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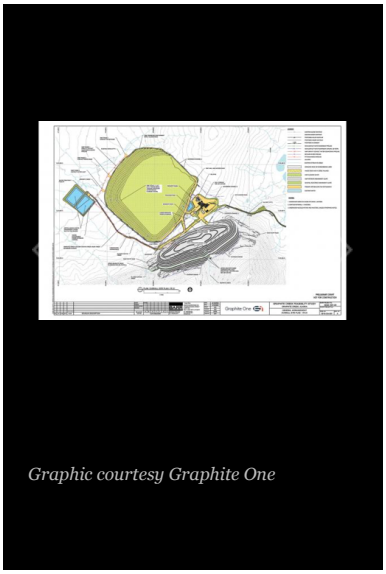

Graphic courtesy Graphite One

Graphite One's Feasibility Study Reveals Proposed Mining Plans

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By Anna Lionas

On April 23, Graphite One Inc. released the feasibility study for the planned graphite mine on the Seward Peninsula. With the study complete, the Canadian mining company can now begin the process of applying for the state and federal permits required to move forward with the project.

The 460-page feasibility study document outlines mining plans, which assumes a 20-year lifetime of the mine. The plans include an open pit mine at Graphite Creek on the north face of the Kigluaik Mountains, and a complex of mill facilities including a power generation plant, fuel storage, a mill to process the ore, a waste management facility and water treatment facility. It also details a proposed access road connecting the mine to the Kougarok Road. Graphite One plans to build a secondary treatment plant in Ohio where the ore will be shipped to be produced into lithium-ion battery anode active materials.

The feasibility study was completed with the help of a $37.5 million U.S. Department of Defense grant, which contributed to 75 percent of the study cost.

Vice President of Operations at Graphite One Mike Schaffner told the Nugget the

company expects to begin the permit application process this summer, with an estimated two years minimum for all the permits to be approved. The building of the mine's facilities would take approximately 30 months.

The project plan

The plan is to build an open pit mine north of the Kigluaik Mountains facing the Imuruk Basin. Mining activities will use conventional mining techniques such as drilling, blasting, loading and hauling.

The mine would operate on a 24-hour/365 operation schedule, allowing for 13 days of non-operation due to inclement weather. There will be four rotating work crews, working two 12-hour shifts.

The support facilities of the mine will include a mill to process the ore, a power plant with three diesel generators with an output of 15 megawatt, a 850,000-gallon diesel storage tank, a filtration and processing plant for mine tailings, a truck shop, a water treatment plant, explosives storage and multiple staging areas for the ore and containers it will be stored and shipped in.

The study assumes that bulk fuel will be delivered via a contracted supplier to the site from Nome and will be stored on site to fuel the power plant, building heaters, concentrate dryer and various mobile equipment. Graphite One assumes a bulk diesel price of $3.67/gal, based on information from a local fuel distributor.

At the height of mining operations an estimated 30,000 tons of ore will be moved each day. It will first be processed in the on-site mill, where the material will be crushed, ground, concentrated and dried, then loaded into lined 20-foot shipping containers to be transported by truck to the Port of Nome. Each truck will haul two containers, at a rate of 22 containers a day.

A total of 230 million tons of waste material will be mined over the mine life. The study assumes that all non-overburden waste materials will be potentially acid generating and will be contained in the waste management facility along with tailings material.

As there is no road access to the proposed mine site, the plan includes building a 17-mile, two-lane gravel road, going through Mosquito Pass to connect to the Kougarok Road. Since the Kougarok Road is a state road and maintained by the Alaska Department of Transportation, Graphite One would have to "come up with an agreement" with the department on improvement of the road and maintenance, Schaffer said.

The Kougarok Road would also need to be reclassified by the DOT to allow the use of double trailers.

During the winter when the port isn't operating, thousands of containers would be stored at a 24-acre storage facility in Nome, the location was not specified.

The feasibility study assumes the Port of Nome expansion project will be completed by the time the mine is operating. The U.S. Army Corps of Engineers closed the bidding process for Phase 1A of the port project on April 28, which is set to be awarded by this fall and to begin construction by next spring. Project manager for the Port of Nome Joy Baker has estimated the port project would be complete by 2032/2033.

Once the deep-draft port is built, self-loading container ships could access the docks to load the ore. If the expansion doesn't come in time, a lighter ship, or barge, will be used to take the containers out.

Nine ships are proposed to dock each season to move 8,200 containers with the graphite concentrate.

The ships will take the containers to Prince Rupert harbor in British Colombia where they will be transferred to trains and head to the secondary treatment plant in Niles, Ohio. There the concentrate will be produced into lithium-ion battery anode active materials and other graphite products.

Also, part of the plan, but not fully articulated, is the creation of a subdivision in Nome that will house mine workers. Once operational, 124 employees are expected to be working at the site, living in Nome or surrounding villages.

"We want 100 percent local employment, and that means general manager all the way down to the guys loading the bags in the truck," Schaffner said. "This isn't zinc, it's not gold. It's not that high of value product. You've got to be able to make this work with the community. You just can't afford to fly people from Texas or Seattle."

In addition to the 850,000-gallon diesel fuel storage tank at the mine site, Graphite One

In addition to the 850,000-gallon diesel fuel storage tank at the mine site, Graphite One estimates it will need 8 million gallons of diesel and 36,000 gallons of gasoline. Nome's current capacity for diesel is 12 million gallons, so an estimated five additional storage tanks will need to be built to accommodate the project.

Project Cost

According to the study, building the mine complex would cost an estimated $949.4 million for the design, construction, installation and commission. The secondary treatment plant in Ohio, which will begin construction before the mine, is estimated to cost over $2 billion. In total, the entire project capital is estimated to cost over $5 billion.

The prices were estimated without considering recently imposed tariffs. The tariff implementations and walk backs by the Trump administration have been one of the most difficult parts of completing the study, Schaffner said.

"A discrete 48.7 percent and 20 percent allowance has been applied to account for U.S. tariffs on Chinese artificial graphite products and refined natural graphite, respectively, in effect as of March 2025," the study said.

Tariffs on natural graphite and anode products are to Graphite One's benefit, Schaffner said, but tariffs on the equipment they'd need to import for the project would hurt the company. The numbers in the study were acknowledged not to be final.

"We put a statement in there [the feasibility study] that when the dust settles, we will go back in and reanalyze this," Schaffner told the Nugget.

Permits Required

The permitting and construction phases of the project are estimated to take five years, with earliest production at the mine set for 2030.

Among the permits Graphite One will need is the U.S. Army Corps of Engineers Section 404 of the Clean Water Act, a wetlands permit. The mine requires the Corp's authorization to discharge dredged or fill materials into U.S. waters and wetlands, it's the only federal permit required for the mine.

They plan to submit that application in late June or early July of this year, Schaffer said, along with other permits. The Corps will evaluate the permit and return to Graphite One with a request for either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS).

An EA typically takes 12 months to complete and determines whether the project would significantly impact the environment. It is a less extensive process than an EIS, which can take 24 months to complete and costs more.

An EA doesn't require a public comment period like an EIS does.

"EIS is a lot more involved, and people like me argue that gives the public a chance to review and comment on what they're doing," said Dr. David Chambers, mining expert and founder for the Center for Science in Public Participation.

An EIS is common for large hard-rock mines in Alaska, like the Red Dog Mine. An EA can also be awarded like in the case of Rock Creek, a gold mine that failed after just a few weeks in operation, a few miles outside of Nome.

Schaffer said Graphite One has the work set up to complete either an EA or EIS and intends to provide data that would answer any question whichever route the Corps choses to take.

"We've been doing fish studies for six years now, very thorough fish studies and surveys for six years," Schaffer said. "We ran a weather station continuously for the last year, that's one that would be required for an EIS."

In an environment like the Imuruk Basin and its surrounding area, water is ubiquitous, whether it's streams, ground water or run-off water from melting snow and ice, all have a chance of encountering the mine site, Chambers said.

"I've always contended that if you could keep contamination completely restricted to the mine site, we would have very few, or certainly far fewer, arguments and issues surrounding mine development. But water likes to move around," Chambers said.

Other permits required will come from state agencies. Some of their purposes will be to evaluate project plans and operations, ensure the project complies with state and federal air emissions standards, authorize the disposal of tailings and waste rock and permit the development of the 17-mile access road.

What's Next

Residents of the Seward Peninsula can expect less activity at the mine site over the next few summers, as Graphite One wraps up minor work related to the permitting process, Shaffner said.

The camp will house about 12 people this summer, down from the 60 at the proposed mine site last year.

Those employed will be specialty contractors flown in, and the number of locals staffed will be less this year, according to Schaffner, who said the benefits of the mine to local communities is a shining part of the study.

“This does have the opportunity to be some long-term stability for the area of Nome,” Schaffner said.

Graphite One officials will be making trips to the region for public meetings again, with meeting dates set for Teller on May 20, for Brevig Mission on May 21 and for Nome at Old St. Joe’s on May 22.

Section: NEWS