

Longbow Horseman

Underground Mining Enterprise

Responsible American Mining • Mountain West

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Executive Summary

The Longbow Horseman Underground Mining Enterprise is a proposed small-to-medium scale underground mining and mineral processing company operating across the Mountain West of the United States. It is built on a philosophy that is currently rare in the American mining industry: do minimal surface disturbance, work underground where the ore actually is, remediate the environmental legacy of past operations as you go, and build the logistics infrastructure that makes all of it economically viable at scale.

The Mountain West — Utah, Nevada, Idaho, Montana, Colorado, Wyoming, and Arizona — contains some of the most mineral-rich and historically proven ground in North America. Hundreds of historic mines were opened, partially worked, and abandoned across these states as economics shifted or early operators lacked the technology to process what they found. The mineral value left behind in old workings, tailings piles, and underexplored zones represents a significant opportunity for a modern, well-capitalized, responsible operator with the right equipment, the right team, and the right logistics.

Market timing: *The U.S. Government has invested \$10 billion in the critical minerals sector in the 18 months ending June 2026 alone, with the Department of Defense actively seeking domestic supply chain partners across the full spectrum of critical minerals — antimony, tungsten, rare earths, lithium, manganese, beryllium, and more. The Mountain West is the primary domestic source for most of these materials.*

The founder brings a combination of qualifications that most junior mining companies cannot claim: generational knowledge of the Mountain West landscape built from a childhood riding horseback through Ashley National Forest and the Uintah Basin, a deep personal interest in prospecting and mineral identification developed over a lifetime in the field, a background in precision manufacturing and complex project management from the F-35 program and large-scale commercial construction, and an established network across the agricultural, ranching, and land communities of northern Utah. He is also assembling the team to make this company the best American underground mining operation in the Mountain West.

Section 1: The Opportunity

1.1 Why the Mountain West, Why Now

The Mountain West is experiencing a convergence of factors that make responsible, small-to-medium scale underground mining more economically compelling than at any point in the last 50 years:

- **Critical mineral demand:** The energy transition, defense technology modernization, and decoupling from Chinese supply chains have created urgent demand for domestically sourced gold, silver, copper, lithium, rare earths, antimony, tungsten, cobalt, and a dozen other strategic minerals — all of which exist in proven deposits across the Mountain West.
- **Historic mines with modern upside:** Hundreds of partially worked historic mines were closed when commodity prices fell, processing technology was inadequate, or capital ran out. Modern processing technology, better equipment, and higher commodity prices make many of these deposits economic today.
- **Tailings remediation opportunity:** Old mine dump tailings piles often contain significant mineral value that early operators could not economically recover. Modern processing can extract remaining value while simultaneously remediating an environmental liability — a dual-revenue model that attracts both investors and regulators.
- **Federal funding availability:** The Department of Energy's Critical Minerals and Materials Accelerator program has \$69 million available for domestic processing technology innovation (announced April 2026). The Department of Defense's SBICCT Initiative and direct loan programs provide additional capital pathways for critical mineral producers.
- **Rail infrastructure advantage:** Union Pacific rail lines run through key mineral-producing regions of Utah and the broader Mountain West. Access to rail dramatically reduces transport costs for ore, concentrate, and finished product — and creates the opportunity to build an all-purpose shipping and receiving station that serves the full regional mineral economy.

1.2 The Tailings Remediation Advantage

Old mine tailings piles represent one of the most underappreciated opportunities in American mining. Historic operators left behind enormous volumes of partially processed material containing residual gold, silver, copper, and in some cases critical minerals that were not being sought at the time. Modern processing technology — heap leach, flotation, gravity concentration, and hydrometallurgical methods — can recover value that simply could not be extracted with 1880s or even 1950s technology.

The regulatory dynamic for tailings remediation is fundamentally different from greenfield mining. Rather than creating a new environmental disturbance, tailings processing removes an existing one. This positions a responsible tailings processor to work cooperatively with state and federal environmental agencies rather than in opposition to them — potentially qualifying for Superfund co-funding, EPA remediation support, and state environmental incentives that reduce operating costs while accelerating permitting.

Key advantage: *A company that remediates tailings earns environmental credit while generating revenue. No other mining model achieves both simultaneously.*

Section 2: Operating Philosophy — Responsible Underground Mining

2.1 Minimal Surface Disturbance

Underground mining is inherently less surface-disruptive than open-pit or strip mining methods. The Longbow Horseman Mining Enterprise is committed to underground methods as the primary extraction approach for all primary deposit work. This means:

- Decline or shaft access to ore bodies rather than open pit excavation wherever geologically feasible
- Tailored surface infrastructure footprint — headframes, ventilation, and processing facilities sized to the operation, not to institutional scale requirements
- Progressive land reclamation — disturbed surface areas reclaimed as work progresses, not deferred to closure
- Underground paste fill or engineered backfill where appropriate to stabilize workings and reduce surface subsidence risk
- Strict water management protocols to prevent acid rock drainage and protect regional watersheds — a non-negotiable operating standard given the Mountain West's water scarcity

2.2 Historic Mine Rehabilitation

The Mountain West is dotted with thousands of historic mine openings, many of which represent genuine mineral opportunities that have simply been waiting for the right operator, the right capital, and the right technology. The Longbow Horseman approach to historic mines includes:

- Systematic review of BLM and state mining records to identify historically productive mines with documented past production and geologically plausible extensions
- Careful underground rehabilitation to assess the true condition and extent of existing workings before committing exploration capital
- Sampling and assaying of in-situ material, waste dumps, and tailings piles to establish whether modern processing can generate economic returns
- Working with historic property records, old assay reports, and oral history from regional mining communities to locate the most promising targets

2.3 The Founder's Prospecting Background

Christopher D. Iorg has been a serious prospector his entire adult life — a man who grew up riding through the mineral-rich terrain of the Uintah Basin and Ashley National Forest, who has spent decades reading the ground, studying geology, and identifying mineralized zones in the field. This is not a desk interest. It is a lifetime of hands-on observation in some of the most productive mineral country in North America.

That prospecting knowledge, combined with access to a deep network of ranchers, farmers, and landowners across northern Utah and the Mountain West who know these hills and have passed stories about old

workings from generation to generation, represents a genuine competitive intelligence advantage that no amount of capital can simply purchase.

Section 3: Logistics and Infrastructure Advantage

3.1 Union Pacific Rail Access — Approved and Ready

Box Elder County, Utah — where Longbow Horseman Enterprise is headquartered — sits directly along the Union Pacific mainline, one of the most strategically important freight rail corridors in the United States. And critically: Longbow Horseman Enterprise has already been approved by Union Pacific to ship and receive through their system. This approval was earned through a two-year application process — a rigorous qualification that most junior mining companies never complete and many established operators spend years attempting. The approval is in place. The logistics infrastructure is not theoretical. It is ready.

Rail access fundamentally changes the economics of mining and mineral processing. This is not a minor convenience:

- Ore and concentrate transport: Rail shipping costs per ton-mile are a fraction of truck transport, making lower-grade deposits economic that would be unviable by road alone
- Reagent and supply delivery: Processing chemicals, fuel, and heavy equipment components arrive by rail at dramatically lower cost than over-the-road freight
- Market access: Rail connects Box Elder County directly to smelters, refineries, and commodity markets in Salt Lake City, the Pacific ports for export, and the broader national rail network
- Regional hub potential: The same rail access that serves a mining operation can anchor an all-purpose mineral shipping and receiving hub serving the broader Mountain West mining economy

3.2 All-Purpose Shipping and Receiving Station

The opportunity exists to develop a dedicated mineral shipping and receiving station along the Union Pacific corridor in Box Elder County that serves not just the Longbow Horseman operation but the broader regional mining community. This facility would provide:

- Concentrate storage and loading for rail shipment to refineries
- Reagent and supply warehousing for distribution to regional mine sites
- Sample preparation and assay laboratory services for regional operators
- Equipment staging and maintenance services
- Cold storage for reagents requiring temperature control

A well-positioned mineral logistics hub in northern Utah would serve operations across Utah, Nevada, Idaho, and Wyoming — and generate revenue streams independent of any single mining project. This infrastructure investment pays regardless of which specific ore body is being worked.

3.3 Public Land Opportunity

The Mountain West contains vast areas of BLM and Forest Service public lands with documented mineral potential, a transparent staking and permitting process, and a long history of productive mining operations. Public land mineral records — maintained by the BLM's Mining Claims database, state geological surveys,

and USGS mineral resource assessments — provide a publicly available roadmap to historically productive and geologically prospective ground.

Key advantages of public land mineral exploration in the Mountain West include:

- Established regulatory framework: BLM and Forest Service mineral permitting, while requiring careful management, follows a known process with defined timelines
- Historic production records: Decades of documented production from public lands provide reliable grade and tonnage information for targeting
- Access to state geological survey data: Utah, Nevada, Idaho, Montana, and Colorado all maintain comprehensive geological survey databases available to prospectors and operators
- Multiple use compatibility: Public lands allow coexistence of mining, grazing, recreation, and wildlife management — critical for maintaining community support and regulatory goodwill

Section 4: Mineral Targets

4.1 Approach — Follow the Ground

The Longbow Horseman Mining Enterprise is not locked to a single mineral target or a single commodity cycle. The Mountain West contains a diverse suite of mineral deposits across multiple commodity types, and a well-equipped, well-organized small mining company with experienced prospectors and flexible processing infrastructure can pursue whatever the ground holds most profitably.

Primary target categories in order of current market priority:

- Gold and silver: The Mountain West's historic backbone commodity. Numerous small historic producers were abandoned at low gold prices that are now far below current market levels. Underground high-grade veins accessible through historic workings represent the lowest-capital entry point.
- Copper: Essential for electrification, defense, and critical infrastructure. Utah has world-class copper geology and existing smelter infrastructure through Kennecott/Rio Tinto that provides an established market for concentrate.
- Critical minerals (lithium, rare earths, cobalt, antimony, tungsten): The current priority of the U.S. government and defense establishment. Historically underexplored in many Mountain West districts due to low historic demand. Now the most financially supported mineral category in the country.
- Base metals (lead, zinc, molybdenum): Often co-occurring with gold and silver in Mountain West geology. Polymetallic deposits generate multiple revenue streams from a single mining operation.

Strategic note: *Utah's Northern Utah geological province contains documented antimony, tungsten, and rare earth occurrences that are receiving active investor and government attention in 2026. Box Elder County sits within this province.*

Section 5: Capital Requirements and Funding Strategy

5.1 Phase Structure

The mining enterprise is structured in phases that allow each stage to be funded on demonstrated results rather than speculative projections:

- Phase 1 — Prospecting and Target Identification (\$250K–\$750K): Systematic field prospecting, historic records review, sampling and assay of priority targets across the Mountain West. Identifies the top 3–5 drill-ready targets. Capital source: private investors, self-funding, prospecting partnerships.
- Phase 2 — Exploration and Resource Definition (\$1M–\$5M): Drilling and underground sampling on priority targets to establish a compliant mineral resource estimate. Capital source: exploration financing, SBIR/STTR critical minerals programs, DoE Critical Minerals Accelerator, strategic partner investment.
- Phase 3 — Tailings Remediation and Historic Mine Rehabilitation (\$500K–\$2M): Parallel track targeting near-term cash flow from tailings processing and historic mine rehabilitation while exploration results mature. Capital source: project financing, EPA remediation co-funding, revenue from initial processing.
- Phase 4 — Production and Rail Infrastructure (\$5M–\$20M+): Underground development to production, processing plant, and Union Pacific rail shipping station development. Capital source: project debt financing, streaming/royalty arrangements, strategic mine partner investment.

5.2 Federal Funding Programs Available

- DoE Critical Minerals and Materials Accelerator: Up to \$69M available for domestic critical mineral processing technology (April 2026 NOFO) — applies to Phase 2/3 processing technology development
- DoD SBICCT Initiative: Pentagon investment program for critical technology companies including critical minerals — applies to Phase 3/4 production
- Defense Production Act Title III: DoD direct investment authority for domestic critical mineral supply chain — applies if targeting minerals on the DoD critical materials list
- USDA Rural Business Development Grants: Rural infrastructure and logistics development in Box Elder County — applies to rail shipping station development
- EPA Brownfields Program: Remediation funding for historic mine tailings cleanup — applies to tailings processing operations

Section 6: Why This Company Wins

- **Founder prospecting knowledge:** A lifetime of reading Mountain West terrain, built on generational ranching and farming knowledge of the land. This intelligence cannot be purchased or replicated quickly.
- **Underground-first philosophy:** In an era of increasing surface disturbance scrutiny and ESG investor pressure, underground mining with minimal surface impact is the most defensible operating model available.
- **Tailings remediation dual-revenue model:** Environmental credit plus mineral recovery from the same operation. No other mining model achieves both simultaneously.
- **Rail logistics infrastructure:** Union Pacific access in Box Elder County creates cost advantages and hub potential that serve the full regional mining economy, not just one project.
- **Historic mine intelligence:** Systematic review of BLM and state geological records combined with community knowledge networks identifies targets that never appear in junior mining company databases.
- **Manufacturing and construction execution background:** The founder has managed complex, high-precision manufacturing programs and large commercial construction projects. Mine development is project management at its core.
- **Critical mineral timing:** The U.S. government is investing at an unprecedented rate in domestic critical mineral supply chains. A company that can identify, develop, and produce domestic critical minerals today is operating in the most federally supported mining environment in American history.

Section 5B: Extraction and Processing Methodology

5B.1 Learning from the Ancestors, Then Improving on Everything

The Longbow Horseman approach to underground mining begins exactly where it should: with the men who did it first. The historic miners who worked the Mountain West understood the ore bodies, understood the ground, and understood what it takes to extract value from rock with minimal equipment and maximum ingenuity. Modern underground mining has replaced their hand tools with machines but has often discarded their intimate knowledge of the ground in the process. We intend to recover both.

The methodology is simple: study the historic workings in every target mine. Understand what the original operators were chasing, where they stopped and why, and what they left behind. Then apply modern equipment, modern safety standards, and modern processing technology to finish what they started — and to find what they missed.

Extraction methods will be selected based on the specific deposit:

- Selective hand mining and mechanical breaking on high-grade veins where preserving grade and minimizing dilution is the priority — following the vein, not blasting the whole face
- Drill and blast where the deposit geometry calls for it and the ground conditions support it — conventional but executed with precision and tight blast design to minimize overbreak and ground disturbance
- Mechanical cutting (roadheader or continuous miner) where ground conditions allow — lower vibration, more consistent advance, better for the underground environment quality
- Combination approaches where the ore body demands it — selective on the rich zones, bulk on the lower-grade material

Operating principle: *We mine what we need and nothing we don't. Every blast, every cut, every meter of advance is intentional. The ground we don't disturb is the ground we don't have to support, ventilate, or rehabilitate.*

5B.2 The Conveyor System — The Spine of the Operation

The material handling system is the detail that separates a well-run underground mine from a dangerous, inefficient one. The Longbow Horseman conveyor design solves the two biggest problems in small underground mining simultaneously: getting material out safely and getting supplies in efficiently.

The system is a continuous belt conveyor running along one side of every development heading and production drift, from the face all the way to the portal or shaft collar:

- Belt width 12 inches to 2 feet depending on the heading size and material volume — narrow enough to leave the rest of the floor clear for personnel and equipment movement

- Wood framing with rollers along the wall — not freestanding in the center of the drive, not hanging from the back, but mounted along the rib where it takes up minimum space and doubles as protective framing for utilities
- Electric motors at intervals along the belt — multiple drive units so the whole system does not fail if one motor goes down
- The framing carries everything: the belt, the electrical conduit, the plumbing lines, the ventilation ducting, and the emergency shut-off switches — all organized in one integrated wall-mounted system rather than hanging separately from the back
- Electrical outlets at regular intervals along the conveyor frame — power available at every point in the mine without running extension cords
- Plumbing runs alongside — water supply to the face for dust suppression and drilling, drain lines back to the portal
- HVAC ducting integrated into the frame — fresh air to the face, return air managed through the same framing system
- Emergency shut-off switches mounted on the frame at regular intervals — anyone anywhere in the mine can stop the entire belt system immediately

The conveyor runs inbound with supplies — timber, bolts, shotcrete materials, tools, food and water for the crew — and outbound with broken ore and waste rock. Material moves automatically. The crew works. Nothing sits on the floor waiting to be moved by hand.

The result: *A mine that looks and feels like a real industrial facility — clean, organized, well-lit, utilities accessible at every point, material flowing continuously in and out. This is not a historic mine with a modern headlamp. This is a modern facility that happens to be underground.*

5B.3 Making it Safe and Beautiful

Underground mines do not have to be dark, cramped, and dangerous. The Longbow Horseman standard for every underground facility is that any visitor — any family member, any government inspector, any potential investor — should be able to walk into our workings and feel safe, organized, and impressed. That standard drives every design decision:

- Ground support installed immediately after every round of advance — rock bolts, mesh, shotcrete where needed — before any other work proceeds
- LED lighting throughout — bright, energy-efficient, mounted on the conveyor frame so the whole drive is consistently illuminated
- Clean floor — broken material goes on the belt, not on the floor. Personnel walkways are maintained clear at all times
- Marked emergency exits, first aid stations, and refuge chambers at regular intervals
- Ventilation designed for personnel comfort, not just minimum regulatory compliance — fresh air at the face, temperature management, dust control
- Painted walls and numbered stations so every location in the mine is immediately identifiable — emergency responders can locate any point in the mine instantly

The goal is an underground environment that a town is proud to have beneath it — not an industrial scar that the community tolerates because of the jobs, but a genuine community asset that the community points to with pride.

5B.4 The Mobile Containerized Processing Plant

All processing takes place at the mill site in a custom-installed facility built inside standard shipping containers. This design was chosen deliberately for four reasons: security, mobility, environmental protection, and blending with the landscape.

- **Security:** Everything locks up at the end of every shift. No exposed machinery, no open tanks, no accessible concentrate. The containers close and the site looks like a staging area, not a processing plant.
- **Mobility:** The entire plant can be broken down and moved to the next site. The processing infrastructure follows the mining operation, not the other way around.
- **Environmental protection:** Processing machinery is never exposed to weather. Dust, reagent spills, and process water are all contained within the structure. No open-air processing, no wind-dispersed dust.
- **Landscape integration:** Shipping containers can be painted, bermed, and landscaped to blend with the local environment. A properly finished container facility is invisible from 200 meters.

5B.5 Processing Methods — No Harmful Chemicals Onsite

This is a non-negotiable operating standard: no harmful chemicals will be used or stored at any Longbow Horseman Mining Enterprise site. No cyanide. No mercury. No acids. No reagents that pose environmental or community risk. This is not a regulatory compliance position. It is a values position, and it is absolute.

All mineral separation will use physical and mechanical methods:

- **Classification:** All material coming off the conveyor is sized and classified through screens and classifiers — separating fine material from coarse, heavy material from light, before any other processing step
- **Gravity concentration:** Shaker tables, jigs, and sluices separate minerals by density. Gold, silver, copper minerals, and most other valuable ore minerals are significantly denser than the host rock they come from. Gravity works, it is clean, and it has worked since the first miner washed a pan in a mountain stream
- **Flotation (where applicable):** For sulfide minerals — copper, lead, zinc, some gold and silver — flotation using food-grade or environmentally approved frothers only. No toxic collector reagents. Flotation circuits are contained within the container facility with full process water recovery and recycling
- **Magnetic separation:** For iron-bearing minerals and some critical mineral concentrates, magnetic separation provides a clean, reagent-free separation option

Precious mineral concentrates go directly into sealed 50-gallon drums at the end of each processing run — weighed, assayed, documented, and secured. No loose concentrate, no open storage.

5B.6 Waste Rock and Host Rock Utilization

Nothing that comes out of a Longbow Horseman mine is wasted. Waste rock — the host rock that contained the ore but has no economic mineral value — has a second life:

- **Aggregate and fill:** Crushed waste rock is used for road construction, site grading, and underground backfill — reducing the need for imported aggregate and keeping material on site
- **Limestone fluxing:** Where the host rock is limestone — common in many Mountain West mineral districts — we will process it onsite into flux-grade limestone ready for use in concrete production. Local limestone flux reduces concrete costs for the entire regional construction economy and turns waste rock into a saleable product
- **Hempcrete aggregate:** Hemp hurd from the Longbow Horseman farm operation combined with properly sized limestone aggregate produces hempcrete — a natural building material. The farm and the mine feed each other
- **Engineered backfill:** Waste rock mixed with cement paste is placed back into mined-out underground voids — stabilizing the workings, reducing surface subsidence risk, and eliminating the surface waste rock pile entirely

The vision: *A mine where nothing is wasted, nothing is exposed, nothing is ugly, and nothing hurts anyone. The mineral value goes into drums. The rock goes back into the ground or into the community. The space that remains is ready for whatever the community needs it for next.*

Section 6B: Underground Livable Environment — A Community Asset

Beyond the Mine: Public Safety and Community Infrastructure

The underground facilities developed by Longbow Horseman Mining Enterprise are designed from the outset to serve purposes beyond mineral extraction. A well-engineered underground space — properly ventilated, stabilized, and accessible — is one of the most valuable community assets a Mountain West town can have: a naturally temperature-stable, blast-resistant, flood-safe environment that can serve the entire community in a public safety scenario.

Every underground facility developed under this enterprise is designed with dual-use community infrastructure in mind:

- **Public safety shelter:** Underground facilities provide protection during wildfires, severe weather events, and other regional emergencies that are increasingly common across the Mountain West. A

town that has an accessible underground facility has a resource that no surface building can replicate.

- **Emergency resource storage:** Temperature-stable underground environment for community food reserves, water storage, medical supplies, and emergency equipment — ideal for the kind of freeze-dried emergency food kits being developed by the Longbow Horseman Meat & Food Security Enterprise.
- **Local economic hub:** Properly developed underground spaces can house workshops, storage facilities, mushroom cultivation, cold storage for agricultural products, and other year-round operations that benefit from stable underground temperatures.
- **Historical and tourism value:** Many Mountain West communities have deep mining heritage. A responsibly developed, publicly accessible underground facility connects communities to that heritage while generating tourism and educational revenue.

For landowners with private mineral claims, this concept extends further: Longbow Horseman can develop your underground mineral deposit into a personal underground facility of your choosing — mine the value from the ground, then design and build the remaining space to your specifications. A private bunker, a private storage facility, a family emergency shelter, a temperature-controlled agricultural space. The mineral extraction pays for the excavation. What you do with the space afterward is yours.

The pitch to claim holders: *You own the ground above. Let us work what's below it, improve the local economy with the resources it contains, and leave you with a safe, engineered underground space your family and your community can use for generations.*

This is not a standard mining company offer. No one else is building mining operations with community livable infrastructure as a designed output alongside mineral production. It is a differentiator that turns a mine from a temporary extraction operation into a permanent community asset.

Section 7: Immediate Next Steps

- Formalize the Longbow Horseman Mining Enterprise as a separate LLC or corporation, distinct from the agricultural and composite manufacturing operations
- Assemble the core prospecting and geological team — experienced Mountain West geologists, licensed mine engineers, and field prospectors
- Begin systematic BLM and state geological database review to identify the top 10 priority target areas across Utah, Nevada, Idaho, and Montana
- Initiate conversations with Union Pacific regarding a mineral logistics facility agreement along the Box Elder County corridor
- File for appropriate exploration permits on the highest-priority BLM public land targets
- Submit initial inquiry to the DoE Critical Minerals and Materials Accelerator program for processing technology co-funding eligibility
- Identify and approach the first 3–5 potential investors or strategic partners for Phase 1 capital

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