to us.

One of the main reasons stated by Anglo American for withdrawing from Alaska is for them “to reduce the capital required to sustain such project during the pre-approval phases of development.” Yet, the company feels compelled to walk away from over \$541 million that they have already invested into this Pebble project! I am afraid Alaska has sent the wrong message and Anglo American's response has been just as clear.

We either honor and trust our permitting system or rely upon the whim of the day. If I am asked to make an important policy decision such as Pebble, I would base that decision on science and facts rather than rely upon innuendo, mass-media advertising or political posturing.

What is surprising is the major labor and business organizations of Alaska are not speaking up. If Alaskans truly want to diversify our economy and quit relying solely upon the petroleum industry and government for creation of jobs, we need to create and maintain a healthy climate for attracting capital investments. A stable, transparent, coherent permitting process is the cornerstone of such a climate.

No one, including myself, wants to jeopardize our world-class fishery, but in order to truly understand the impact on this treasured fishery, science is essential to guide us. If we believe there are ways to improve the permitting process, then we should implement such improvements. However, Alaskans should not be afraid, and should insist that our permitting process not be short-circuited. Our economic future, and that of Alaska, will depend upon it.

Mike Dunleavy is an Alaska state senator representing the Matanuska-Susitna Valley as a Republican.

The views expressed here are the writer's own and are not necessarily endorsed by Alaska Dispatch, which welcomes a broad range of viewpoints. To submit a piece for consideration, e-mail [commentary\(at\)alaskadispatch.com](mailto:commentary(at)alaskadispatch.com).

Websites

www.northerndynastyminerals.com

www.pebblepartnership.com

www.pebbleresearch.com



Contact Information

General Office
15th Floor
1040 W. Georgia Street
Vancouver, BC
Canada V6E 4H1

Investor Relations

info@northerndynasty.com

Tel: 604.684.6365

TF: 800.667.2114



3201 C Street, Suite 505

Anchorage, AK 99503

Phone: (907) 339-2600

Fax: (907) 339-2601

Northern Dynasty Minerals Ltd.
The **Future** of U.S. Mining & Metals

Message

From: Doug Allen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CDFCEA029E1E41DE8FD0CAA6599DDA87-DOUG ALLEN]
Sent: 2/27/2020 2:20:25 PM
To: [REDACTED]
CC: Ron Thiessen [ronthiessen@hdimining.com]; Tom Collier [tomcollier@pebblepartnership.com]; Mark Peters [markpeters@hdimining.com]
Subject: Oskar - follow up
Attachments: Alt cases presentation to RT.DA 191027.pdf; plpmodel 190422.DD 180ktpd.20yrs.pdf; plpmodel 190422.DD 180ktpd.49yrs.pdf; plpmodel 190422.DD 180-240ktpd.44yrs.pdf; USACoE. Preliminary Final EIS. Executive Summary. Feb 2020.pdf; Commissioner Feige letter to Tom Collier. February 12 2020.pdf; Final EIS Quotes and Talking Points Feb 24 2020.pdf; Fraser Institute. Exec Summary. 2019 Annual-survey-of-mining-companies.pdf

Oskar and Jeff,
Thanks for the opportunity to provide you with an update at BMO.

It's a very exciting time for the project and we were hopefully able to leave you with a strong sense of the very considerable progress that we are making.

As we discussed, the recent media leak confirms that the Corps has completed the *Final EIS* and once their remaining reviews with the co-operating agencies are completed, we have a very high level of confidence that their remaining time goals of *Final EIS* publication in "Mid 2020" (our view: mid-late June) and the *Record of Decision* 45-60 days later (our view: early-mid August), are very achievable.

During our discussion I believe that we referenced the "3b letter" process at EPA. We learned yesterday that EPA will *not* file a 3b letter on the 28th. Instead, they have requested an additional extension to continue their engagement with USACE. We believe it is positive that both agencies are continuing their discussions and that EPA has not seen fit to file a 3b letter at this time.

As we also discussed, we are targeting the kick-off of formal partnering process lead by two investment banks in an April timeframe. If interested, we anticipate that site visits will be planned for later in 2Q and early 3Q.

In advance of that, beginning late next week (after PDAC) we're very interested to engage directly with you to see if we can agree a smaller ~\$US 25M transaction with Orion. Please consider sending us a Term Sheet.

Oskar if you plan to be at PDAC and would like a follow up meeting with us please let me know?

In follow-up I have included with this email the following items:

- Confidential "Alternative Cases" booklet
- 3 confidential "Alternative Cases" models
- Executive Summary Preliminary *Final EIS*
- Alaska Commissioner DNR, Corri Feige, letter to Tom Collier
- Quotes and talking points from the *Final EIS* on the key topics of the Bristol Bay Fishery and TSF analysis; talking points on the key topics of securing the *ROD* and Native Community Support
- Executive Summary 2019 Fraser Institute Survey of Mining Companies
 - Alaska is ranked #4 in the global *Investment Attractiveness Index*
 - Link to the full Survey is [here](#)

Thank you again for your time at the BMO conference.
Let us know when you have questions.
Doug

Doug Allen Vice President | Business Development

Message

From: Greg Brooks [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=28465BC6D06A4DF6B9AB4D52EFED0A28-GREG BROOKS]
Sent: 2/27/2020 12:52:28 AM
To: Doug Allen [dougallen@northerndynasty.com]
CC: Ron Thiessen [ronthiessen@hdimining.com]
Subject: RE: Greg - help
Attachments: plpmodel 190422.DD 180-240ktpd.44yrs.pdf; plpmodel 190422.DD 180ktpd.49yrs.pdf; plpmodel 190422.DD 180ktpd.20yrs.pdf

See attached.

From: Doug Allen <dougallen@northerndynasty.com>
Sent: February 26, 2020 3:37 PM
To: Greg Brooks <GregBrooks@hdimining.com>
Cc: Ron Thiessen <RonThiessen@hdimining.com>
Subject: Greg - help

[INTERNAL]

Greg,
I need the 3 spreadsheets that discuss the alternatives for the permitting cases, sent to me please. These are the same 3 cases for which you printed me hardcopy for my trip east. Are they in the form of pdf's or Excel files? Hopefully the former.
Thanks....Doug

Doug Allen Vice President | Corporate Communication



Northern Dynasty Minerals Ltd. | 15th Floor - 1040 W. Georgia St. Vancouver BC V6E 4H1 Canada
Dir +1-778-373-6966 T +1-604-684-6365 TF 800-667-2114
E DougAllen@northerndynasty.com Web www.northerndynastyminerals.com

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PLP Financial Model

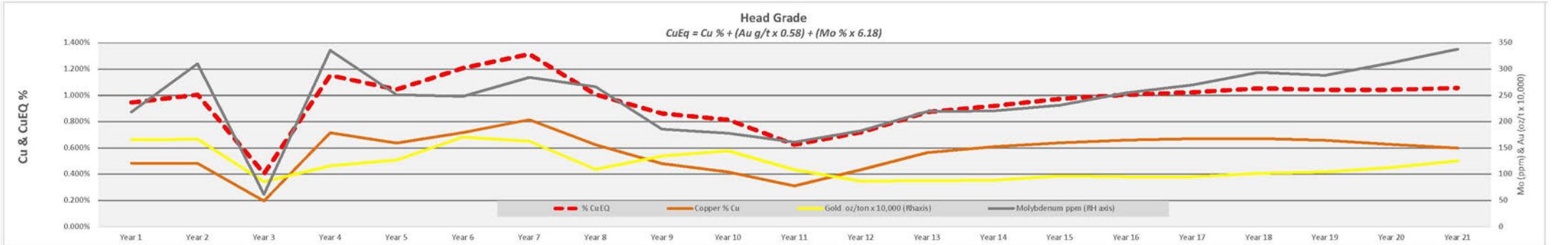
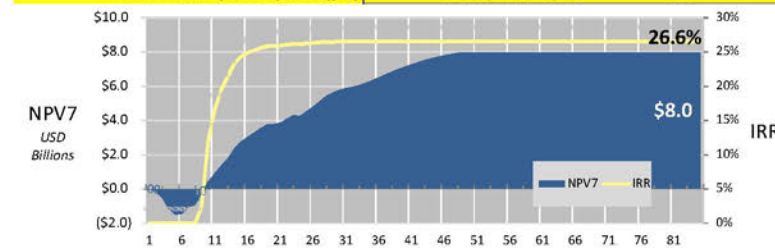
DISCOUNTED CASH FLOW

expressed in \$US millions, unless stated otherwise, volume in short tons (millions)

Scenario: 180kTPD->240kTPD, 3.5B tons SCN3.5 \$3.6B Capex

	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30	Year 31	Year 32	Year 33	Year 34	Year 35	Year 36	
44 YEARS PRODUCTION																					
Mining Volume	386	386	441	441	441	441	441	441	441	386	386	165	110	110	110	110	110	110	110	110	
Milling Volume	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	82.34	
Strip Ratio	3.7	3.7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	3.7	3.7	1.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
REVENUE	3,407	3,711	1,374	4,309	3,886	4,601	5,094	3,824	3,231	3,084	2,293	2,756	3,428	3,648	3,865	4,129	4,201	4,300	4,255	4,223	
Copper (\$US 3 per lb)	2,113	2,112	846	3,118	2,778	3,147	3,608	2,738	2,105	1,838	1,362	1,904	2,484	2,684	2,822	2,915	2,956	2,961	2,906	2,766	
Gold (\$US 1300 per oz)	880	1,047	391	583	641	992	954	587	769	911	626	502	526	543	602	734	740	791	811	882	
Molybdenum (\$US 12 per lb)	355	503	98	522	400	399	454	423	297	294	268	304	364	366	383	421	446	485	475	513	
Silver (\$US 20 per oz)	59	49	39	85	67	64	79	76	60	42	38	46	54	56	58	59	60	62	64	63	
Realization charges	317	357	116	463	395	435	497	397	300	273	215	279	355	376	395	415	425	437	429	425	
NET SMELTER RETURN	3,090	3,353	1,258	3,847	3,491	4,166	4,598	3,427	2,930	2,812	2,078	2,477	3,074	3,272	3,470	3,714	3,775	3,863	3,827	3,798	
	37.52	40.72	15.27	46.72	42.40	50.59	55.84	41.61	35.59	34.15	25.23	30.08	37.33	39.74	42.14	45.10	45.85	46.91	46.47	46.12	
OPERATING COSTS	1,270	1,314	1,593	1,381	1,317	1,385	1,498	1,564	1,509	1,442	1,301	1,019	968	980	837	848	858	867	878	891	
Open Pit	560	604	912	648	592	652	754	840	800	739	609	314	250	258	263	272	282	290	303	318	
Process	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	366	
Transportation	51	52	22	74	66	74	85	65	51	45	34	46	59	64	67	69	70	70	69	66	
Environmental	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	
G&A	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	
Infrastructure Lease	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	
	15.42	15.96	19.35	16.77	16.00	16.82	18.19	18.59	18.33	17.51	15.80	12.37	11.76	11.91	10.16	10.29	10.42	10.53	10.67	10.82	
OPERATING PROFIT (EBITDA)	1,820	2,039	336	2,466	2,174	2,781	3,100	1,863	1,421	1,369	777	1,458	2,105	2,292	2,633	2,866	2,917	2,996	2,948	2,907	
	53%	55%	24%	57%	56%	60%	61%	49%	44%	44%	34%	53%	61%	63%	68%	69%	69%	70%	69%	69%	
CAPITAL COSTS	1,04	1,04	3,582	3,053																	
Capital Costs - Leased Infrastructure (FYI only)			incl. opex	1,683	1,490																
Sustaining Capital - Mining		403	5	38	69		112														
Sustaining Capital - Expansion																					
Sustaining Capital - TSF, Other		126	21	137	8	126	8	126	8	126	8	126	8	126	8	126	8	126	8	126	
Reclamation Funding		22	22	21	22	22	21	21	21	20	20	20	19	19	19	19	18	18	17	18	
Project Finance Principal & DSRF																					
Project Finance Interest and Fees																					
Pre-production Proceeds of Metal Stream																					
Working Capital	129	17	217	316	27	72	46	150	43	24	66	55	92	9	49	15	21	4	9	19	
PRE-TAX PROJECT CASH FLOW	1,512	1,505	166	1,953	2,102	2,561	2,913	1,866	1,435	1,248	814	1,257	1,987	2,139	2,556	2,707	2,869	2,857	2,914	2,783	
Cumulative Pre-tax Project Cash Flow	15,118	16,623	16,457	18,410	20,511	23,073	25,986	27,851	29,286	30,534	31,348	32,605	34,592	36,730	39,287	41,994	44,863	47,721	50,635	53,417	
PV Factor	0.25	0.23	0.22	0.20	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.10	0.09	0.08	0.08	0.07	0.07	
PRE-TAX PROJECT NPV 7																					
IRR																					
Pre-tax Project Payback (yrs)																					
	33	29		35	38	51	55	34	25	24	13	26	39	42	49	54	54	56	55	54	
NPI Royalty	94	106		125	112	154	171	93	73	75	39	80	119	132	146	151	154	158	155	153	
Alaska Mining License	41	47		55	50	68	76	41	32	33	17	35	53	58	64	67	68	70	69	67	
Alaska State Royalty Taxes	47	51	20	58	53	63	70	52	45	43	32	38	47	50	53	56	57	59	58	58	
Borough Severance & Property Taxes	215	232	20	275	253	337	371	220	176	175	101	180	258	282	312	327	334	343	337	332	
TOTAL MINING TAXES & ROYALTIES	337	382		331	385	556	619	329	259	268	133	287	433	479	531	548	560	577	566	557	
Total Corporate Income Tax Payable	26%	30%	0%	20%	21%	25%	24%	20%	21%	25%	19%	27%	25%	26%	24%	23%	22%	23%	22%	23%	
POST-TAX PROJECT CASH FLOW	960	891	186	1,347	1,464	1,669	1,923	1,317	1,000	804	580	791	1,296	1,378	1,714	1,832	1,976	1,938	2,011	1,894	
Cumulative Post-tax Project Cash Flow	10,737	11,627	11,442	12,789	14,253	15,921	17,844	19,161	20,161	20,965	21,546	22,337	23,633	25,011	26,725	28,556	30,532	32,470	34,481	36,374	
POST-TAX PROJECT NPV 7																					
IRR																					
Post-tax Project Payback (yrs)																					
Post-tax Project Payback (yrs)																					

POST-TAX PROJECT NPV 7	7,959
IRR	26.6%
Post-tax Project Payback (yrs)	3.8
Post-tax Project Payback (yrs)	3.3
	<i>excl. expansion capital</i>



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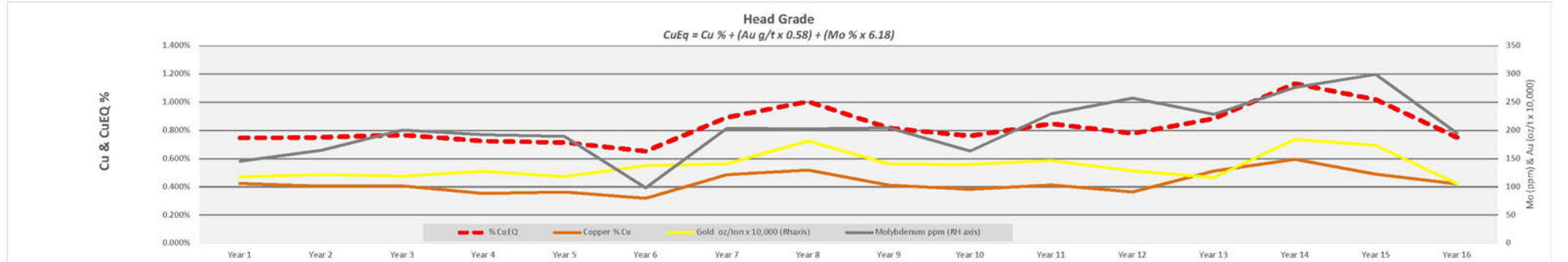
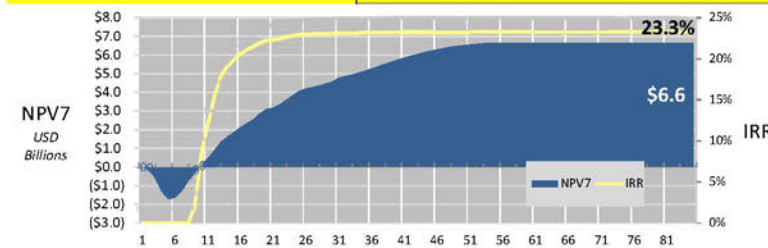
PLP Financial Model

DISCOUNTED CASH FLOW

expressed in \$US millions, unless stated otherwise, volume in short tons (millions)

Scenario: 180kTPD, 3.15B tons SCN3.6 \$3.6B Capex

				-Year 4	-Year 3	-Year 2	-Year 1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
49 YEARS PRODUCTION																							
		\$/t milled	TOTAL	NPV 7%																			
Mining Volume			9,547	-	-	-	30	60	83	165	165	276	276	276	386	386	386	386	386	386	386	386	369
Milling Volume			3,146	-	-	-	-	29.18	65.71	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70
Strip Ratio			2.03	na	na	na	na	1.1	0.3	1.5	1.5	3.2	3.2	3.2	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	
REVENUE				-	-	-	-	795	1,809	2,121	2,104	2,145	1,876	2,658	3,046	2,443	2,256	2,527	2,260	2,640	3,344	3,011	2,222
Copper (\$US 3 per lb)	65%	26.89	84,590	-	-	-	-	522.07	1,147	1,279	1,191	1,256	1,097	1,700	1,821	1,447	1,337	1,454	1,257	1,784	2,087	1,715	1,451
Gold (\$US 1300 per oz)	23%	9.51	29,904	-	-	-	-	202	481	597	636	605	612	649	912	694	670	738	644	501	845	868	480
Molybdenum (\$US 12 per lb)	11%	4.50	14,158	-	-	-	-	54	142	205	235	240	121	259	266	266	211	299	327	287	354	388	242
Silver (\$US 20 per oz)	2%	0.70	2,209	-	-	-	-	17	38	40	42	44	47	50	47	37	38	35	32	69	57	40	49
Realization charges	9.7%	4.02	12,635	-	-	-	-	70	159	190	190	197	150	248	264	224	198	234	220	263	314	285	217
NET SMELTER RETURN				-	-	-	-	726	1,649	1,930	1,914	1,948	1,727	2,410	2,782	2,219	2,058	2,293	2,040	2,376	3,030	2,726	2,005
				-	-	-	-	24.88	25.10	25.38	23.14	25.64	26.28	36.68	42.35	33.78	31.32	34.90	31.05	36.17	46.12	41.50	30.51
OPERATING COSTS				-	-	-	-	429	705	802	830	971	999	1,023	1,100	1,249	1,158	1,145	1,205	1,249	1,165	1,170	1,150
Open Pit	1.68	5.10	16,034	-	-	-	-	104	142	203	233	372	405	414	488	646	557	542	606	639	547	561	548
Process		4.69	14,763	-	-	-	-	123	276	309	309	309	309	309	309	309	309	309	309	309	309	309	309
Transportation		0.65	2,042	-	-	-	-	13	28	32	30	31	27	41	44	35	33	36	31	43	50	42	35
Environmental		0.95	2,981	-	-	-	-	20	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
G&A		0.75	2,359	-	-	-	-	22	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Infrastructure Lease		1.40	4,393	-	-	-	-	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146
			13.53	-	-	-	-	14.70	16.72	12.21	12.63	14.78	15.21	15.57	16.74	19.01	17.62	17.43	18.33	19.01	17.73	17.82	17.51
OPERATING PROFIT (EBITDA)				-	-	-	-	297	945	1,128	1,084	977	727	1,387	1,683	970	900	1,148	835	1,127	1,865	1,556	854
				-	-	-	-	37%	52%	53%	52%	46%	39%	52%	55%	40%	40%	45%	37%	43%	56%	52%	38%
CAPITAL COSTS				-	169	-	957	-	1,581	-	879	-	-	-	-	-	-	-	-	-	-	-	-
Capital Costs - Leased Infrastructure (FYI only)				-	375	-	698	-	522	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital - Mining				-	-	-	-	73	178	61	323	17	61	201	296	27	3	22	-	10	11	10	16
Sustaining Capital - Expansion				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital - TSF, Other				-	-	-	-	62	184	70	8	99	8	81	8	81	52	22	27	37	179	241	449
Reclamation Funding				-	20	-	19	19	20	20	20	20	21	20	20	20	20	21	21	20	20	20	21
Project Finance Principal & DSRF				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Finance Interest and Fees				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-production Proceeds of Metal Stream				78	444	734	408	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Working Capital				-	-	-	-	41	66	56	29	20	23	56	37	56	7	31	34	36	69	45	114
PRE-TAX PROJECT CASH FLOW				-	110	-	532	-	866	-	490	101	497	921	762	820	661	1,029	1,320	899	833	1,053	821
Cumulative Pre-tax Project Cash Flow				-	110	-	642	-	1,508	-	1,998	1,897	1,399	478	284	1,104	1,765	2,794	4,114	5,013	5,845	6,898	7,719
PV Factor				0.97	0.90	0.84	0.79	0.74	0.69	0.64	0.60	0.56	0.53	0.49	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.27
PRE-TAX PROJECT NPV 7																							
IRR																							
Pre-tax Project Payback (yrs)																							
NPI Royalty				-	-	-	-	-	-	-	-	15	10	18	21	14	14	17	13	17	28	3	15
Alaska Mining License				-	-	-	-	-	-	-	15	17	10	38	69	38	38	56	38	53	102	85	39
Alaska State Royalty Taxes				-	-	-	-	-	-	4	7	8	4	17	31	17	17	25	17	24	45	38	17
Borough Severance & Property Taxes				-	-	-	-	12	25	30	29	30	27	37	42	34	32	35	31	36	46	42	31
TOTAL MINING TAXES & ROYALTIES				-	-	-	-	12	25	34	51	70	51	110	163	103	100	133	99	130	221	168	101
Total Corporate Income Tax Payable				-	-	-	-	-	-	-	-	-	-	-	-	188	121	129	199	131	185	371	308
effective tax rate				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	15%	18%	22%	18%	21%	27%	27%	35%
POST-TAX PROJECT CASH FLOW				-	110	-	532	-	866	-	490	89	472	888	711	750	610	919	970	675	604	721	591
Cumulative Post-tax Project Cash Flow				-	110	-	642	-	1,508	-	1,998	1,908	1,436	549	162	912	1,522	2,441	3,411	4,086	4,689	5,410	6,002
POST-TAX PROJECT NPV 7																							
IRR																							
Post-tax Project Payback (yrs)																							



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PLP Financial Model

DISCOUNTED CASH FLOW

expressed in \$US millions, unless stated otherwise, volume in short tons (millions)

Scenario: 180kTPD, 3.15B tons SCN3.6 \$3.6B Capex

Year 17 Year 18 Year 19 Year 20 Year 21 Year 22 Year 23 Year 24 Year 25 Year 26 Year 27 Year 28 Year 29 Year 30 Year 31 Year 32 Year 33 Year 34 Year 35 Year 36

49 YEARS PRODUCTION				
	\$/t milled	TOTAL	NPV 7%	
Mining Volume		9,517		
Milling Volume		3,146		
Strip Ratio		2.03		
REVENUE		130,860	26,235	
Copper (\$US 3 per lb)	65%	84,590	16,571	
Gold (\$US 1300 per oz)	23%	29,904	6,490	
Molybdenum (\$US 12 per lb)	11%	14,158	2,705	
Silver (\$US 20 per oz)	2%	2,209	468	
Realization charges	9.7%	12,635	2,465	
NET SMELTER RETURN	100%	118,225	23,770	
OPERATING COSTS		42,572	10,452	
Open Pit	1.68	5.10	16,034	4,260
Process		4.69	14,763	3,195
Transportation		0.65	2,042	402
Environmental		0.95	2,981	646
G&A		0.75	2,359	514
Infrastructure Lease		1.40	4,393	1,434
		13.53		
OPERATING PROFIT (EBITDA)	64%	75,654	13,318	
CAPITAL COSTS		3,586	3,056	
Capital Costs - Leased Infrastructure (FYI only)		1.14	1,595	1,434
		incl. opex		
Sustaining Capital - Mining		0.50	1,568	774
Sustaining Capital - Expansion		0.00	-	-
Sustaining Capital - TSF, Other		1.25	3,927	917
Reclamation Funding		0.31	963	282
Project Finance Principal & DSRF		0.00	-	-
Project Finance Interest and Fees		0.00	-	-
Pre-production Proceeds of Metal Stream		0.53	1,665	1,420
Working Capital		-	-	128
PRE-TAX PROJECT CASH FLOW	57%	67,275	9,581	
Cumulative Pre-tax Project Cash Flow				
PV Factor				
PRE-TAX PROJECT NPV 7		9,581		
IRR		25.8%		
Pre-tax Project Payback (yrs)		3.6		
NPI Royalty		-	1,254	
Alaska Mining License		-	3,643	
Alaska State Royalty Taxes		-	1,614	
Borough Severance & Property Taxes		-	1,808	
TOTAL MINING TAXES & ROYALTIES		2.64	8,319	1,283
Total Corporate Income Tax Payable		4.07	12,802	1,654
effective tax rate		21.7%		
POST-TAX PROJECT CASH FLOW	39%	46,154	6,644	
Cumulative Post-tax Project Cash Flow				69%
POST-TAX PROJECT NPV 7		6,644		
IRR		23.3%		
Post-tax Project Payback (yrs)		3.8		

	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30	Year 31	Year 32	Year 33	Year 34	Year 35	Year 36
Mining Volume	369	386	386	386	386	386	364	364	165	121	121	88	88	88	88	88	88	83	83	83
Milling Volume	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70
Strip Ratio	4.6	4.9	4.9	4.9	4.9	4.9	4.5	4.5	1.5	0.8	0.8	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
REVENUE	2,878	3,475	3,304	3,620	2,627	1,978	2,343	2,661	2,170	4,035	1,933	2,140	2,489	2,739	2,889	3,117	3,258	3,301	3,350	3,407
Copper (\$US 3 per lb)	2,121	2,502	2,330	2,493	1,723	1,196	1,369	1,707	1,357	2,795	1,225	1,454	1,777	1,984	2,123	2,212	2,290	2,336	2,360	2,354
Gold (\$US 1300 per oz)	375	486	570	776	564	577	755	613	544	831	457	412	403	421	429	565	602	577	589	623
Molybdenum (\$US 12 per lb)	317	420	348	298	302	166	182	292	234	355	217	237	269	291	293	295	319	341	354	381
Silver (\$US 20 per oz)	65	66	57	52	38	39	37	49	36	54	34	37	40	43	44	45	47	47	48	49
Realization charges	305	371	335	340	261	171	194	257	205	386	187	215	256	283	298	308	323	333	339	346
NET SMELTER RETURN	2,574	3,103	2,969	3,280	2,366	1,807	2,149	2,404	1,965	3,649	1,747	1,925	2,233	2,455	2,591	2,809	2,935	2,968	3,011	3,061
	39.17	47.24	45.18	49.92	36.01	27.50	32.70	36.59	29.91	55.54	26.59	29.30	33.99	37.37	39.44	42.75	44.67	45.18	45.83	46.60
OPERATING COSTS	1,198	1,307	1,233	1,276	1,321	1,271	1,278	1,139	893	880	830	798	808	817	679	685	686	684	687	688
Open Pit	580	680	610	649	712	674	677	530	292	247	232	196	198	203	207	211	211	208	210	211
Process	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309
Transportation	51	59	55	59	42	30	33	41	33	66	30	36	43	47	51	53	54	55	56	56
Environmental	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
G&A	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Infrastructure Lease	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146
	18.24	19.89	18.77	19.42	20.11	19.34	19.45	17.33	17.59	13.40	12.63	12.15	12.30	12.44	10.33	10.42	10.45	10.41	10.46	10.47
OPERATING PROFIT (EBITDA)	1,375	1,797	1,736	2,004	1,045	536	871	1,265	1,072	2,768	917	1,127	1,425	1,638	1,912	2,124	2,249	2,284	2,324	2,373
	48%	52%	53%	55%	40%	27%	37%	48%	49%	69%	47%	53%	57%	60%	66%	68%	69%	69%	69%	70%
CAPITAL COSTS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Costs - Leased Infrastructure (FYI only)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital - Mining	26	26	-	113	69	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital - Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital - TSF, Other	156	126	21	137	8	126	8	126	8	126	8	126	8	126	8	126	8	126	8	126
Reclamation Funding	20	20	20	20	21	21	20	20	20	19	19	19	18	18	19	18	18	18	17	18
Project Finance Principal & DSRF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Finance Interest and Fees	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-production Proceeds of Metal Stream	101	61	5	7	95	74	59	27	22	194	216	10	52	12	41	12	30	10	20	8
PRE-TAX PROJECT CASH FLOW	1,071	1,564	1,690	1,727	1,042	438	783	1,092	1,066	2,429	1,106	973	1,347	1,482	1,844	1,968	2,193	2,151	2,279	2,238
Cumulative Pre-tax Project Cash Flow	13,213	14,776	16,466	18,193	19,235	19,673	20,456	21,548	22,614	25,044	26,150	27,123	28,470	29,952	31,796	33,764	35,957	38,108	40,387	42,625
PV Factor	0.25	0.23	0.22	0.20	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.10	0.09	0.08	0.08	0.07	0.07
PRE-TAX PROJECT NPV 7	9,581																			
IRR	25.8%																			
Pre-tax Project Payback (yrs)	3.6																			
NPI Royalty	24	32	32	34	17	8	15	23	19	51	16	20	26	30	35	40	42	43	43	44
Alaska Mining License	66	91	90	108	49	20	43	66	57	161	49	62	80	94	103	110	117	119	121	124
Alaska State Royalty Taxes	29	40	40	48	21	9	19	29	25	71	22	27	35	41	46	48	52	53	54	55
Borough Severance & Property Taxes	39	47	45	50	36	28	33	37	30	55	27	30	34	38	40	43	45	45	46	47
TOTAL MINING TAXES & ROYALTIES	159	210	207	240	123	65	110	155	132	338	114	139	176	203	224	240	255	260	264	270
Total Corporate Income Tax Payable	230	322	321	390	168	65	151	236	206	589	175	222	289	340	374	398	426	433	442	452
effective tax rate	25%	24%	22%	26%	18%	17%	22%	25%	22%	28%	18%	27%	25%	27%	23%	23%	22%	23%	22%	23%
POST-TAX PROJECT CASH FLOW	682	1,032	1,162	1,097	751	308	522	701	727	1,502	817	611	882	940	1,247	1,330	1,512	1,458	1,573	1,516
Cumulative Post-tax Project Cash Flow	9,488	10,520	11,682	12,778	13,529															

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PLP Financial Model

DISCOUNTED CASH FLOW

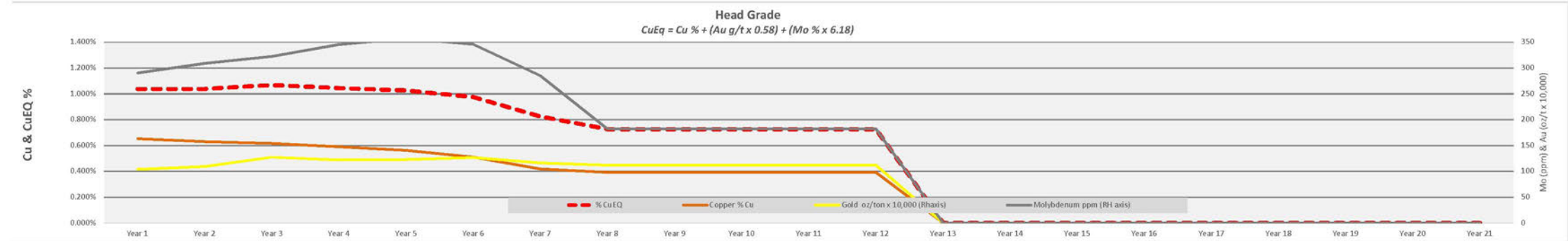
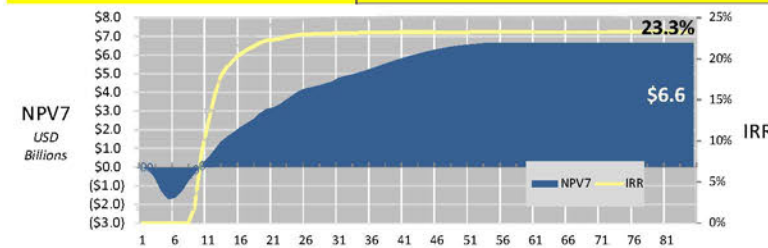
expressed in \$US millions, unless stated otherwise, volume in short tons (millions)

Scenario: 180kTPD, 3.15B tons SCN3.6 \$3.6B Capex

Year 37 Year 38 Year 39 Year 40 Year 41 Year 42 Year 43 Year 44 Year 45 Year 46 Year 47 Year 48 Year 49 Year 50 Year 51 Year 52 Year 53 Year 54 Year 55 Year 56

49 YEARS PRODUCTION				
	\$/t milled	TOTAL	NPV 7%	
Mining Volume		9,547		
Milling Volume		3,146		
Strip Ratio	2.03			
REVENUE		130,860	26,235	
Copper (\$US 3 per lb)	65%	84,590	16,571	
Gold (\$US 1300 per oz)	23%	29,904	6,490	
Molybdenum (\$US 12 per lb)	11%	14,158	2,705	
Silver (\$US 20 per oz)	2%	2,209	468	
Realization charges	9.7%	12,635	2,465	
NET SMELTER RETURN		118,225	23,770	
OPERATING COSTS		42,572	10,452	
Open Pit	1.68	16,034	4,260	
Process	4.69	14,763	3,195	
Transportation	0.65	2,042	402	
Environmental	0.95	2,981	645	
G&A	0.75	2,359	514	
Infrastructure Lease	1.40	4,393	1,434	
	13.53			
OPERATING PROFIT (EBITDA)		75,654	13,318	
CAPITAL COSTS		3,586	3,056	
Capital Costs - Leased Infrastructure (FYI only)	incl. opex	1,595	1,434	
Sustaining Capital - Mining	0.50	1,568	774	
Sustaining Capital - Expansion	0.00	-	-	
Sustaining Capital - TSF, Other	1.25	3,927	917	
Reclamation Funding	0.31	963	282	
Project Finance Principal & DSRF	0.00	-	-	
Project Finance Interest and Fees	0.00	-	-	
Pre-production Proceeds of Metal Stream	0.53	1,665	1,420	
Working Capital	-	-	128	
PRE-TAX PROJECT CASH FLOW		67,275	9,581	
Cumulative Pre-tax Project Cash Flow				
PV Factor				
PRE-TAX PROJECT NPV 7		9,581		
IRR		25.8%		
Pre-tax Project Payback (yrs)		3.6		
NPI Royalty		1,254		
Alaska Mining License		3,643		
Alaska State Royalty Taxes		1,614		
Borough Severance & Property Taxes		1,808		
TOTAL MINING TAXES & ROYALTIES		8,319	1,283	
Total Corporate Income Tax Payable		12,802	1,654	
effective tax rate		21.7%		
POST-TAX PROJECT CASH FLOW		46,154	6,644	
Cumulative Post-tax Project Cash Flow			69%	
POST-TAX PROJECT NPV 7		6,644		
IRR		23.3%		
Post-tax Project Payback (yrs)		3.8		

	Year 37	Year 38	Year 39	Year 40	Year 41	Year 42	Year 43	Year 44	Year 45	Year 46	Year 47	Year 48	Year 49	Year 50	Year 51	Year 52	Year 53	Year 54	Year 55	Year 56
Mining Volume	77	77	77	77	72	72	72	26	-	-	-	-	-	-	-	-	-	-	-	-
Milling Volume	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	65.70	28.65	-	-	-	-	-	-	-
Strip Ratio	0.2	0.2	0.2	0.2	0.1	0.1	0.1	-0.6	-1.0	-1.0	-1.0	-1.0	-1.0	na	na	na	na	na	na	na
REVENUE	3,432	3,377	3,352	3,436	3,344	3,267	3,096	2,558	2,261	2,261	2,261	2,261	986	-	-	-	-	-	-	-
Copper (\$US 3 per lb)	2,358	2,298	2,215	2,168	2,078	1,981	1,797	1,451	1,350	1,350	1,350	1,350	589	-	-	-	-	-	-	-
Gold (\$US 1300 per oz)	641	646	681	794	761	765	789	689	639	639	639	639	279	-	-	-	-	-	-	-
Molybdenum (\$US 12 per lb)	382	382	405	423	453	468	454	368	229	229	229	229	100	-	-	-	-	-	-	-
Silver (\$US 20 per oz)	51	51	50	51	53	54	56	50	42	42	42	42	18	-	-	-	-	-	-	-
Realization charges	347	341	339	339	338	332	310	251	203	203	203	203	89	-	-	-	-	-	-	-
NET SMELTER RETURN	3,085	3,036	3,013	3,097	3,007	2,935	2,786	2,307	2,057	2,057	2,057	2,057	897	-	-	-	-	-	-	-
	46.96	46.21	45.86	47.14	45.76	44.68	42.41	35.11	31.31	31.31	31.31	31.31	31.31	-	-	-	-	-	-	-
OPERATING COSTS	684	687	692	695	634	518	512	502	486	484	484	477	209	-	-	-	-	-	-	-
Open Pit	207	211	218	222	163	49	47	45	32	30	30	22	11	-	-	-	-	-	-	-
Process	309	309	309	309	309	309	309	309	309	309	309	309	135	-	-	-	-	-	-	-
Transportation	56	55	53	52	50	48	44	36	33	33	33	33	14	-	-	-	-	-	-	-
Environmental	62	62	62	62	62	62	62	62	62	62	62	62	27	-	-	-	-	-	-	-
G&A	49	49	49	49	49	49	49	49	49	49	49	49	21	-	-	-	-	-	-	-
Infrastructure Lease	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10.41	10.46	10.54	10.58	9.65	7.88	7.79	7.64	7.40	7.36	7.36	7.25	7.31	-	-	-	-	-	-	-
OPERATING PROFIT (EBITDA)	2,401	2,349	2,321	2,402	2,373	2,418	2,274	1,805	1,571	1,573	1,573	1,581	688	-	-	-	-	-	-	-
	70%	70%	69%	70%	71%	74%	73%	71%	69%	70%	70%	70%	70%	-	-	-	-	-	-	-
CAPITAL COSTS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Costs - Leased Infrastructure (FYI only)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital - Mining	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital - Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital - TSF, Other	8	126	8	126	8	126	8	126	8	126	8	126	8	-	-	-	-	-	-	-
Reclamation Funding	17	17	16	16	15	14	14	13	12	13	12	11	10	-	-	-	-	-	-	-
Project Finance Principal & DSRF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Finance Interest and Fees	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-production Proceeds of Metal Stream	18	21	11	4	8	15	3	73	15	14	15	14	109	94	-	-	-	-	-	-
Working Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PRE-TAX PROJECT CASH FLOW	2,358	2,227	2,285	2,265	2,342	2,293	2,256	1,739	1,566	1,449	1,539	1,458	778	94	-	-	-	-	-	-
Cumulative Pre-tax Project Cash Flow	44,983	47,211	49,496	51,761	54,102	56,395	58,651	60,390	61,956	63,406	64,945	66,402	67,181	67,275	67,275	67,275	67,275	67,275	67,275	67,275
PV Factor	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02
PRE-TAX PROJECT NPV 7	9,581																			
IRR	25.8%																			
Pre-tax Project Payback (yrs)	3.6																			
NPI Royalty	45	44	43	45	44	45	43	34	29	29	29	30	13	-	-	-	-	-	-	-
Alaska Mining License	126	123	121	126	124	128	120	93	80	80	80	81	32	-	-	-	-	-	-	-
Alaska State Royalty Taxes	56	54	53	55	55	57	53	41	35	35	35	36	14	-	-	-	-	-	-	-
Borough Severance & Property Taxes	47	46	46	47	46	45	42	35	32	32	32	32	14	-	-	-	-	-	-	-
TOTAL MINING TAXES & ROYALTIES	273	267	264	273	270	275	258	203	176	177	177	178	73	-	-	-	-	-	-	-
Total Corporate Income Tax Payable	459	447	441	459	456	471	441	341	293	294	294	296	117	-	-	-	-	-	-	-
effective tax rate	22%	23%	22%	23%	22%	23%	22%	22%	21%	23%	22%	23%	17%	0%	0%	0%	0%	0%	0%	0%
POST-TAX PROJECT CASH FLOW	1,626	1,513	1,580	1,533	1,617	1,547	1,557	1,195	1,097	979	1,068	984	588	94	-	-	-	-	-	-
Cumulative Post-tax Project Cash Flow	30,802	32,315	33,895	35,428	37,045	38,592	40,149	41,343	42,440	43,419	44,488	45,472	46,060	46,154	46,154	46,154	46,154	46,154	46,154	46,154
POST-TAX PROJECT NPV 7	6,644																			
IRR	23.3%																			
Post-tax Project Payback (yrs)	3.8																			



Message

From: Tom Collier [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=DB8A85DDDD0049FD8D85238493B197FB-TCOLLIER]
Sent: 9/26/2019 10:39:09 PM
To: Stephen Hodgson [stephenhodgson@pebblepartnership.com]
Subject: Fwd: Rosemont

(Internal)

Ron keeps talking about the various “alternatives” to the permit case. And he refers to them as numbers or letters. Like Alternative 1.

Can you help me understand what alternatives he is referring to? I understand that these generally include secondary gold recovery, a grade cut off, and increased through-put and mine life. But do you know how he is naming or numbering these alternatives?

Sent from my iPhone

Begin forwarded message:

From: Ron Thiessen <RonThiessen@hdimining.com>
Date: September 26, 2019 at 2:23:03 PM AKDT
To: Tom Collier <tomcollier@pebblepartnership.com>
Subject: Re: Rosemont

Yes to both, and on Rosemont isn't there part of the courts decision that supports Pebble in the event of ENGO litigation against the USACE?

It probably isn't applicable but Mingo Logan came up today in a meeting (thank you Doug)! That was a retroactive veto. Do you think there's any merit in differentiating it from Pebble. I believe I understand ML and what happened but just in case someone wants to explore the only “retro-active” veto.

On Sep 26, 2019, at 6:02 PM, Tom Collier <tomcollier@pebblepartnership.com> wrote:

Let me make sure I have what you want.

First, a memo that distinguishes what happened at Rosemont from the Pebble situation.

Second, a memo that explains what the process road map looks like for getting necessary permits for the various alternatives we have discussed.

Sent from my iPhone

On Sep 26, 2019, at 1:53 PM, Ron Thiessen <RonThiessen@hdimining.com> wrote:

Message

From: Ron Thiessen [RonThiessen@hdimining.com]
Sent: 9/27/2019 5:01:20 AM
To: Tom Collier [tomcollier@pebblepartnership.com]
Subject: Re: Rosemont

(External)

Yes to the bolt on Secondary Gold recovery plant.

On Sep 26, 2019, at 5:37 PM, Tom Collier <tomcollier@pebblepartnership.com> wrote:

I asked Steve to define the alternatives you and he have been discussing, see below. Assuming this is correct, I'd be doing a memo on the extension and expansion alternatives. Would you also like a bolt on gold plant addressed as an alternative?

Sent from my iPhone

Begin forwarded message:

From: Stephen Hodgson <stephenhodgson@pebblepartnership.com>
Date: September 26, 2019 at 3:13:18 PM AKDT
To: Tom Collier <tomcollier@pebblepartnership.com>
Subject: RE: Rosemont

- Permitting alternative
 - 180,000 tons per day
 - 1.3 billion tons milled over 20 years
 - Strip ratio 0.12:1
 - No gold plant
- Extension alternative
 - 180,000 tons per day
 - 3.15 billion tons milled
 - Cutoff grade strategy applied, mill fed for final 5 years from stockpile
 - Strip ratio 2.03:1
 - Mine life extended to 49 years
- Expansion alternative
 - Initial 180,000 tons per day, expanding to 240,000 tons per day in Year 4
 - 3.5 billion tons milled
 - Cutoff strategy applied, mill fed for final 5.5 years from stockpile
 - Strip ratio 1.77:1
 - Mine life 44 years

Stephen Hodgson P.Eng.

Senior Vice President Engineering & Project Director

Message

From: Tom Collier [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=DB8A85DDDD0049FD8D85238493B197FB-TCOLLIER]
Sent: 9/27/2019 11:13:31 PM
To: Stephen Hodgson [stephenhodgson@pebblepartnership.com]
Subject: Re: Extension alternative

Steve. I've got this. Please don't have James or anyone else do any work on it. We looked at this months ago. I've got a few outstanding questions to the lawyers and I'll get back to Ron. Thanks.

Sent from my iPad

On Sep 27, 2019, at 3:03 PM, Stephen Hodgson <stephenhodgson@pebblepartnership.com> wrote:

(Internal)

Tom, Ron called me this morning regarding the Doyon discussions and he mentioned that he had asked you to provide some information on how the extended alternative would be implemented from the permitting case. I've put some information together below as an outline of what would have to be done to implement the extended alternative.

Extension alternative

Friday, September 27, 2019
11:38 AM

The Extension alternative is based on the following:

- <!--[if !supportLists]--><!--[endif]-->Project constructed per the Permitting Case
- <!--[if !supportLists]--><!--[endif]-->180,000 tons per day mill feed, 3.1 billion tons total
- <!--[if !supportLists]--><!--[endif]-->Total waste mined - 6.4 billion tons
- <!--[if !supportLists]--><!--[endif]-->Mining rate increase starting in Year 3, transitioning over several years to 5x the permitting case.
- <!--[if !supportLists]--><!--[endif]-->Cutoff grade strategy implemented in Year 3 with mining rate increase
- <!--[if !supportLists]--><!--[endif]-->Gold plant commissioned and operating in Year 3
- <!--[if !supportLists]--><!--[endif]-->Operating life extended to 49 years with the last 5.5 years plant feed from stockpile

The extended project will require significant waste dumps (Upper Talarik Creek and South Fork Kaktuli), water treatment capacity increase, and in approximately Year 20-23 commissioning of a new tailings facility (likely Site R).

Revised plans for Site R have not been developed but conceptually, the pyritic tails would occupy a separate cell within Site R. After moving to Site R, the bulk TSF would be closed per the current plan. The pyritic tails would be reclaimed to the gold plant to recover the gold and then transfer to the Site R pyritic facility. The pyritic TSF would be converted to a PAG waste rock facility and remain in place.

The increased mining capacity and gold plant would likely result in the need for additional power generation capacity. The large increase in mining tonnage would also require expansion of the explosives handling, an increase in workforce with expanded camp facilities, and

additional fuel storage. The remaining infrastructure would be adequate to handle the tonnage increase.

To enable this to proceed per this schedule, the project must be authorized at the beginning of Year 2:

- <!--[if !supportLists]--><!--[endif]-->Purchase mining equipment
- <!--[if !supportLists]--><!--[endif]-->Prepare waste dump sites
- <!--[if !supportLists]--><!--[endif]-->Construct additional water treatment facilities for the larger footprint
- <!--[if !supportLists]--><!--[endif]-->Construct gold plant
- <!--[if !supportLists]--><!--[endif]-->Expand camp and mine operations facilities

Likely permit implications (James should weigh in here):

- <!--[if !supportLists]--><!--[endif]-->Waste dumps and stockpiles will require 404 permits prior to development
- <!--[if !supportLists]--><!--[endif]-->Site R tailings will require 404 permits by year 20
- <!--[if !supportLists]--><!--[endif]-->The water management plan will require major revisions, which will trigger the requirement for a new APDES permit
- <!--[if !supportLists]--><!--[endif]-->The increased mine operation, power increase, waste dumps, and Site R will trigger a PSD revision.

To make this happen, the feasibility study for the extension would have to be completed during construction. While perhaps a bit unusual, this is precisely what First Quantum did with their expansion of Cobre Panama.

Created with Microsoft OneNote 2016.

Stephen Hodgson P.Eng.

Senior Vice President Engineering & Project Director

<image001.png> **Pebble Limited Partnership** | 505 – 3201 C Street, Anchorage AK 99503 USA
Dir +1-907-339-2607 T +1-907-339-2600 TF +1-800-450-2600 F +1-907-339-2601 C +1-907-227-4688
E StephenHodgson@pebblepartnership.com Web pebblepartnership.com

Message

From: Ron Thiessen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=952FB143BD9C47F88914E612C9C0A02E-RON THIESSE]
Sent: 1/3/2020 8:50:28 PM
To: [REDACTED]
Subject: FW: 2011 - PEA compressed
Attachments: image001.jpg; ATT00001.htm; NorthernDynasty.Wardrop PEA.Feb.2011.pdf; ATT00002.htm

Clark, attached is a compressed version of the 2011 PEA for your review. The ES is very informative and is about 50 pages.

I think this document while dated is still very relevant. Capital items have not changed much since that time, recall that iron ore, oil, steel etc., were at all time highs. And all are much lower today. In addition we used much lower metal prices than would be applicable today; then Cu \$2.50 and Au \$1050, now Cu\$3 and Au \$1350 (or higher).

The size of the plant is smaller, as the PEA is a 200,000MT/220,000ST daily throughput, and the current plan is 160,000MT/180,000ST through put. This change was arrived at mainly through 2012/13 work with Anglo, where the original plan was to permit a 320,000Mtpd operating plant, but only build a 160,000Mtpd facility initially and increase the plant in future years. Increases would come on the back of higher metal prices, more demand, and/or perhaps mine expansion considering some form of underground mining to access the much higher grades in a selective manner. After Anglo left, we reconsidered this plan, and decided that trying to permit something of that scale would be more challenging, and why would you do that when the initial intention was to built ½ that scale. More logical to permit production capacity increases in future when the basis for the increase would be known with certainty and not speculative.

Ron

Ron Thiessen President & CEO



Hunter Dickinson Inc. | 15th Floor - 1040 W. Georgia St. Vancouver BC V6E 4H1 Canada
T +1-604-684-6365 F +1-604-681-2741 TF 800-667-2114
E RonThiessen@hdimining.com Web hdimining.com

From: Ron Thiessen
Sent: November 21, 2019 8:35 PM
To: [REDACTED]
Subject: Fwd: 2011 - PEA compressed

I arranged a compressed version of the 2011 PEA. Hopefully it makes it.
Ron

Begin forwarded message:

From: Doug Allen <dougallen@northerndynasty.com>
Date: November 21, 2019 at 6:02:13 PM EST
To: Ron Thiessen <RonThiessen@hdimining.com>
Subject: 2011 - PEA compressed

Doug Allen Vice President | Corporate Communication

Message

From: Ron Thiessen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=952FB143BD9C47F88914E612C9C0A02E-RON THIESSE]
Sent: 6/29/2020 10:45:10 PM
To: [REDACTED]
CC: Tom Collier (tomcollier@pebblepartnership.com) [tomcollier@pebblepartnership.com]
Subject: NDm PLP Contact details (and a bit more)
Attachments: Commissioner Feige letter to Tom Collier. February 12 2020.pdf; DNR Commissioner Feige letter to Col Borders. April 15 2020.pdf; Wardrop.PEA.2.2011-compressed.pdf; USACoE. Preliminary Final EIS. Executive Summary. Feb 2020.pdf

Gabe

Please find my and Tom's contact details below. In addition I decided to send along a couple of interesting pieces:

- I have attached two letters from Alaska Commissioner DNR Cori Feige (ie Alaska Minister of Energy & Mines) to Tom Collier and Colonel Borders (Alaska Corps of Engineers). Both letters are powerful reads and reinforce the important message that "Alaska is open for responsible mineral development"
 - We discussed that Gov. Mike Dunleavy's 3 daughters have worked, and 1 still does work, at Teck's Red Dog Mine. He is very supportive of the mining industry in general and Pebble's right to due process specifically
 - Alaska ranked #4 in the Fraser Institute 2019 survey of Global Mining jurisdiction attractiveness
 - Overall we believe that the State of Alaska permitting process will be both rigorous and efficient.
- February 2020 Executive Summary of the final draft of the Final EIS.
- 2011 PEA

That is more than I said I would send, and more than you need for casual reading, but each is I believe an important and relevant piece. The letters from Commissioner Feige really set out the attitude of not only the Commissioner but of the Governor as well vis a vis responsible resource development and Pebble as well. The findings in the final draft of Final EIS for completeness and the breadth and depth of study analysis. And the 2011 PEA sets out what Pebble can easily become and I feel is still very relevant in the context of today's capital and operating cost environment, even though we used substantially lower metal prices than would be used today.

Regards and thank you and Matteo for your time earlier today.

Ron

Tom Collier CEO Pebble LP
Anchorage Alaska
Email: tomcollier@pebblepartnership.com
Web: <https://pebblepartnership.com>

Ron Thiessen President & CEO



Hunter Dickinson Inc. | 15th Floor - 1040 W. Georgia St. Vancouver BC V6E 4H1 Canada
T +1-604-684-6365 F +1-604-681-2741 TF 800-667-2114
E RonThiessen@hdimining.com Web hdimining.com

Message

From: RonThiessen@hdimining.com [RonThiessen@hdimining.com]
Sent: 9/12/2019 2:31:15 PM
To: [REDACTED]
CC: Stephen Hodgson - PLP [stephenhodgson@pebblepartnership.com]; Diane S. Nicolson [dianenicolson@hdimining.com]
Subject: Re: New Opportunity - Pebble Project

[REDACTED]

The Pebble Project is well beyond exploration with mineral resources of +10B tons; 55% of which are in the M&I category. We are currently in the final stages of mine permitting under the US NEPA process. The project development plan we are in permitting with seeks to Mine approximately 10% of the total resources.

That said we have a large property with multiple potential targets and the Pebble deposit itself is open in a couple of directions.

I have copied Stephen Hodgson VP Engineering for Northern Dynasty and in charge of the permitting process. In terms of Pebble he would be best placed to provide answers to the extent we are prepared to do so.

I have also copied Diane Nicholson another executive within our over all group of Hunter Dickinson (<http://www.hdimining.com/s/SeniorManagement>.) and President and CEO of Amarc Resources, which is focused on earlier stage exploration projects in B.C. she would also be a person involved in geological assessments.

Regards

Ron Thiessen

On Sep 12, 2019, at 6:57 AM, [REDACTED] wrote:

Hello Mr. Ronald,

Good morning, this is [REDACTED] from the *Seequent group*, you might know us as the developers of [Leapfrog](#) and [Geosoft](#) (Oasis Montaj).

I was reading some news and saw that [Northern Dynasty Minerals](#) announced some exciting news on funding for the Pebble Project. Would it be okay to ask you some questions about the exploration Projects?

Who would you suggest would be the best person in your business for me to talk to about your plans in exploration and how Seequent might be able to assist in your future workflows with regards the geoscience decision making?

In addition to the well-known exploration solutions, now we have a pioneering data management solution for your drilling and sample data, [Deposit](#).

We are available to talk about your demands and challenges and how we can help!

Kind Regards,
[REDACTED]

Message

From: [REDACTED]
Sent: 8/5/2020 12:20:45 AM
To: Ron Thiessen [ronthiessen@hdimining.com]; Tom Collier [tomcollier@pebblepartnership.com]; Betty Chan [bettvchan@hdimining.com]
CC: [REDACTED]
Subject: Re: Pebble Project infrastructure

Ron,
Thank you for the thorough explanation.

Regards,
Ryan

Get [Outlook for iOS](#)

From: Ron Thiessen <RonThiessen@hdimining.com>
Sent: Tuesday, August 4, 2020 8:05:05 PM
To: [REDACTED]; Tom Collier <tomcollier@pebblepartnership.com>; Betty Chan <BettyChan@hdimining.com>
Cc: [REDACTED]
Subject: RE: Pebble Project infrastructure

Ryan

In the 2011 PEA the net capex is \$4.6948B, net of \$1.3150B in infrastructure costs; total \$6.010B. Ratio of 180/200* would give total capex of \$5.409B, and then outsource the same number for infrastructure.

The assumption in the PEA is that we would outsource the infrastructure components (Port Power Road) to 3rd parties. They would then charge the project usage/toll fees to recover their costs, including interest and profit. From a DCF standpoint this makes financial sense for Pebble, as it will reduce the upfront capex, spread the cost (plus providers costs and profit) out over +25 years, thus reducing the upfront DCF hit. And Pebble has good margins, which increase over time (nature of higher grade ores in future).

And that is still the case.

*This all for a 200,000 ton per day concentrator operation. Our permitting plan is for a 180,000 tpd concentrator operation.

Cobre de Panama, see <http://www.canadianminingjournal.com/news/copper-first-quantum-gives-cobre-panama-15-boost/>

Capex is \$6.300B for 85mtpa (85 million tonnes per annum, or 234,000 tonnes per day, so likely the nominal throughput would be 220,000 metric tonnes per day), converting to US short tons 220,000 x 1.1= 242,000 ton/day. 180/242 x \$6.3B=\$4.490B.

Recall that our 2011 PEA was done at a time when oil prices were circa \$125/bbl and steel prices were running \$1000/t v \$500/t when FQM was building CdeP. What I am saying is that when we were doing the 2011 PEA (so costing was being done later ½ of 2010 and early 2011) all costs were very high.

Ron Thiessen President & CEO



Hunter Dickinson Inc. | 15th Floor - 1040 W. Georgia St. Vancouver BC V6E 4H1 Canada
T +1-604-684-6365 F +1-604-681-2741 TF 800-667-2114
E RonThiessen@hdimining.com Web hdimining.com

From: [REDACTED]

Sent: August 4, 2020 3:19 PM

To: Ron Thiessen <RonThiessen@hdimining.com>; Tom Collier <tomcollier@pebblepartnership.com>; Betty Chan <BettyChan@hdimining.com>

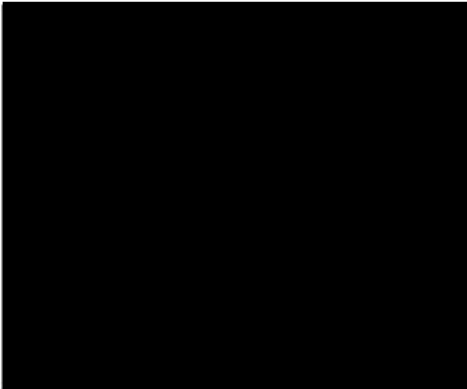
Cc: Taylor McKenna <tmckenna@kopernikglobal.com>

Subject: Pebble Project infrastructure

Hi Ron and Tom,

I hope all is well. Could you provide a quick recap of the capex range of the Pebble project, given its similar size to Cobre Panama? Secondly, is the \$4.6bn figure in the 2011 Tech Report, assuming access roads developed by the government, and is that still the case?

Regards,



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From: Ron Thiessen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=952FB143BD9C47F88914E612C9C0A02E-RON THIESSE]
Sent: 8/5/2020 12:49:16 AM
To: [REDACTED]
Subject: RE: Offer of Employment
Attachments: NDM2011PEA.pdf

Yes he went over a couple of changes with me late in the day, you should have a revised offer today.

In the meantime you were looking for some more reading (other than the very modest Willie book). Please find attached the 2011 PEA.

Ron

Ron Thiessen President & CEO



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T +1-604-684-6365 F +1-604-681-2741 TF 800-667-2114
E RonThiessen@hdimining.com Web hdimining.com

From: [REDACTED]
Sent: August 4, 2020 3:44 PM
To: Ron Thiessen <RonThiessen@hdimining.com>
Subject: Re: Offer of Employment

Thanks Ron.

I had a read. The comp and everything looks good. Greg and I had a chat about a few questions I had, as it has been a while since I have been granted stock options.

Cheers

Mike

From: Ron Thiessen <RonThiessen@hdimining.com>
Sent: Tuesday, August 4, 2020 12:37 PM
To: [REDACTED]
Subject: Offer of Employment

Mike

Please find attached the offer of employment. You will see it comes from HDSI, the more or less master company which holds all the leases, employment contracts etc., for the public companies in the group. Neither HDSI nor HDI own any shares in the various public companies; they are principally service providers that help facilitate the business model of the HD group of companies.

You will be seconded to Northern Dynasty Minerals Inc., and that is addressed in the contract overall along with the appropriate provisions and protections within NDM.
Have a read, don't hesitate to ask for clarity on anything that you question.

Regards
Ron

Ron Thiessen President & CEO



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Message

From: Doug Allen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=CDFCEA029E1E41DE8FD0CAA6599DDA87-DOUG ALLEN]
Sent: 11/10/2019 10:54:43 PM
To: Ron Thiessen [ronthiessen@hdimining.com]
CC: Betty Chan [bettychan@hdimining.com]
Subject: Ron - email #2 of 2
Attachments: Pebble. A New Path Forward - November 2018.pdf; A Clear Path Forward. November 2019.pdf; USACE. PLP Draft EIS. Executive Summary. Feb 20 2019-compressed.pdf

Ron....as discussed in my prior email what about this as a draft for the list I included in that prior email.
Betty could send these from your email address starting on Tuesday....D

“Don (Don Lindsay, Mark Bristow, Paul Rollinson, Stuart Tonkin, Phil Baker, Mitch Krebs, Tom Kaplan?, Greg Lang?.
Consider cc’ing Tom on emails sent to those CEO’s with Alaskan mines)
I trust this finds you well.

I am writing to ensure that you are aware that the reality on the ground in Alaska has changed quite meaningfully in the past year and that not-surprisingly the popular media (mis)perceptions have not yet caught up with this reality.

I am attaching to this email two brochures.

[3 attachments if you decide to also attach the pdf of the DEIS Exec Summary. See below]

The first, “*Pebble: A New Path Forward*”, was sent to ~ 250,000 Alaskans last November just after the resounding defeat of Ballot Measure 1.

[Ron, for recipients who do not have businesses in Alaska and who may not be familiar with BM1 I propose adding this next sentence so as to educate them:]

BM1 if you are not aware was a November 2018 Alaska general election ballot measure aimed directly against Pebble which Alaskan voters defeated by a resounding 62% - 38%.

Alaskans were hungry for straight-forward answers to their straight-forward questions about how Pebble will protect water quality and co-exist with the fishery.

A New Path Forward was a very good success on our journey to improve perceptions and public support in Alaska.

- In the last year our polling indicates that support for the project has moved 8% points to 55%. Further it indicates that a resounding 70% of Alaskans support Pebble’s right to go through the permitting process. Moreover, an astounding 54% of those who indicate opposition to the project say that they would consider changing their opinion if presented with facts that convinced them to do so.

[Mike/Tom needs to confirm the numbers]

If this context the February 2019 *Draft Environmental Impact Statement* is critical.

As you will appreciate the *DEIS* is the first truly independent assessment of the facts and science regarding Pebble.

As you may be aware the *DEIS* was very clean and it concludes unequivocally and repeatedly that:

- Pebble will not harm the Bristol Bay fishery
 - No population-level effects, even in the instance of tailings failure, which the Corps describes as “highly unlikely”
- Pebble will not affect water resources of Bristol Bay
- Pebble will make an important contribution to a disadvantaged region, and the State of Alaska as a whole

Given it’s enormous importance I have provided you with a hyperlink ([here](#) – 2nd document in the list) to the Executive Summary of the *DEIS* in case it is of interest.

[Ron if you prefer, we could add a pdf of the Exex Summary of the *DEIS*, instead of including the hyperlink? It is an incremental 3MB and by attaching it it improves the likelihood that recipients may actually open it up and read part of it]

On the back of this extremely favourable and clean *DEIS* we have just sent to the same ~250,000 Alaskans the second attached brochure, "*Pebble: A Clear Path Forward*".

I hope that you will take a few minutes to review both of these brochures.

Last, on the topic of "no native support for the project" I remind you that in fact we have signed land access agreements with both Alaska Peninsula Corporation and Iliamna Natives Limited, the two largest landowners in the region and the two largest Village Native Corporations most affected by Pebble. APC and INL are now our business partners in the project.

Recently, Willie Hensley, an icon in Native Alaska, has been our spokesperson in a television ad that we ran in-state. The link below provides you with access to that advertising clip if you've not previously seen it.

<https://f.io/12bwzF6->

As a reminder the US Army Corps of Engineers continues to target the completion of the EIS process and the issuance of the *Record of Decision* by mid 2020.

It is a very exciting time for the project.

I am available to discuss our progress if you would like.

My best,

Ron

Doug Allen Vice President | Corporate Communication



Northern Dynasty Minerals Ltd.

Northern Dynasty Minerals Ltd. | 15th Floor - 1040 W. Georgia St. Vancouver BC V6E 4H1 Canada

Dir +1-778-373-6966 T +1-604-684-6365 TF 800-667-2114

E DougAllen@northerndynasty.com Web www.northerndynastyminerals.com

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A NEW PATH FORWARD



Dear Alaskans,

You've heard about Pebble. But it's hard to know what the truth is these days, isn't it?

Mining and fishing DO coexist in Alaska. We believe Pebble won't harm the fishery, and we're confident the permitting process will validate that.

This Alaska asset should have a full, fair, and thorough review by experts. Not based on politics. Not based on opinions, but real science. Based on facts.

Alaskans know how to develop resources responsibly and have done so for decades. We look forward to working together.

*Tom Collier, CEO
Pebble Partnership*



**Pebble is an important opportunity for Alaska,
but there are many misconceptions.**

Let's review the facts.



“WHERE IS PEBBLE?”

Despite what you may have seen or heard, Pebble is NOT at the “headwaters” of Bristol Bay.

It is at the upper reaches of three very small tributaries – out of over 50,000 tributaries in the entire drainage.

KEY FACTS

- On state of Alaska land open for development
- 100 air and 230 river miles from Bristol Bay
- Footprint is only 0.013% of the Bristol Bay area



Pebble is in a very suitable location. Even in the unlikely event of an incident, we’re confident the effect on the fishery would be minimal.



“HOW BIG IS IT?”

There’s no question Pebble is a substantial project. But you might be surprised how small it will be.

KEY FACTS

- Footprint will equal only 5.3 square miles
- No facilities in the Upper Talarik drainage
- Will NOT be the largest mine in Alaska



THIS IS THE PEBBLE DEPOSIT

MINE AREA BRISTOL BAY SOCKEYE ESCAPEMENT

Koktuli Drainage:

South Fork 0.06%

North Fork 0.02%

TOTAL 0.08%

The mine footprint will not have an adverse effect on fish productivity. Our science proves it. The purpose of permitting is to validate it.

“WHAT ABOUT THE FISH?”

Fish need clean water, and we understand virtually every aspect of it at the Pebble site.

Flow, chemistry, even temperature.

We will protect the salmon, their environment, and the watershed.

KEY FACTS

- Cyanide will NOT be used at Pebble
- Every drop of water will be carefully managed
- Released water will be optimized for fish



WATER FROM MINE FOOTPRINT



ALL WATER ENTERING BRISTOL BAY

AREN'T YOU AT THE “HEADWATERS?”

Based on our current plan, water entering Bristol Bay which comes from the mine footprint area will equal 0.01%.

Even that small amount will be treated for optimal fish conditions before release.

Mine operations will be safe for the Bristol Bay fishery. How confident are we?
Our own drinking water will be drawn directly from ground water wells.

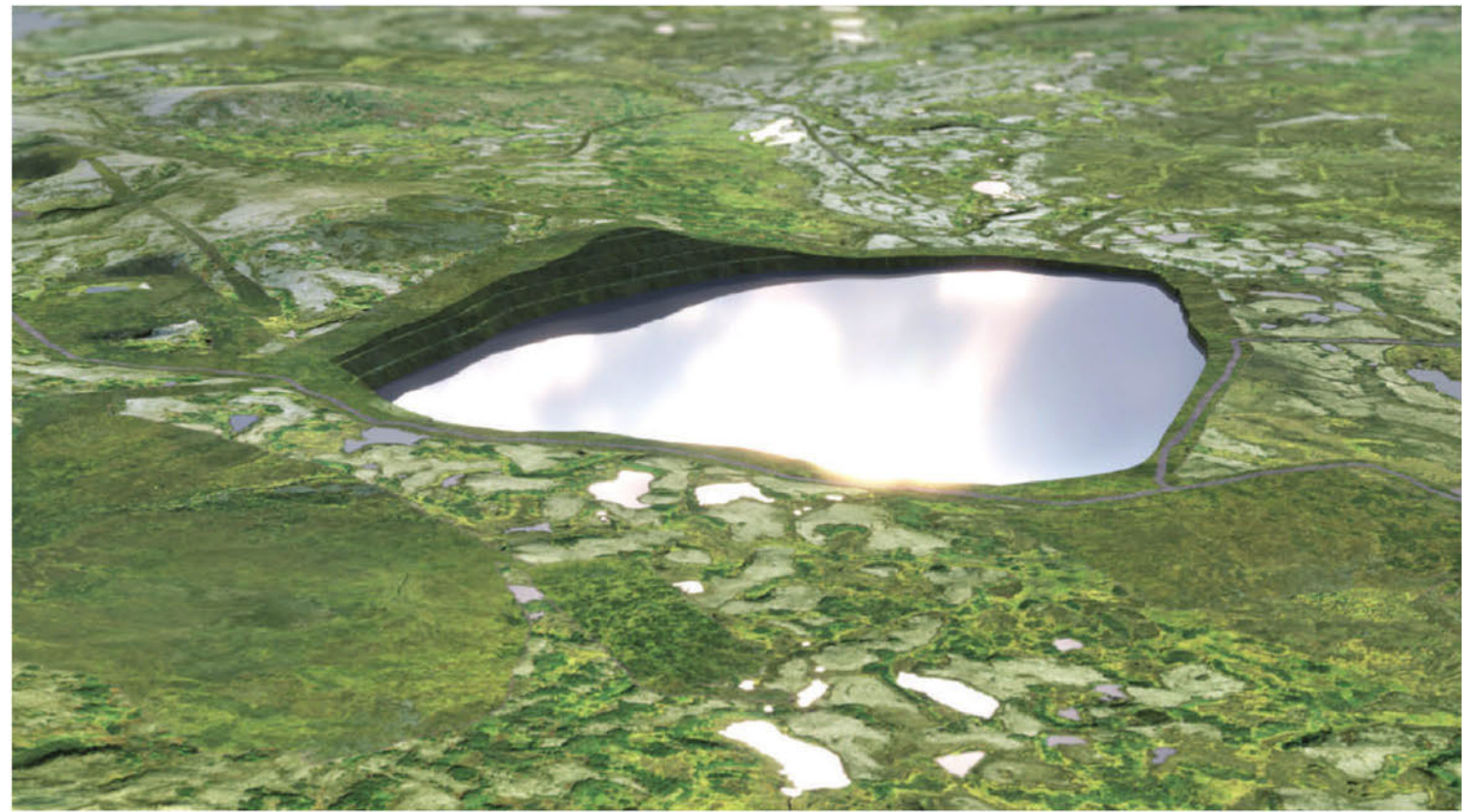
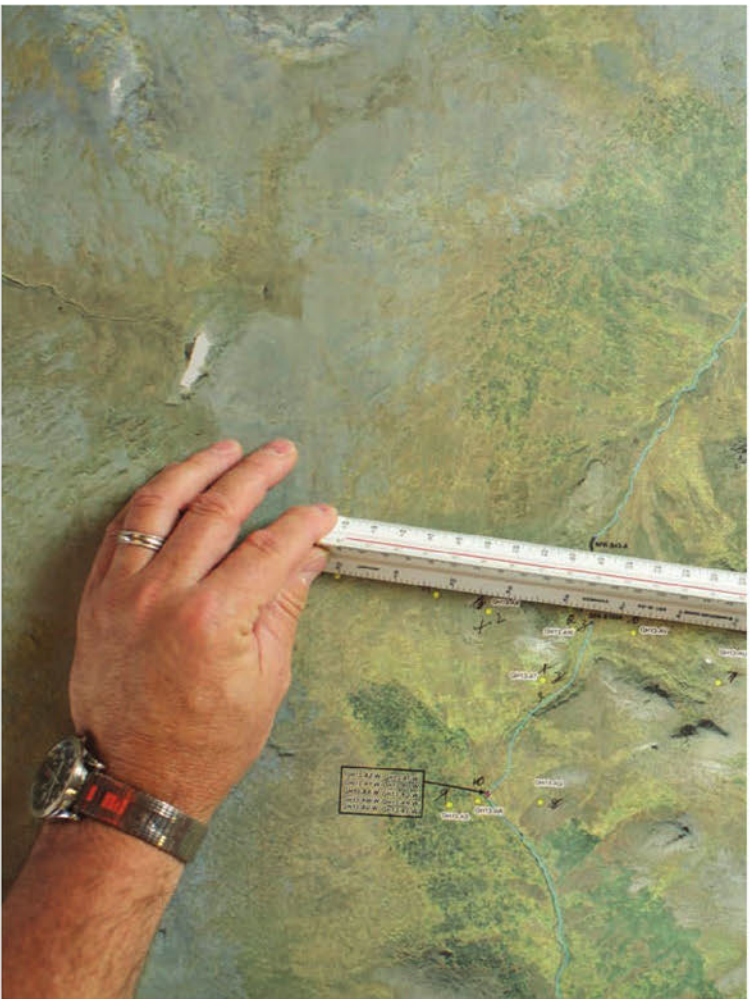
“ARE TAILINGS TOXIC?”

Most mined rock will be inert. But about 12% will be pyritic, which can create acidic conditions if exposed to air and water.

Tailings aren't "toxic." They are a natural byproduct to be kept in a lined facility and returned to the pit at closure.

KEY FACTS

- **Pyritic tailings stored in a fully lined facility**
- **Will meet Alaska Dam Safety Program standards**
- **Designed using proven, world-class engineering**



All pyritic tailings will be backhauled to the pit for permanent underwater storage. They will present no failure risk and offer no threat to downstream habitat.



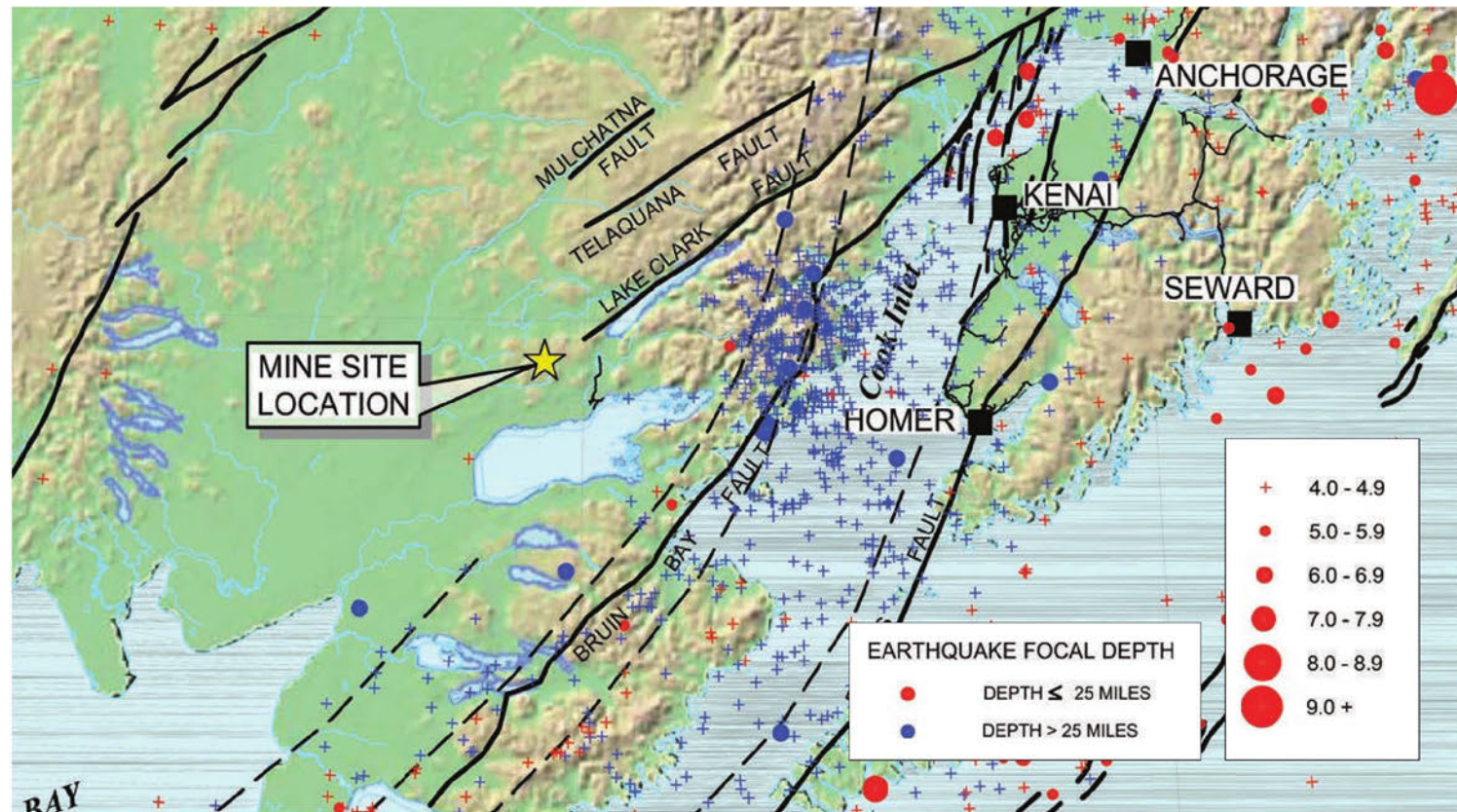
“OKAY... EARTHQUAKES!”

Despite what you may have heard, seismic activity near the deposit is extremely low.

Nevertheless, we are taking extraordinary steps to safeguard against earthquakes.

KEY FACTS

- **No meaningful area seismicity for 11,000 years**
- **Designed for a max quake where no fault exists**
- **Will be built for Alaska’s largest earthquakes**



The mine is designed to withstand the greatest possible seismicity predicted by science. But even in the worst possible scenario, science tells us that the fishery will be fine.

“BUT THE SCIENCE...”

Much of what you’ve heard about Pebble is false. Where did it come from?

The EPA produced the “Bristol Bay Watershed Assessment” using faulty data and seeking a predetermined outcome. Simply put? It was bad science.

KEY FACTS

- EPA mine scenarios were designed to fail
- Peer reviews called it “suspect” and “misleading”
- Mining and fishing DO co-exist in Alaska



U.S. HOUSE SCIENCE COMMITTEE IN 2017:

“The preemptive [EPA] action taken for the Pebble Mine Project was unprecedented under the Clean Water Act and was justified by a questionable scientific assessment that relied on predetermined conclusions developed by EPA officials.”

Permitting experts will conduct a rigorous and scientific review, demanding transparency and accountability. This process is the right way to evaluate the Pebble project.

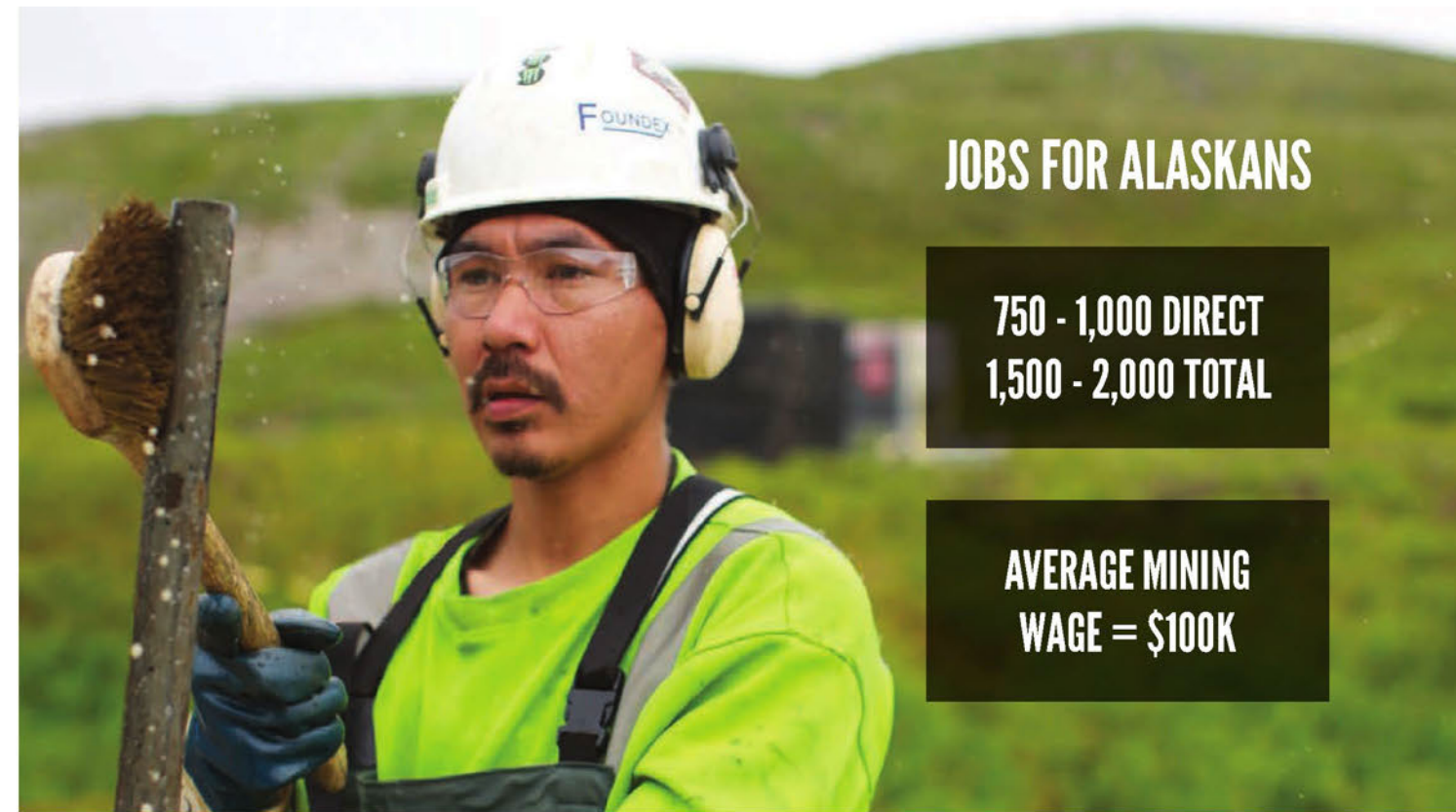
“WHO BENEFITS?”

The opportunities for Alaskans, and local and state government, are substantial.

What do these economic numbers mean for Alaskans? They mean jobs. And jobs mean self-sufficiency. Purpose.

EXPECTED BENEFITS

- Planned revenue sharing with local residents
- \$21 Million average annual L&P Borough revenue
- \$1 Billion estimated state of Alaska revenue



JOBS FOR ALASKANS

750 - 1,000 DIRECT
1,500 - 2,000 TOTAL

AVERAGE MINING
WAGE = \$100K

“There are no other job opportunities, absolutely none. If Pebble weren't here, I'd probably be on welfare, probably be on food stamps, be on energy assistance.” – Lake Area Resident

“WHAT ARE THE FACTS?”

We believe in this project, and we believe in Alaska. But there have been a lot of lies about Pebble, so let's review the facts.

Pebble is an asset for Alaska.

Pebble means jobs for Alaskans.

Pebble will NOT harm the fish.

**The permitting process
will validate this.**



Cautionary & Forward Looking Information

The Pebble Limited Partnership ("PLP") is a wholly-owned subsidiary of Northern Dynasty Minerals Ltd ("NDM"). Through PLP and another subsidiary, NDM holds a 100% interest in the Pebble Project.

This presentation includes "forward-looking statements". All statements in this presentation, other than statements of historical facts, that address exploration drilling, exploitation activities and events or developments that NDM expects are forward-looking statements. Although NDM believes the expectations expressed in its forward-looking statements are based on reasonable assumptions, such statements should not be in any way construed as guarantees of the ultimate size, quality or commercial feasibility of the Pebble Project or of NDM's future performance or the outcome of litigation.

Assumptions used by NDM to develop forward-looking statements include the following: the Pebble Project will obtain all required environmental and other permits and all land use and other licenses, studies and development of the Pebble Project will continue to be positive, and no geological or technical problems will occur. The likelihood of future mining at the Pebble Project is subject to a large number of risks and will require achievement of a number of technical, economic and legal objectives, including obtaining necessary mining and construction permits, approvals, licenses and title on a timely basis and delays due to third party opposition, changes in government policies regarding mining and natural resource exploration and exploitation, the final outcome of any litigation, completion of pre-feasibility and final feasibility studies, preparation of all necessary engineering for surface or underground mining and processing facilities as well as receipt of significant additional financing to fund these objectives as well as funding mine construction. NDM is also subject to the specific risks inherent in the mining business as well as general economic and business conditions. For more information, Investors should review NDM's filings with the US Securities and Exchange Commission at www.edgar.com and its home jurisdiction filings available at www.sedar.com.

The technical information contained in this presentation has been reviewed and approved by Stephen Hodgson, PEng, a qualified person who is not independent of NDM.

The Information presented on pages 16 and 17 of this brochure is indicative only and based on the mine development case submitted in a 404 permit application (see below) and is intended to provide information about general economic effects/contribution of a development at Pebble to Alaska and the Lake and Borough Peninsula region. Includes estimates of mineral licensing tax, corporate tax, and state royalties. It should not be used to evaluate the Pebble Project's impact on Northern Dynasty.

In January 2018, the US Army Corps Of Engineers confirmed that Pebble's 404 permitting application was complete and that an Environmental Impact Statement ("EIS") is required to comply with its National Environmental Policy Act ("NEPA") review of the Pebble Project. As part of the EIS preparation process the USACE will undertake a comprehensive alternatives assessment and consider a broad range of development alternatives. NDM/PLP continues to consider various development options and no final project design has been selected at this time.





A CLEAR PATH FORWARD

CAUTIONARY AND FORWARD LOOKING LANGUAGE

The Pebble Limited Partnership ("PLP") is a wholly owned subsidiary of Northern Dynasty Minerals Ltd. ("NDM"). All statements of NDM and/or PLP in this presentation, other than statements of historical facts, that address the permitting, development and production for the Pebble Project are forward-looking statements. These statements include statements regarding (i) the mine plan for the Pebble Project, (ii) the social integration of the Pebble Project into the Bristol Bay region, (iii) the political and public support for the permitting process, (iv) the timetable for completion of the EIS permitting process by the US Army Corps of Engineers, and (v) the ability of NDM to develop the Pebble Project and become a leading copper, gold and molybdenum producer. Although NDM believes the expectations expressed in these forward-looking statements are based on reasonable assumptions, such statements should not be in any way be construed as guarantees that the Pebble Project will secure all required government permits, establish the commercial feasibility of the Pebble Project or develop the Pebble Project. Assumptions used by NDM to develop forward-looking statements include the assumptions that (i) the Pebble Project will obtain all required environmental and other permits and all land use and other licenses without undue delay, (ii) studies for the development of the Pebble Project will be positive, (iii) NDM will be able to establish the commercial feasibility of the Pebble Project, and (iv) NDM will be able to secure the financing required to develop the Pebble Project. The likelihood of future mining at the Pebble Project is subject to a large number of risks and will require achievement of a number of technical, economic and legal objectives, including (i) obtaining necessary mining and construction permits, licenses and approvals without undue delay, including without delay due to third party opposition or changes in government policies, (ii) the completion of feasibility studies demonstrating the Pebble Project mineral reserves that can be economically mined, (iii) completion of all necessary engineering for mining and processing facilities, and (iv) receipt by NDM of significant additional financing to fund these objectives as well as funding mine construction, which financing may not be available to NDM on acceptable terms or on any terms at all. NDM is also subject to the specific risks inherent in the mining business as well as general economic and business conditions. For more information, Investors should review the risk factors and related discussions in NDM's filings with the US Securities and Exchange Commission at www.sec.gov and its Canadian home jurisdiction filings available at www.sedar.com.

In January 2018, the US Army Corps Of Engineers (the "USACE") confirmed that Pebble's 404 permitting application was complete and that an Environmental Impact Statement ("EIS") is required to comply with its National Environmental Policy Act ("NEPA") review of the Pebble Project. As the NEPA EIS process requires a comprehensive "alternatives assessment" be undertaken to consider a broad range of development alternatives, the final project design and operating parameters for the Pebble Project and associated infrastructure may vary significantly from that contemplated in this presentation. As a result, we will continue to consider various development options and no final project design has been selected at this time.

Information about general economic effects/contribution of a development at Pebble to Alaska and local government should not be used to evaluate the Pebble Project's impact on NDM.

Dear Alaskans,

Pebble has a clear path forward. This is an exciting time for us – and for all Alaskans.

The Environmental Protection Agency (EPA) has revoked the pre-emptive veto against Pebble. This signals a fair, equitable, and reliable permitting process.

The U.S. Army Corps of Engineers (USACE) released the Draft Environmental Impact Statement (DEIS) – a thorough and objective evaluation which shows clearly that Pebble can co-exist with the fisheries.

We are committed to a project that benefits all Alaskans. It is time to move forward.

*Tom Collier, CEO
Pebble Partnership*





**Pebble represents a unique socioeconomic opportunity
for Alaska. Today, we have a clear path forward.**

Let's talk about why.

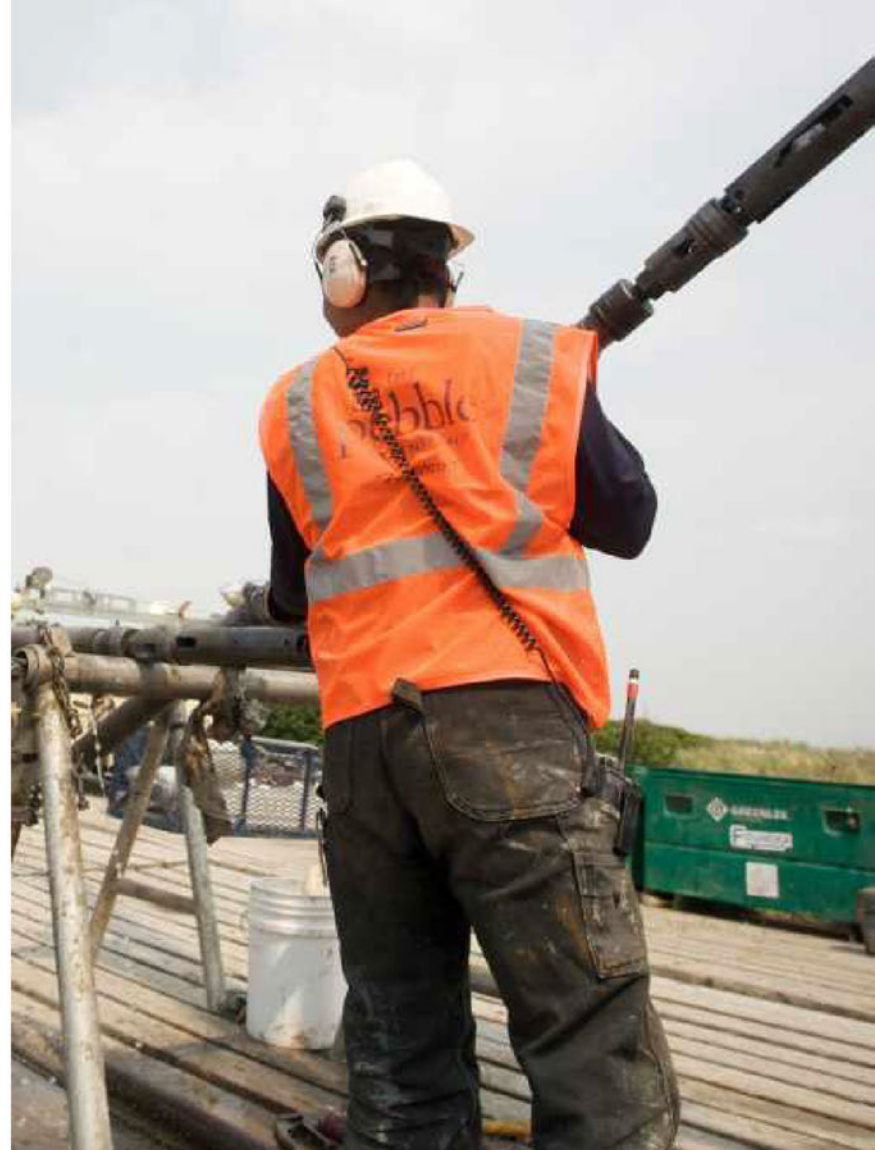
AN OBJECTIVE REVIEW

The Draft Environmental Impact Statement (DEIS) provides an expert, independent, transparent review and scientific evaluation of Pebble.

It is a key part of the stringent NEPA permitting process, respected globally, even by organizations which oppose Pebble.

THE DRAFT EIS

- **Expert, objective, scientific evaluation of Pebble**
- **Assesses if Pebble is environmentally safe**
- **Created by USACE, EPA, and many other agencies**



WHO PRODUCED THE DRAFT EIS?



US Army Corps
of Engineers®



Nondalton Tribal Council





MINING IS ESSENTIAL

It's easy to forget, but metal from mining makes all modern life possible. Without it? Well, that was the Stone Age.

With Alaska's proven record of responsible resource development, this is where we WANT to mine. And Alaskans will benefit.

KEY FACTS

- **Copper is essential for green energy and tech**
- **Mining must increase to support green efforts**
- **Domestic mining is better for the environment**

WHAT DOES THE DRAFT EIS SAY?

**Alaska's resource projects
already co-exist with fishing.**

(ES 53)



FACTS ABOUT PEBBLE

You've probably heard a lot about Pebble. Let's review some facts.

The Pebble Deposit is on state of Alaska land, acquired because of its mineral development potential. It was set aside specifically for mineral exploration.

KEY FACTS

- **Pebble is an asset for all Alaskans**
- **Pebble means jobs and revenue for Alaska**
- **Permitting affirms Pebble is safe for fish**

WHAT DOES THE DRAFT EIS SAY?

Project benefits include increased revenue, employment, and education.

(4.10-8)

ALASKANS WILL BENEFIT

The Pebble Deposit is an Alaska asset and offers economic opportunity statewide.

The benefits to the local people, and their economy and culture, are substantial – and mining on state land contributes to the Permanent Fund for all Alaskans.

FROM THE DRAFT EIS

- **1,000 to 2,000 direct and indirect Alaska jobs**
- **\$21M average annual local government revenue**
- **\$1B estimated state revenue over 20 years**



WHAT DOES THE DRAFT EIS SAY?

**Project benefits will be most apparent
in small, rural communities
closest to the mine site.**

(4.10-8)

WATER IS PROTECTED

Everything depends on clean water,
from people to fish to wildlife.

Water quality will be safe for
the Bristol Bay fishery, and the
DEIS validates that there will be no
harm to the area's water resources.

FROM THE DRAFT EIS

- **Cyanide will not be used for gold recovery**
- **Strategic water release will benefit fish habitat**
- **No downstream effects post-closure**



WHAT DOES THE DRAFT EIS SAY?

**Pebble's approach will
use industry best practices.**

(ES 5)



TAILINGS ARE SECURE

Our Tailings Storage Facility (TSF) will be designed for maximum safety using proven, world-class engineering.

The DEIS affirms that catastrophic failure is highly unlikely – that’s tech-talk which means our approach is sound.

FROM THE DRAFT EIS

- **Pyritic tailings storage will be fully lined**
- **Must meet Alaska Dam Safety Program standards**
- **Pyritic TSF will be eliminated at closure**

WHAT DOES THE DRAFT EIS SAY?

**There are no population impacts
for fish from the tailings release
scenarios evaluated.**

(ES 71)

SALMON ARE SAFE

We are committed to the highest environmental stewardship. Our plan will support and protect salmon.

Science tells us that the Pebble Deposit can be developed responsibly, and the DEIS confirms it.

FROM THE DRAFT EIS

- **Mine area salmon escapement is extremely low**
- **Habitat impacts will be offset by mitigation**
- **Mining and fishing DO co-exist in Alaska**



WHAT DOES THE DRAFT EIS SAY?

**The project will not reduce
returning adult salmon to the Kvichak
and Nushagak river systems.**

(ES 53)

A CLEAR PATH FORWARD

The DEIS shows a clear path forward for permitting and found no significant environmental challenges.

Alaska knows how to develop resources responsibly.

The DEIS proves it.

We look forward to working with you.



WHAT DOES THE DRAFT EIS SAY?

**There will be no long-term change
to the health of the Bristol Bay
and Cook Inlet fisheries.**

(ES 54)



A CLEAR PATH FORWARD

Message

From: Ron Thiessen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=952FB143BD9C47F88914E612C9C0A02E-RON THIESSE]
Sent: 3/24/2020 8:44:05 PM
To: Sean Magee [seanmagee@hdimining.com]
Subject: Re: MN appeals court kicks back another PolyMet Permit

Tom and I discussed this yesterday. I believe that in Pebble's case our mill is actually right sized in all regards; feed in systems (shovels trucks conveyors) for optimal operation of a 180,000 tpd mill. I think PolyMet had a feed in system/plan that required the upsizing the back end of the mill to operate efficiently. Our examination of alternatives in the main does not involve trying to make something from inefficient to efficient, but rather just a question of whether there could be a basis for a "grade cut off strategy" which "could" require amendments if the low grade material is stockpiled on wet lands (noting that this material gets processed at end of life (years 19/20) and ends up in the TSF. Or we can find a non wet lands storage facility for the low grade stock pile, until it is processed. The other alternative is continuing operations beyond 20 years, given the ore is there, but the other facilities mainly TSF are not. But there could be very different methods of mining or processing beyond 20 years. In my mind the mine life extension isn't something which can technically be answered today, in any event. But the mill doesn't need that material within the next 20 years. That is basically the view of Tom. But he is thinking more about it to ensure we do not run afoul.

From: Sean Magee <SeanMagee@hdimining.com>
Date: Tuesday, March 24, 2020 at 1:14 PM
To: Ronald Thiessen <RonThiessen@hdimining.com>
Subject: FW: MN appeals court kicks back another PolyMet Permit

Not sure if you saw this.

Bottom part of the article includes language from the court decision relevant to mining projects that may expand in future.....S

Sean Magee Executive Vice President, Strategic Communications & Public Affairs



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Dir +1-778-373-6761 T +1-604-684-6365 F +1-604-681-2741 TF 800-667-2114 C +1-604-351-2550
E SeanMagee@hdimining.com Web hdimining.com

From today's Greenwire – note the court views about expansion and permitting:

MINING

Minn. appeals court kicks back another PolyMet permit

Published: Monday, March 23, 2020

The Minnesota Court of Appeals sent an air emissions permit for the PolyMet copper-nickel mine back to state regulators for further review today, giving another victory to environmental groups that oppose the project.

The appeals court found that the Minnesota Pollution Control Agency did not adequately evaluate whether the air permit requested by PolyMet was a "sham permit" — meaning one that didn't accurately reflect the size and scope of PolyMet's proposed mine.

This is the fourth permit the Court of Appeals has rejected this year. In January, the court overturned three permits issued to PolyMet by the Minnesota Department of Natural Resources — a permit to mine and two dam safety permits.

PolyMet officials said today they are disappointed by the court's ruling and are evaluating their legal options.

"We demonstrated through the extensive environmental review and permitting process that we can meet or exceed Minnesota's strict standards for nonferrous mines," the company said in a statement.

A spokesman for the MPCA said the agency was still reviewing the opinion.

"The Court of Appeals decision today makes it even more clear: the process that granted permits for the PolyMet mine proposal is broken," Kathryn Hoffman, CEO of the Minnesota Center for Environmental Advocacy, said in a statement. "It's clear that the permits that were issued to PolyMet did not protect human health and the environment, and it's time for our agencies to acknowledge and address that."

Hoffman's group and a Minnesota tribe argued that the MPCA's decision to issue the permit was arbitrary and not supported by substantial evidence. They alleged the MPCA failed to take a "hard look" at whether PolyMet was engaged in sham permitting, saying the MPCA didn't adequately review information available to it before awarding the permit in late 2018.

They argued that the MPCA issued its findings after questions were raised about PolyMet's intent to abide by terms of the permit. Among the concerns, the Minnesota Center for Environmental Advocacy noted that crusher lines at the plant have more capacity than PolyMet claimed it intended to use.

The appeals court said that all parties agree if PolyMet decides to expand production, more permits will need to be issued, but if expansion is the current intent, then now is the time to comply with requirements under a stronger permit.

"Of course, once a project is operating, expansion proposals may be viewed more favorably by regulators," the court said. "If that is the true course being charged by PolyMet, then there is merit to relators' argument that the synthetic-minor permit is a sham."

The appeals court said it doesn't have all the documents the MPCA considered, so it can't determine whether the MPCA's decision to grant the permit was arbitrary and capricious or unsupported by substantial evidence.

"For this reason, we conclude that a remand to the MPCA for additional findings is warranted," the court found.

The Minnesota Center for Environmental Advocacy says the proposed mine cannot operate until it has a valid permit. — *Amy Forliti, Associated Press*

Mike

Mike Heatwole

VP Public Affairs, Pebble Partnership
(907) 339-2637

It all begins with mining! Mining makes modern communications possible.

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Message

From: [REDACTED]
Sent: 10/16/2019 4:15:01 PM
To: Doug Allen [dougallen@northerndynasty.com]; Ron Thiessen [ronthiessen@hdimining.com]
Subject: Re: "The time to invest is now"

Sadly, I am able to pick up on tea leaves from non NDM public statements which has provided more clarity than NDM management. Another developer was asked if they are big enough to make a dent in the pending copper supply crunch even if Pebble goes online. Their response? Yes, Pebble was once considered a mega mine but their current plan is only for 20 years. No word about expansion. Likely because it's not an expected reality at this point in time.

I am fairly confident at this point NDM isn't getting the offers expected due to the 20 year mine plan. Only 11% of the deposit is de-risked enough by the developers (you guys). The social license argument isn't enough (due to our special opposition) to expect majors to value this deposit for more than what is in the DEIS. Why would they? The enviro's will fight expansion all the way. In my humble opinion, NDM should have de-risked more than 11% of the deposit.... Too late now, but hopefully the board realizes this and will adjust expectations accordingly. Maybe take the best offer, or only sell the 11% of the deposit and hold on to the remaining for further de-risking. If a social licence is such a no brainer why not be the one's to make it happen and reap the rewards?

Can a social license help this expand into a mega mine increasing value exponentially? Yes. Is it certain enough to factor in when appraising a premium valuation on the deposit? No. At least that's what I'm picking up on from other mining companies. Disappointing for shareholders.

On Tue, Oct 15, 2019 at 12:59 PM [REDACTED] wrote:

All I'll say is if you guys dilute yet again with a lower share price than the last round at \$0.75, this is being mismanaged and you guys have no business holding on to Pebble. The excuses and continued over promises have lasted long enough and I look forward to voting my shares at the next AGM.

On Tue, Oct 15, 2019 at 11:19 AM Doug Allen <dougallen@northerndynasty.com> wrote:

Tim,

We cannot comment on discussions with would-be partners.

Messaging is tricky because of the above. Tom and Ron have both enunciated aspirational goals.

The reality is that until we have something to announce we don't know exactly how partnering will play out and we can't discuss the range of possibilities.

We're aware that the lack of news flow and the lack of clarity is frustrating for investors. But we cannot and will not negotiate in public and so investors are left with this extended period of unknown and uncertainty.

I wish it otherwise but that's the reality of it.

Doug



Northern Dynasty Minerals Ltd. | 15th Floor - 1040 W. Georgia St. Vancouver BC V6E 4H1 Canada
Dir +1-778-373-6966 T +1-604-684-6365 TF 800-667-2114
E DougAllen@northerndynasty.com Web www.northerndynastyminerals.com

From: [REDACTED] >
Sent: October 14, 2019 11:46 AM
To: Doug Allen <dougallen@northerndynasty.com>
Subject: Re: "The time to invest is now"

It appears majors might be getting hung up on the smaller mine plan? Rough estimates are about \$2B NPV. Is anyone buying the "social licence to expand" pitch? With the foaming from the mouth rabid opposition it might be easier mining from the moon than expanding Pebble. Still looking for some clarity with the mixed messages.

Thanks.

On Thu, Oct 10, 2019 at 9:34 AM [REDACTED] > wrote:

Doug,

A little (more like a lot) confused and hoping you can clear something up.

The presentation says the time to invest is now. Tom Collier shortly after the presentation update was telling people that NDM is shopping an Anglo style asset deal and would hope to announce something in the near term. Ron, only weeks later, said about partner timing that there are market cap issues and we need to be patient to get the returns this project deserves.

Message

From: Ron Thiessen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=952FB143BD9C47F88914E612C9C0A02E-RON THIESSE]
Sent: 4/2/2020 12:35:31 AM
To: [REDACTED]
Subject: Re: Pebble Project

[REDACTED]

Then that is good for me, I was under the impression that you were upset with me over something I had done, and I just really wanted to clear the air about that if nothing else. I understand you and FQML have moved on, but I am also trying to understand the impediments at the time that I thought changed your views on Pebble; not to try to entice you back but rather to simply learn from it for the next go around with potential partners and investors.

You have answered that with the assessment of the economics of the 20 year phase. Still it was your original observation* that it was an asset that once in production regardless of its initial economics could come to book appropriately with time (a short time of course). The main features of change would be:

1. Alaska state (AIEDA) and Native Corps unburdening the up front capex in return for participation in its resource development and utility (port power road),
2. Application of cut off regime to improve head grade to the mill, and stockpiling of low grade material for future years.
3. The simple extension of the mine life to include more of the reserves/resources that already exist at Pebble

These 3 things would have improved the returns (DCF/NPV) multiple (4 - 6) times, and NDM would have been willing to accept lesser participation in the early years until FQ's requisite returns could have been achieved or the alternatives giving rise to those kinds of returns could be secured/implemented.

And then there is the co-development of infrastructure not only with the parties above but another major mine in Western Alaska, which will have significant impacts on both developments.

Yes the points above and below were and still are predictive, and one could not back in 2018 guarantee their outcome. We had a far higher level of confidence in the outcomes, and were prepared to put our project, funding and work at risk in a deal which would have ensured or provided for the kinds of returns/opportunities that I would have understood FQML needed to proceed. And that is what I understood the termination letter from FQML to want to do; continue discussing a potential way forward to seek a structure which provided the opportunity for the needed returns. If I erred in my interpretation, and stated something which was a public statement I presume in our News Release then I apologize for that.

My challenge was I couldn't find anyone to have those conversations with. We were trying to provide information and communication in that regard (even as simple as what were the target returns) but most went unanswered. I truly wanted to make the \$37.5mm you provided an opportunity to continue in a way that might have worked for both parties.

Again I am not trying to change your mind, your decision or induce you in any manner. I know you have your hands full with your day job. I really wish you, your team and FQML the best going forward; these are very challenging times and commodity markets have been a big enough challenge without Covid - 19, but now we have that and oil supply-demand crisis as well.

I hope you your family and everyone else I've come to know at FQML are keeping well in these "socially, medically and economically demanding days."

Thank you

Ron

*Tom still uses your comments at the Captain Cook Hotel, in that boardroom presentation (where Steve kept aggravating you by showing pictures of the Iliamna Airport two 5000 foot runways) and you opined that Pebble as an asset, was one that someone should be able to rationalize an early period of losses if that facilitates optimizing the opportunity of permits, if soon thereafter changes are possible to then optimize for economics. In fact it was that statement and your enthusiasm which really drove the permitting and allowed me to rationalize taking that asset into permitting. So I have to thank you for that as well, although its been a bitch of a time financing permitting on our own.

From: [REDACTED]
Date: Friday, March 13, 2020 at 7:37 PM
To: Ronald Thiessen <RonThiessen@hdimining.com>
Subject: Re: Pebble Project

Hi Ron,

You are not correct that I don't want to speak with you. I'd have no problem with chatting.

But we're busy and we've moved on from the Pebble project. So I really don't want to spend any time in a debate about its progress and our involvement.

Things might have been different had we ever reached an agreement. But the economics of Pebble's first 20year phase to the major fund contributor are not compelling. Our shareholders were always a bit anxious and probably would not have thanked us for retaining the exposure. They, in turn, have been struggling with any resource investments. In any event, we would not consider hopping back after the public statements made.

So, for us, it was absolutely final. As I said we moved on. In a time of world uncertainty as I'm sure you are aware, we are focused on our day-job.

But I'm always pleased to hear that Pebble is moving forward. I'm convinced it can easily be executed with no risk to the salmon; that's just hype. As you can see with Covid-19, hype can be much more powerful than reality.

Good luck
[REDACTED]

Sent from my BlackBerry

From: RonThiessen@hdimining.com
Sent: 12 March 2020 06:35
To: pkrprivate@fqml.com
Subject: Pebble Project

[REDACTED]

I have wanted to speak to you personally/privately for some time, but I know you have been very engaged in a lot of other things and to a large extent not pleased with NDM or myself. I would really like to understand better how our relationship came to be so distressed we cannot talk. I have always had and continue to have a great deal of respect for you in particular but also Matt, Tristan and many others from your organization.

We couldn't find a way forward on several fronts in spring and summer of 2018, and I accepted that. I did still want to continue engaging with you and FQ, and I thought I believed I was doing what Angus laid out for me when he delivered the termination letter to our/your option agreement. As he did deliver it early (a few days prior to expiry) and on a week/trading day with a week/trading/day to follow; I had no options myself but to issue a news release before the following days market open. So there was no time for debate or discussion, and that was of FQ's choice. Angus or whoever decided on the timing of the termination did so without consultation or I believe consideration for what NDM would be required to do.

That said that is all behind us, and I accept it all. I just wish we could have continued dialogue even privately.

So we find ourselves here today; March 2020 on the cusp of receipt of the Federal permits, and assured of that because the final EIS is so positive/affirmative. Going back to spring 2018 the uncertainties were:

1. Gubernatorial election; would anti-Pebble Begich win or would pro-resource development Dunleavy win. Dunleavy won with a good margin.

2. Anti-Pebble ballot initiative on the Nov 2018 vote; what would the people of Alaska do; No to Pebble or Yes to Pebble. Pebble won 2 to 1.

3. FQ's Salt Lake NEPA (National Environment Policy Act) lawyers were extremely pessimistic at the prospects for a successful out come (ever) to the permitting process for Pebble. Interestingly they had never participated in a full NEPA process from an experience standpoint, whereas Tom Collier and his team from DC and Alaska had at least 10 major projects in their experience portfolio and 4 of those in Alaska.

As has eventuated we will have accomplished a successful NEPA process, received our Record of Decision, CWA 404 permits, plus BESSE pipeline permits, and Coast Guard bridge construction permits all in under 3 years (we originally projected 4 years), under budget at \$85 million (we projected \$150 million). The most satisfying part of this review were the EIS conclusions:

- Development and Operation of Pebble will not affect the commercial fishery in Bristol Bay.
- Development and Operation of Pebble will not affect water quality in the region.
- Development and Operation of Pebble will have a substantial positive impact on the socio and economic conditions in the region, a region bereft of economic opportunity.

Still in the spring of 2018, there was no certainty of outcome in any of the 3 items above. I felt that at all times I had dealt in good faith, that we had the best and brightest as part of the team as well as one of the greatest mineral endowments in the world, in a country where the rule of law prevails. Yes there was a misunderstanding on the difference between the NEPA process and permits it provided, recognizing that in order for construction to start we needed State construction permits. However there has never been a project in Alaska where the CW 404 permits have been issued, and the state construction permits have not been forthcoming. And we explained that. State permits will still be needed and will still cost in the neighborhood of the NEPA process (a lot of that is final engineering).

We/I will be sending out a more comprehensive email later today or tomorrow to your team on the successes we have to date on Pebble and our anticipated course forward. However I wanted to reach out to you personally and one to one, before that communication goes out to the FQ team. And I know you have let me know in email communications that you no longer have any interest in Pebble. We have retained bankers to run a process and I have so informed them, but we are sending out the updates to all and the bankers will be in contact with all.

Respectfully

Ron

PS If you would like to know more about the way forward, I would be very pleased to talk to you. A lot has changed and the State and a number of Alaska Regional Native Corps are on the cusp of agreeing to fund most if not all of the infrastructure, removing it from Capex into opex. But with the caveat that it is combined with another large project in Western Alaska. Between ourselves and the other project I can see combined savings in development and operations which will amount to well over \$1.5B.

Ron Thiessen President & CEO



Hunter Dickinson Inc. | 15th Floor -
1040 W. Georgia
St. Vancouver BC V6E 4H1 Canada
T [+1-604-684-6365](tel:+16046846365) F [+1-604-681-2741](tel:+16046812741) TF 800-667-2114
E RonThiessen@hdimining.com Web
hdimining.com

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Message

From: Ron Thiessen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=952FB143BD9C47F88914E612C9C0A02E-RON THIESSE]
Sent: 9/22/2020 1:37:32 AM
To: Russell E. Hallbauer [russellhallbauer@hdimining.com]; Robert Dickinson [robertdickinson@hdgold.com]
Subject: RE: UBS Commodities: Large falls across commodities (Iron ore -4%, WTI -4%, Gold -2%, Copper -2%)to

Yes it is a gong show but we have one at Pebble as well. I was contacted about a month ago by a group purporting to be a private HK based subsidiary of a Chinese SOE (Beijing City investment management company). They were looking for a potential reasonable investment in Pebble (really NDM); up to \$50 million but starting smaller say \$10-15mm; so well below disclosure thresholds and even then never any kind of control or influence. They came at an opportune time, and were looking at the market.

Turned out they were impersonating executives of the Wan Yuan Group HK Ltd. And they taped all the Zoom meetings that we had with them, edited them and then published them today.

They had agreed an NDA and would abide by it while lawyers sorted it out, and confirmed on the weekend we would get it this week.

Needless to say lots of embarrassing materials on the tapes; not any material incorrect or even non public information. But the manner in which its disclosed is not pleasant to say the least and could be damaging to relationships mainly in Alaska.

We have made a bunch of calls already to apprise others what may be coming their way. I discuss economic synergies between Pebble and Donlin from shared infrastructure, not that it's some kind of a secret if you look at WA and the sites it makes sense. I was asked if there was anything formalized and I said "no" and we couldn't really do anything more than conceptualize until the ROD was issued. But I know Nova Gold and Barrick are hyper sensitive, so I called them to let them know and apologize.

There are also lots of political discussions as you would think appropriate for someone from China looking at the US permitting/political/regulatory process. Its salicious, but not wrong.

Here is the NY Times article on it, <https://www.nytimes.com/2020/09/21/climate/pebble-mine-alaska.html?searchResultPosition=1>

Ron Thiessen President & CEO



Hunter Dickinson Inc. | 15th Floor - 1040 W. Georgia St. Vancouver BC V6E 4H1 Canada
T +1-604-684-6365 F +1-604-681-2741 TF 800-667-2114
E RonThiessen@hdimining.com Web hdimining.com

From: Russell E. Hallbauer <RussellHallbauer@hdimining.com>
Sent: September 21, 2020 6:02 PM

Message

From: Ron Thiessen [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=952FB143BD9C47F88914E612C9C0A02E-RON THIESSE]
Sent: 9/22/2020 6:53:21 PM
To: Sean Magee [seanmagee@hdimining.com]; Tom Collier [tomcollier@pebblepartnership.com]; Mike Heatwole [mikeheatwole@pebblepartnership.com]
Subject: RE: Size and scope of Pebble Mine

Ron Thiessen President & CEO



Hunter Dickinson Inc. | 15th Floor - 1040 W. Georgia St. Vancouver BC V6E 4H1 Canada
T +1-604-684-6365 F +1-604-681-2741 TF 800-667-2114
E RonThiessen@hdimining.com Web hdimining.com

From: Sean Magee <SeanMagee@hdimining.com>
Sent: September 22, 2020 11:35 AM
To: Ron Thiessen <RonThiessen@hdimining.com>; Tom Collier <tomcollier@pebblepartnership.com>; Mike Heatwole <mikeheatwole@pebblepartnership.com>
Subject: FW: Size and scope of Pebble Mine

Draft response

Hi Rachel,

The Pebble mine development proposal currently being evaluated by the US Army Corps of Engineers provides for 20 years of mining operations and an average mill throughput of 180,000 tons per day. In total, the project would process about 1.3 billion tons of mineralized material.

At this time, there is no **definitive** plan for subsequent phases of development, although the Pebble deposit would certainly support a longer mine life. What we have said consistently, and is reinforced in the 'Pebble tapes' you mention, is the operator of the Pebble mine may decide at some **undetermined(remove)** point in the future to propose additional phases of development, but that no such formal plan or intention to do so exists today.

To create a definitive plan an extensive amount of additional work would have to be undertaken to evaluate the feasibility, differences, opportunities and impacts of underground mining v continued open pit mining. (Or is this just an opportunity for someone/USACE to say go back and do that additional work? We know that for the first +1B tones the open pit alternative is the best and works, financially. But that the bulk underground mine would not be feasible in a 20 year period).

I would also add that any possible additional development would have to go through a comprehensive, multi-year federal and state permitting process – likely under the National Environmental Policy Act. If that occurs, the Pebble mine's operational and environmental track record to that point would certainly be considered by the federal and state regulators considering granting permits for any extension or expansion of the project.

Note. The biggest variable driving feasible economics of Pebble in any form is metal prices. With time those usually appreciate and processing efficiencies and technology reduce op cost and capex.

Sean Magee Executive Vice President, Strategic Communications & Public Affairs