



WHEATON CREEK

JADE MINING IMPACT ASSESSMENT

SUMMARY

Element's report provides

Quarry Mining Environmental Impact Assessment for Wheaton Jade Mine Claims (WCJMC) at Dease Lake, Cassiar Region, Northern British Columbia, Canada

Element's leadership

Scott Lomu • President

Over 25 years in the precious elements industry.
A passionate voice for responsible, humane mining.
Leading the digital gold rush to provide access for all.

David Kasteler • COO

FINSERV entrepreneur who has built multiple high-value organizations.
Consulted for or represented over \$750M in mining assets.

Element's purpose

Element is bringing the blockchain + metaverse revolution to gold and precious elements. We digitize precious elements by building digital economies on top of mine. Why is it important to slow mining?

- End Hoarding
- Reduce CO₂ Emissions
- End Exploitation
- Corruption
- Free Access for All

****Document information provided by a 3rd party. Data not verified by Element United.**

EXECUTIVE SUMMARY

This report was produced independently and as a result of Element United's continued ambition to mine differently, support future generations by protecting the planet, and reclaim land once destroyed by harmful practices, ultimately giving power back to the people most hurt by industrial mining.

Research is intended to give the reader of this report an overview of artisanal jade and its impact on the sustainability framework surrounding artisanal quarry gold mining. People, planet, and prosperity underline this report's themes, starting with the introduction of jade, indicating its historical, religious, and cultural contexts.

Next, we discuss quarry mining and the jade market to understand better the extraction process with the market value of jade. Note that what follows is a relevant parallel to jade mining in Myanmar so as to understand the ecologically damaging potential of jade and the accompanying health (and life) concerns.

Therefore, considering health and wellness, we note the extreme terrain, weather, and conditions under which First Nation miners would work in this mine. Following, we include a summary of the Tahlitan people, culture, language, and history.

Closing this report, we offer carbon data in relevant equivalencies to contextualize carbon in day-to-day life. Our team conducted no on-site testing. Instead, we used prevailing and applicable data, professional SME sources to include the airline industry, product retailers, and academics, as well as EPA calculators, and reliable, annotated, public, educational, and generally accepted resources to form estimations or conclusions.

Research notes and resources are provided at the end of this document.



INTRODUCTION

SHORT HISTORY OF BC JADE

Chinese jade's 5000-year history is rooted in an individual, spiritual power—one that delivers a bridge to immortality and communication with the gods through the holes of jade discs. Those five centuries of history, and a growing jade market, from finely carved jewelry to commercial use, explains the demand for British Columbian (BC) jade.

Yet as Chinese interests increase in the BC jade mining industry, there's also a cost to Canada's First Nations and their traditional unceded territory, which gave rights to the Tahltan people under Indigenous law. Some say, "One can put a price on gold, but jade is priceless," however mining Nephrite jade comes at an increasing cost for Northern BC First Nation peoples.

BC's nephrite jade has been linked to First Nation peoples and their culture for 4000 years. Carved out by glaciers, First Nations discovered this stone alongside river beds which they then carved and used in axes, knives, and other tools. Notably, these tools have been found at Salish sites in BC's Cariboo region. Centuries later, when Chinese laborers arrived, the nephrite jade found a market not just as tools but as decoration. Immigrants would place chunks of jade in the coffins of laborers, which were then sent back to China.

“Abandoned machinery, shipping containers, and jade boulders cut open and discarded because they're too low in quality are scattered across areas where caribou roam and Tahltan people hunt and go snowmobiling.

—Chad Norman Day, president of the Tahltan Central Government

With little Canadian government oversight to assist the Tahltan people in policing their land, problems arise when evicting miners who failed to acquire permission for access. Though only producing a current \$10 million annual revenue, unchecked Chinese consumerism is steadily driving the Canadian jade market upward, leaving unsightly facelifts, land degradation, waterway pollution, and abandoned used machines.

Even more alarming is the steadily increasing carbon footprint that pairs with land use and degradation of their rightful land.

QUARRY MINING

WHEATON CREEK

Canada's Nephrite Jade Stone is quarry mined and is predominantly found in what's known as "Jade Valley," located in Northern B.C., near its northern border with Yukon Territory. Mining claims in Jade Valley are often remote, with roads nonexistent. Experienced miners must access their claims via wooded trails, off-road vehicles, and helicopters.

This Nephrite Jade is buried in sandy sedimentary soil and extracted from:

- a) solid rock formations, which are known as a Jade lens (a rock formation thick in the middle and thinner at its edges) and
- b) boulders that broke away from a Jade lens.

Vault-like conditions keep the core from being exposed to degradation brought on by characteristics of weather events or the earth's elements. Boulders buried 30 to 40 meters, or more are generally of higher quality, ranging in sizes from 3 to 5 metric tons and up to 80 metric tons. Miners note that larger boulders often hold higher-quality nephrite jade at their core after cutting the outer surface.

Mining operations require heavy, earth-moving equipment to excavate and extract boulders as heavy as 20 to 40 metric tons. Rock Trucks then haul the boulders off the mountain and to the highway for initial processing and to determine viability. Trucks then transport the boulders to shipping ports in Prince Rupert and Vancouver or for processing at a plant in BC.

At depths of 30 to 40 meters, mining operators can extract from 50 to 100 boulders per acre or 100 - 200 boulders each season, equaling as much as 8000 tons annually¹.

¹ Wheaton Creek Executive Summary



JADE MARKETS

The global market for jade is dominated by Myanmar (formerly Burma), where most jadeite is produced. The reported jade market's size largely depends on data from Myanmar. Before conflict and mine shutdowns resumed in the country in 2011, jade sales were estimated to be \$3.5 billion per year.

BC. Jade continues to be a status item with greater durability than jadeite.

Shutdowns led to a jade supply gap, increasing interest in the BC market. As a result, BC jade production rose from 1.7% to 8.3% from 2011 to 2014, with prices for gem-quality jade jumping to \$200-\$1,000 per kg. And according to one Harvard study in 2013, the global jade market has an assessed value of \$8 billion. Chinese buyers have even been known to fly in via helicopter to the northern BC jade sites, where they will buy jade "off the bucket" in cash, ensuring the best quality jade, significantly benefiting miners.

China is home to the largest jade market in the world, where jade is considered not just a symbol of wealth, purity, and spirituality but also a hard asset. Skillful jade craftspeople sometimes take years to intricately carve pieces of jade, which are then sold in major retail centers like Hong Kong or Beijing. A finished product may reach ten times its original price, creating immense wealth throughout the value chain.

For example, the Polar Pride Boulder was carved into a massive Buddha and sold for \$1 million in 2004².

² Desjardins, J. (2020, June 17). *The rush for jade in British Columbia*. Visual Capitalist. <https://www.visualcapitalist.com/the-rush-for-jade-in-britishcolumbia/>

JADE OUTSIDE BC

MYANMAR IS A LESSON IN REGULATIONS



PC: NPR, Residents sit near a damaged house caused by a landslide at a mining site in Hpakant in July. The landslide killed nearly 200 people.

Despite its enormous market value, jade mining symbolizes tragedy and suffering. Once home to clean, clear water, places like Hpakant in Myanmar now see extreme instances of land degradation and environmental destruction. One local described the scene:

“Mountains became valleys, and valleys became mountains. Rivers, streams, and creeks are upside-down, shifted into chaos.”³

In mining areas like Hkun Lat, Myanmar, mining waste, known as tailings and consisting of discarded earth and stones, is left in giant, heaping mountains. When nearby mining pits fill with rainwater, site heaps eventually give way, sluffing off, collapsing, and creating landslides. Though the government limits tailing heap height, companies disregard and often exceed limits, creating dangerous situations for community members and miners.

³ Fishbein, E., & Lamung, A. M. (2020, September 29). *How a beloved gemstone became a symbol of environmental tragedy in Myanmar*. <https://www.npr.org/sections/goatsandsoda/2020/09/29/915604532/how-a-beloved-gemstone-became-a-symbol-of-environmental-tragedyinmyanmar>

Clean water is essential to all life on earth, making it another (and vital) concern for locals. Still, mining companies often find their way around waste disposal mandates, which leads to excess sediment build-up in freshwater resources, resulting in oxygen-depleted water, destroying fish and animal habitats, and devastating vast swaths of ecosystems working against human survival.

Heroin addiction is another result of jade mining in the Kachin state of Myanmar. It's reported that the conditions are so bad that miners will use heroin to withstand the harsh working conditions. Often, intimidation and violence are used as a means of land grabbing.

Pristine jungle landscapes are turned inside out, flattened to mine the highest quality jadeite known worldwide⁴.

“Mining, agribusiness, logging, and so forth finances the interests of Myanmar's powerful elites. Pressure on the country's resources increased with the recent opening to foreign investment. Locals tend to lose access to land and a healthy environment to live in. Civil society argues that aggressive resource extraction in historic conflict zones threatens ceasefire agreements and the country's fragile peace. They demand to return resource control to local groups and call for a moratorium on large-scale extraction projects until the country achieves stability.

—Arnim Scheidel

Yet while communities advocate for better governmental support, little is done to help, and large mining operations continue status quo devastation at the expense of the local people and the environment on which they depend for money, food, and survival.

Without advocacy, communities like Hpakant are without recourse. Freshwater streams on which they rely, like the Uru Stream, will be so polluted that there's no opportunity for them to restore it to their natural state without government funds and

⁴ Meynen, N. (2018, December 5). *Jade is anything but green*. The Ecologist. <https://theecologist.org/2018/dec/03/jade-anything-green>

resources—if at all.



DEASE LAKE AND CASSIAR REGION

JADE VALLEY TOPOGRAPHY

The Cassiar Range Eco section is a "broad band of mountains extending from the southeast to the northeast corner of the ecoregion. The Cassiar Mountains are predominately a granitic core surrounded by folded metamorphic and sedimentary rocks. Summit elevations range between 1,800 and 2,700 m. Surfaces below 1,800 m were overridden by ice; consequently, the lower summits are rounded and commonly bare a thin drift cover.

The soil landscapes of the Cassiar Mountains are a mixture of humo ferric podzols, turbic cryosols, and lithic soils. Turbic cryosols are situated in the alpine soil landscape where permanently frozen horizons are found on finely textured materials, such as moraines, where subsurface drainage is impeded. The humoferric podzols are primarily located on colluvium and morainal material. The dominantly lithic soils include mixtures of bare rock and significant soil development with inclusions of ferro-humic podzols and folisoils⁵."

JADE VALLEY CLIMATE

Dease Lake has a typical Northern B.C. subarctic climate with mild summers from May or June to September and severely cold and snowy winters lasting from October to March or April. Given Dease Lake's elevation, miners can expect snowfall on any day of the year. Annual snowfall averages 212.8 cm (83.78 in)⁶⁷.

⁵ Demarchi, D. A. (2004, January). *Dease Liard Sustainable Resource Management Plan Background Document*. Government of Canada / Gouvernement du Canada. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/skeenaregion/deaseliard-srmp/dease_liard_srmp_background_document.pdf

⁶ Government of Canada / Gouvernement du Canada. (2022, September 16). Dease Lake, BC. Environment Canada. https://weather.gc.ca/city/pages/bc-14_metric_e.html

⁷ Wikimedia Foundation. (2022, March 13). *Dease Lake*. Wikipedia. https://en.wikipedia.org/wiki/Dease_Lake

THE TAHLTAN NATION



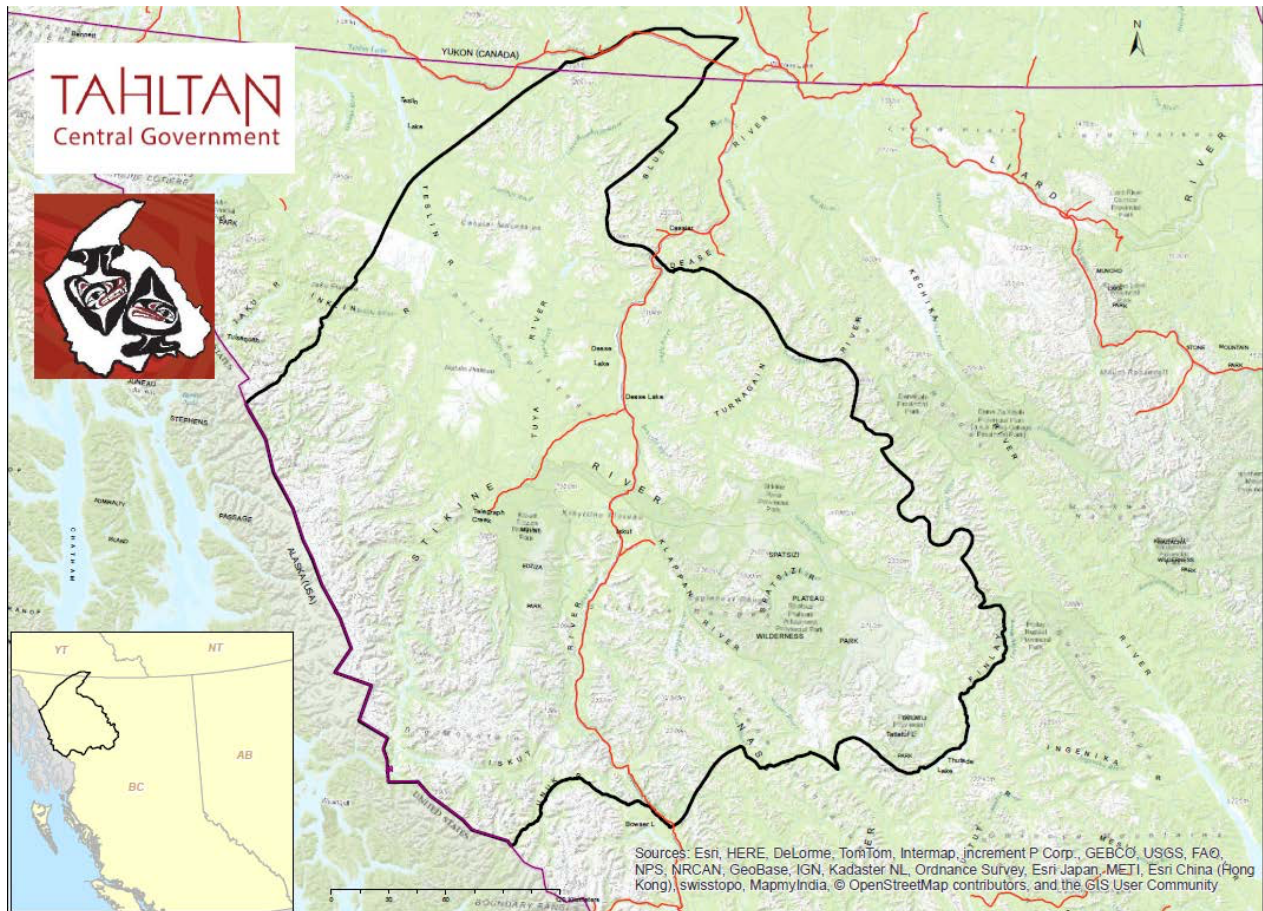
PC Tahltan Nation

THE TAHLTAN TERRITORY

Traditional Tahltan territory covers 93,500 km² of remote territory in northwestern BC and is in the heart of the Stikine River Watershed. Of the 1300 inhabitants, roughly 1000 are from the Tahltan First Nation, comprised of two bands: the Tahltan Band in Telegraph Creek and the Iskut Band in Iskut.

Within this territory, 26% of the Stikine and Iskut River Watersheds are protected parks, ecological reserves, and other safeguarded areas. The topography includes coastal, mountainous, and inland plateaus, featuring the world's most extensive cottonwood stands and twenty-five edible berries, including soapberries, raspberries, blueberries, strawberries, saskatoons, and highbush cranberries.

Wildlife species of note in the area include grizzly, black bear, woodland roughly 2,500 Spatsizi caribou, mountain goat, Stone's sheep, moose, wolves, foxes (red, cross-fox, silver fox, and black fox), wolverine, lynx, porcupine, rabbit, squirrel, many small rodents, trumpeter swans, grouse, ptarmigan, and many other migratory birds.



MINING'S ENVIRONMENTAL IMPACT

Not so dissimilar to Myanmar, BC jade mining takes place in the mountainous regions over swaths of beautiful acreages, sometimes digging up to 50 feet deep to expose jade deposits. (Frequently, new mines are found in the "wrong place" due to limited geoscience.) Core drills then extract samples before excavation to ensure the product's quality. After which, hydraulic spreaders enter cleavage points to break away the jade, remove boulders, and cut with water-cooled diamond saws. Jade boulders are then hauled off the mountain to storage and cutting facilities before being transported for international or national manufacturing.

Tahltan Central Government President Chad Day notes, "These jade and placer gold operations have unacceptable impacts on the Tahltan Nation. Our community members and staff have camera footage and several eyewitness accounts of illegal poaching of our wildlife and other serious environmental infractions, such as taking equipment through salmon-bearing waters by these operators. Abandoned equipment and garbage have been piling up from these operators for decades."

Beloved cultural gemstone quickly becoming a tragedy in Canada's boreal landscape

Concerns continue to mount because, Day says, "Jade is also an important resource to Tahltan culture, and yet the Province allows others to come into our territory without our consent to extract millions of dollars' worth of jade each year, with zero compensation and a huge

environmental mess that hurts us all as British Columbians⁸."



CULTURAL IMPACT

Health and Wellness

The Tahltan's relationship with mining companies operating on their territory is primarily one of cooperation due to the additional employment opportunities, but there has also been some conflict. On occasion, some companies are discovered to be mining without permission. Still, Tahltan leaders try to manage their communities and a culture in transition. They believe adding sizeable disposable income from mining may significantly contribute to drug and alcohol problems, which requires more effective adaptive management.

Sacred Land and Waters

With an ever-increasing demand for global mining, coal, and oil and gas commodities driving near runaway development, First Nations in Northwest BC are feeling the pressure. The Sacred Headwaters is a highly traditional use area for the Gitxsan, Wet'suwet'en, Tlingit, Haida, and Haisla. These Nations depend on it for survival. And given the current state of global environmental damage, they don't want to see destruction come to the land, wildlife, and rivers on which they've lived and depended for thousands of years.

⁸ Lasley, S. (2021, May 21). *Tahltan Nation demands end to jade fever*. North of 60 Mining News. <https://www.miningnewsnorth.com/story/2021/05/21/news/tahltannation-demands-end-to-jade-fever/6820.html>

Three thousand thirty-one total acres could be lost to hunting and recreational opportunities, caribou habitat, sensitive ecosystems, aquifer depletion, and freshwater pollution.



The Tahltan see that the sheer pace of exploration and development does not account for or give time to mitigate any negative social impacts associated with mining development. Consequences would be "compounded by the historical and current effects of colonization, residential school syndrome, racism, and inadequate social, health, and education services currently available to the Tahltan⁹."

Access to tourism dollars

Tourism is far more valuable than the mining industry in BC, with First Nation people guaranteed fairer, long-term distribution of money.

The Stewart Cassiar Tourism Council promotes the scenic Iskut Tatogga Corridor (encompassing more than 93,000 square km) as the gateway to "experience the wild" in the Stikine Country, Spatsizi Park, Mount Edziza Park, the Grand Canyon of the Stikine, and the Upper Stikine River. Given its location 86 km south of Dease Lake, and what happened to Myanmar people and regions, jade mining's environmental impact would threaten the Iskut Tatogga Corridor. The chain of over 50 km of lakes, providing visitors with rafting, canoeing, kayaking, hiking, fishing, hunting, and camping, would be threatened by the mining industry's plan to install a high-voltage transmission line that would bisect the heart of Tahltan Territory. And just as in Myanmar, the

⁹ First Nations - land rights and environmentalism in British Columbia. (n.d.). http://www.firstnations.de/mining/lecture_in_victoria.htm

government has ignored the impact and consequences of its federal reporting.

Freshwater resources

Water is life, and the Tahltan must ensure its longevity and protection. Water is immeasurably linked to the health and wellness of the ecosystems and the spiritual connections throughout the Tahltan territory, helping them live, support themselves, and maintain activities intrinsic to their culture¹⁰.



PC TAHLTAN NATION

Culture and Heritage

Tahltan culture and heritage foundations are connected with the land. Tahltan people learn and live their culture on the land daily as they fish, hunt, tan the hides of deer or moose, gather, and teach. Ancestral voices offer oral histories, providing generations with evidence and examples of Tahltan sovereignty, past and present¹¹.

¹⁰ Pacific Centre for Environmental Law and Litigation. (2017, March 31). *Written Submissions of the Tahltan Central Government to the Expert Panel on the National Energy Board Modernization*. https://s3.ca-central-1.amazonaws.com/ehq-production-canada/documents/attachments/18bc1b0d0ad709ef6c240bb24110bd0655d6396c/000/006/082/original/Tahltan_Central_Government_Submissions_to_NEB_Modernization_Panel.pdf

¹¹ Energy Board Modernization. https://s3.ca-central-1.amazonaws.com/ehq-productioncanada/documents/attachments/18bc1b0d0ad709ef6c240bb24110bd0655d6396c/000/006/082/original/Tahltan_Central_Government_Submissions_to_NEB_Modernization_Panel.pdf

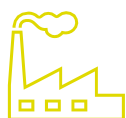
ESTIMATED
ANNUAL
MTC PROD.

56675.11



MINING

- 531.64 MtC



MANUFACTURING & PROCESSING

- 54333.28 MtC



SHIPPING

- 780.47 MtC



SOIL & BIOMASS

- 1029.72 MtC

FACTORED CARBON DATA*

SUM 28337.56 MTC PER ACRE

MINING

Cat 966f Earth Mover
Cat 330B L Hydraulic Excavator
Komatsu D65E-6 Crawler Dozer
Bell 206 L4 Helicopter flight Dease
Lake to site Flight Chilliwack to Dease
Lake
Refueling truck
Equipment Use (Generator, diamond saw)

MANUFACTURING

Processing Facility at Dease Lake
Marketing & Manufacturing @
Prince Rupert, Vancouver, &
Kelowna
Distribution & Retail facilities @ North America
Manufacturing Facility @ China (75%)

SHIPPING & TRANSPORTATION

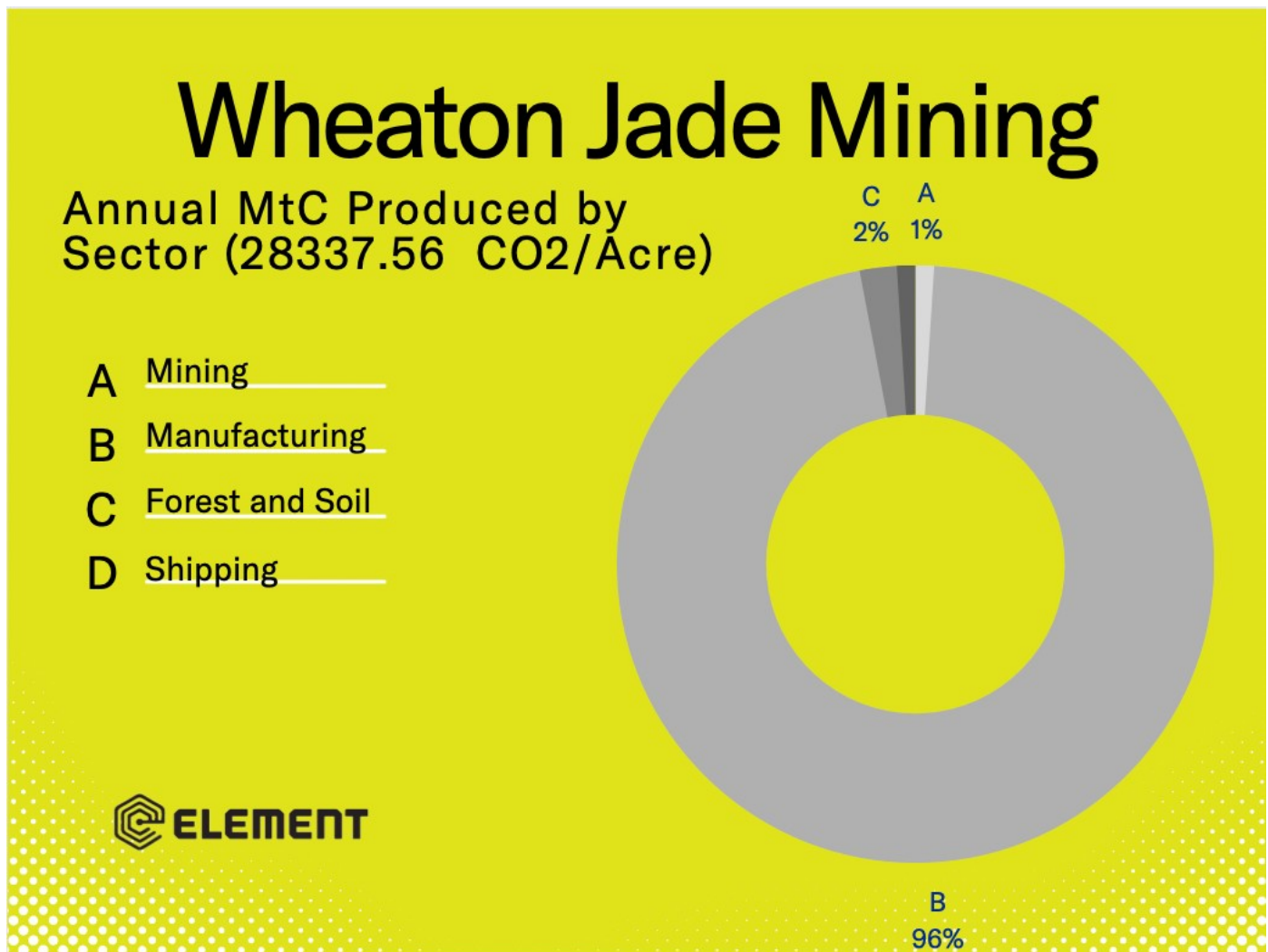
Trucking Initial Processing to
Dease Lake
Trucking Dease Lake to Prince
Rupert
Trucking Dease Lake to
Vancouver
Trucking Dease Lake to Kelowna
Trucking Dease Lake to Seattle
Shipping Port of Prince Rupert to Hong Kong

SOIL & BIOMASS DISTURBANCES

Mountain soil with variable CO₂ stores
Aboveground biomass of live cedar, pine, and bushes

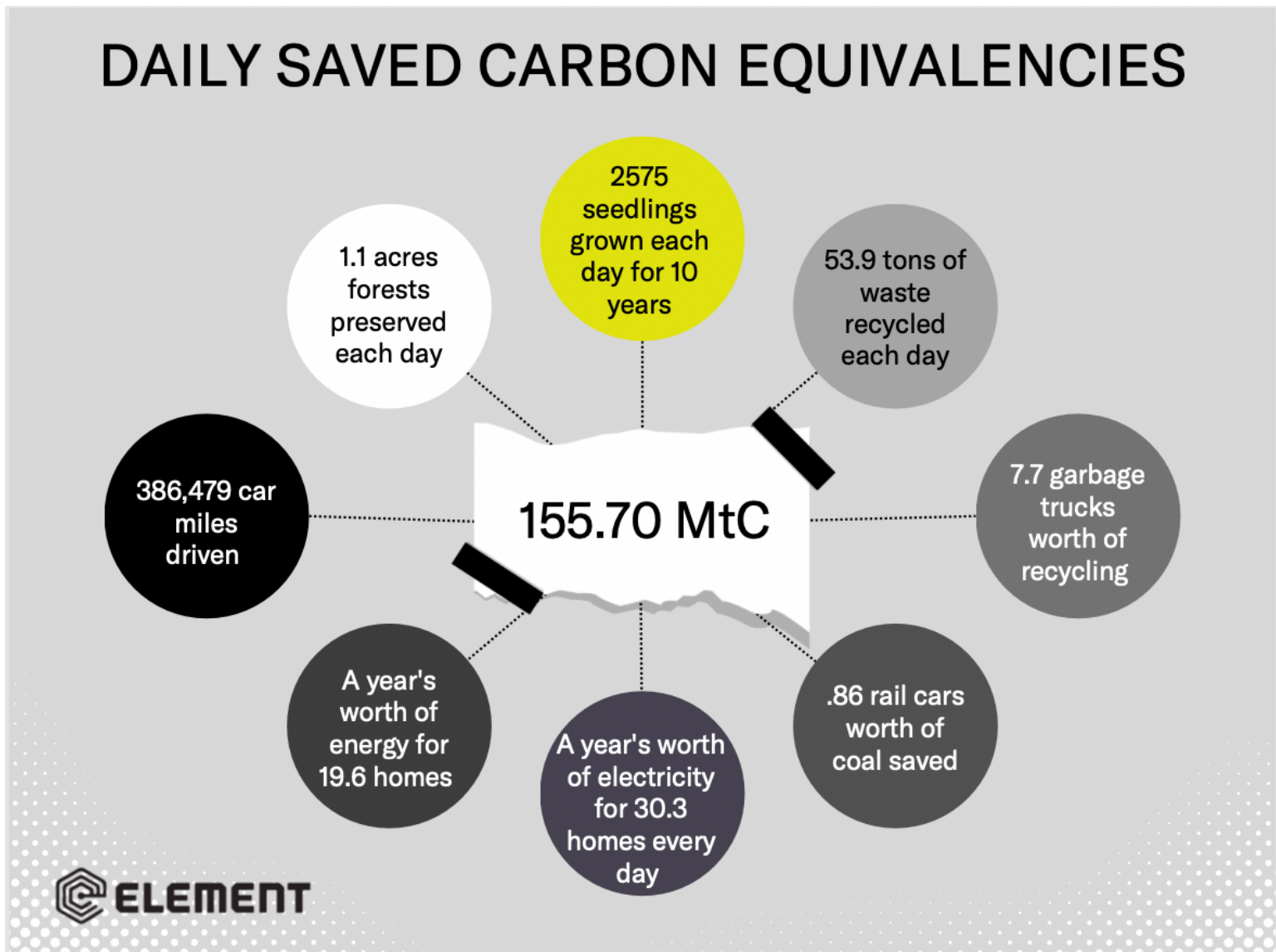
* For Legal and Research Notes, See pp 19-20

EST. LIFETIME: 85,891,130
METRIC TONS OF CARBON¹²



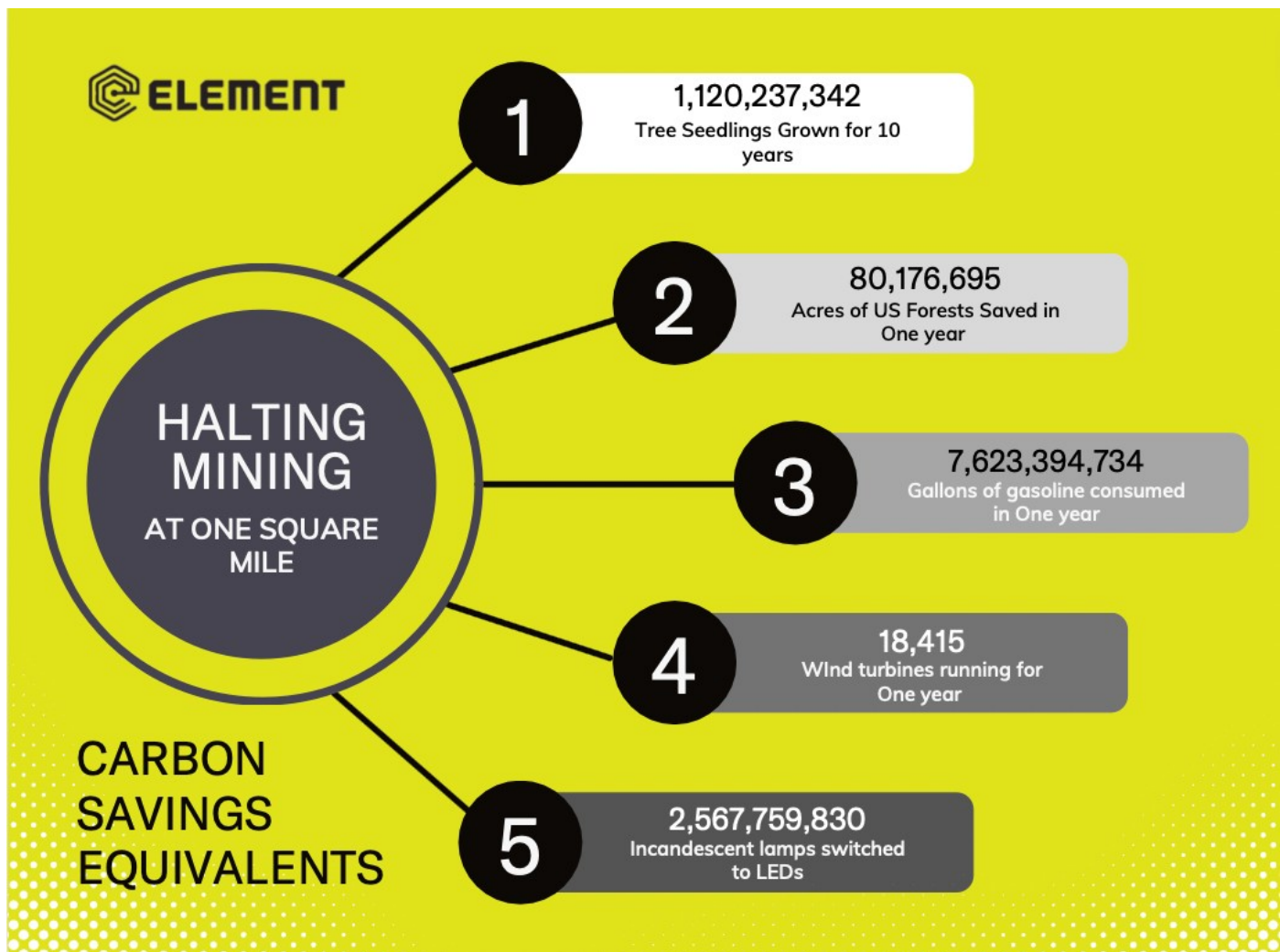
¹² For Legal and Research Notes, See pp 19-20

EST. DAILY: 155.70
METRIC TONS OF CARBON¹³



¹³ For Legal and Research Notes, See pp 19-20

HALT MINING AT ONE SQUARE MILE SAVES EST. 67,749,109 MtC¹⁴



¹⁴ For Legal and Research Notes, See pp 19-20



LEGAL NOTES

FORWARD-LOOKING STATEMENT

This Presentation may contain forward-looking statements that involve substantial risks and uncertainties. Forward-looking statements discuss plans, strategies, prospects, and expectations concerning the business, operations, markets, risks, and other similar matters. There may be events in the future that we cannot accurately predict or control. Any forward-looking statement in this presentation speaks only as of the date on which it is made. Factors or events that could cause our actual results to differ may emerge from time to time.

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RESEARCH NOTES

CALCULATIONS IN THIS REPORT USED THE FOLLOWING

Wheaton Creek Executive Summary

- Data was collected from the executive summary to make site determinations. *See LaPointe, GD.*

Land size and mining operation

- Calculations are based on 3030 acres of land. *See Lambant, P.*
- The most significant annual potential for mining equals 4000 metric tons. *See Lambant, P.*
- Maximum 26.5 tons carrying weight per load via trucking @ minimum rate of 10.00 mpg fuel burn. *See The Rock Truck*

Prevailing data

- Mining, extraction, manufacturing, prime retrieval rate, and all other environmental estimations used prevailing data and gathered evidence from the US, Canadian, and other global agencies offering similar or general findings. *See multiple links below*

SME findings

- SMEs were contacted for earth mover equipment fuel capacity verification. *Contacted Local Caterpillar Dealership*
- Diesel carbon burn was calculated at 22.38 lbs. carbon/gal. *Aviation SME contacted (Captain David Parlotz)*

Owner's manuals

- Where data such as a fuel burn on Caterpillars and Komatsu earth moving machinery was unavailable, a general estimation of 7.5 gallons per hour was used given online retrievable owner's manuals.

Calculations

- Maximum machine/vehicle daily run times measured @ 12 hours. *See Weather Spark, Sunlight hours*
- Online conversion calculators were used for kWh to CO2, Btu to kWh, and Lbs. to MtC. *Keyword search engine calculation lookups*
- Online EPA calculators were employed for compiling all other CO2 scopes. *See Environmental Protection Agency*
- International shipping calculators for freighter distance, knots, and average days asea. *See Carbon calculator*
- Airplane CO2 data was retrieved directly from booking agencies. Home office (Chilliwack to Dease Lake)
- Each of 5 manufacturing facilities (50,000sq ft at 6-inch depth poured concrete). *See The People's Republic of China, Carbon Footprint - cement*
- Electricity and natural gas average determinations were used for each facility. *See Business Energy Advisor*

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