Impacts of the Stibnite Gold Project: A Review of the Supplemental Draft Environmental Impact Statement

Idaho Rivers United
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Introduction

The Stibnite Gold Project (SGP) is an open-pit gold mine proposed by Perpetua Resources that lies on federal, state, and private lands. Located in Valley County, Idaho, the project is 14 miles southeast of Yellow Pine. The Forest Service issued a draft Environmental Impact Statement (DEIS) in August 2020, which examined five alternatives based on plans that were submitted in 2016 and a revised plan submitted in 2019. Many found this initial DEIS inadequate with multiple sections of key information missing and baseline data not properly obtained. Shortly after the public comment period for the DEIS ended, Perpetua submitted a second revised plan to the Forest Service in December 2020 followed by a modified plan in October 2021. Because of these modifications in Perpetua's plan, the Forest Service decided to move forward with a supplemental draft EIS (SDEIS) to account for these substantial changes in the plan of operations. The supplemental draft Environmental Impact Statement (SDEIS) was released on October 28, 2022.

What is the Stibnite Gold Project (SGP)?

The SGP is a massive open-pit, cyanide-leaching gold mine proposed by Perpetua Resources (formerly Midas Gold). The purpose of this project is to mine 4.2 million ounces of gold, 1.7 million ounces of silver, and 115 million pounds of antimony from the Stibnite mining district. While antimony is considered a critical mineral in the United States and is certainly the biggest product by weight, it is not the main driver for this project. Perpetua's feasibility report estimates that 95% of its profits will be derived from gold sales. The mine is only economically feasible because of the gold, a mineral that is not of critical use to the United States. While the Stibnite area where the mine is located has been heavily impacted by previous mining operations, more than 51% of the SGP's 3,200 acre footprint will fall on previously undisturbed lands, the majority of which is public lands administered by the Payette National Forest.

The SDEIS released details three Action Alternatives for the project:

1. The Proposed Action (Also known as ModPro2 or MMP)
2. The Johnson Creek Route Alternative
3. The No Action Alternative

The primary difference between the action alternatives is what route they will use to access the mine site. The Proposed Action alternative will use Johnson Creek Road during initial construction and during preparation of the Burntlog Road, which would eventually be the primary route to the mine site. One of the major concerns with the Proposed Action is the proximity of the Burntlog Road with the Frank Church River of No Return Wilderness as well as impacts to Inventoried Roadless Areas and resulting critical habitat fragmentation. The Johnson Creek alternative would utilize Johnson Creek Road as the main route throughout the lifespan of the project.

Under the No Action Alternative, mining, ore processing, and related activities would not take place. However, the prior approved exploration and reclamation work directed by the Administrative Settlement Agreement and Order on Consent from 2021 would still take place.

The Johnson Creek alternative "was developed to evaluate potential reductions in impacts to various resources caused by the Burntlog Route," (SDEIS). However, there will still be adverse impacts on the environment surrounding the area with either alternative.

The Forest Service has declared in the SDEIS that the Proposed Action is the Preferred Alternative if the project were to move forward.

Fisheries

Within the SGP footprint, critical habitat for ESA-listed chinook salmon, steelhead, and bull trout all exist. While Perpetua firmly stands behind the notion that this project represents a general restoration effort, the science and analysis included within the SDEIS provide numerous contrasting facts and reasons to be extremely concerned about the overall health of the fisheries found at Stibnite and potential downstream implications.

First, a primary component of the SGP related to fisheries restoration is the experimental fish tunnel that will be used to provide access to the upper East Fork South Fork (EFSF) during early mine operations. In 2019, The U.S. Fish and Wildlife stated that due to the uniqueness of this tunnel design, "there exists a reasonable probability that the project will not be able to volitionally pass fish safely, timely, or effectively."[1] Even if this barrier is sufficiently resolved, this project will create a new barrier in Meadow Creek at the foot of the Tailings Storage buttress and dam.

The project will largely result in degraded conditions that are paramount to the survival and reproduction of the resident and migratory fish species found in the area. In particular, stream temperatures are predicted to be elevated above existing baseline conditions for **up to 100 years** when vegetation can reestablish adequate shade (SDIES ES–15). This timeline is far too long and may result in the permanent extirpation of temperature sensitive species from the project area. Additionally, these baseline conditions represent the current state of affairs at Stibnite after a century of mining and degradation. True restoration would go far beyond the current baselines and attempt to reach what would be pre-mine conditions.

For chinook salmon in particular, this project will result in the temporary or permanent displacement of the species from the project area (SDEIS ES-19) due to habitat conditions reaching unsuitable conditions.

[1] United States Fish and Wildlife Service - Comments on Proposed Stibnite Gold Project 2019

For bull trout and westslope cutthroat trout, the outcome is much the same. The SDEIS asserts that at the end of the project there would be a "net decrease in both quantity and quality of habitat for bull trout and westslope cutthroat trout," (SDEIS ES-19).

Water Quality and Quantity

Both action alternatives involve the removal and disturbance of mineralized materials which have the potential to release heavy metals and ions that would deteriorate surface water resources and groundwater chemistry. Project operations will increase water temperatures in West End Creek and the EFSF. Post-closure activities will result in elevated temperatures in Meadow Creek and West End Creek. The temperatures in most of the waterways are not expected to return to baseline levels (or current water temperatures) for approximately 100 years. By that time irreversible damage to the ecosystem and native species will have already taken place.

Sedimentation from mining activities and construction will be a detriment to water quality. Groundwater will suffer from an increase in analyte concentrations from the leaching of development rock. However, the argument for allowing this degradation in water quality is that "existing groundwater in those areas typically does not meet regulatory criteria for use as drinking water due primarily to arsenic and antimony concentrations," (p. ES-15). Existing degraded water quality should not be used as a rationale for activities that further pollute groundwater in the area.

In addition to the anticipated increase in groundwater contamination, it is expected that the groundwater levels will be reduced as a result of pit dewatering and the creation of impermeable liners under the Yellow Pine, West End, and Hanger Flats pit areas. Additionally, the same liner system will be used under the tailings storage facility (TSF) and TSF buttress which will permanently remove six wetland areas within the mine site. This alteration in groundwater connectivity is expected to have adverse impacts on flow and groundwater recharge of streams and wetlands in the project area.

Wetlands and Riparian Zones

Under either alternative, the SGP will have major implications for the wetlands and riparian areas within, and outside of, the mine site. In addition to the direct impacts detailed below, the Forest Service acknowledges that due to the required drawdown of the site water table, indirect impacts to wetlands and groundwater recharge of streams may be greater than anticipated or what has been documented in the SDEIS.

Both Alternatives would result in the loss of 120 acres of diverse, high functioning wetlands within the mine site and 619 acres of riparian areas. Off-site, this loss differs between the Burnt Log Route Alternative (76.3 acres lost) and the Johnson Creek Alternative (71.2 acres lost).

Within the mine site itself, a major proportion of the wetlands and riparian areas that would be lost will be within the upper Meadow Creek valley. This previously undisturbed and high-functioning wetland is slated to be the site of the SGP tailings dump where millions of pounds of mine waste will inundate the valley floor. This toxic mine waste will sit between a synthetic liner that is designed to prevent clean water infiltration and contamination while at the same time isolating the entire tailings facility footprint from the water table, diminishing the impacts of any 'reclaimed' wetlands that will be constructed on top of this liner system.

Despite claims of 'restoring the site,' portions of Perpetua's wetland mitigation will occur off-site in the Lemhi valley. While the Lemhi River valley represents important salmon habitat, to truly stick to their claims, this mitigation must occur within the upper EFSF drainage.

Recreation

The public lands and waterways in, near, and along the access routes of either alternative for the SGP and areas beyond the analysis area, are of immense value to Idahoans and recreational tourists. In a brief summary, this region, within the Payette and Boise National Forests, represents a diverse array of recreational assets providing a broad range of opportunities for the public. Hunting, fishing, whitewater paddling, cycling, backcountry skiing, dispersed camping, hiking, bird watching, wildlife viewing, mushroom foraging, OHV use, and horseback riding are a few examples of activities that are enjoyed in the area year-round.

The area of analysis for this project extends five miles from any major SGP feature. This analysis area is too narrow in scope and misses numerous trailheads, access points, and campgrounds that will be impacted by either action alternative presented in the SDEIS.

The increase in traffic, regardless of alternatives, will likely result in an increase in traffic along the South Fork Salmon Road and Lick Creek Road. Both roads are primary access routes for fishing, hiking, and river recreation in particular.

Additionally, the roughly 14,000 acres that comprise the general SGP area boundary will be closed to all recreational pursuits for over 20 years. Access to the popular Thunder Mountain area, traditionally accessed via the Stibnite Road, will be restricted and in all likelihood closed for significant periods of time during the life of the mine.

The SDEIS also fails to incorporate any sort of downstream analysis. The South Fork Salmon River, while being a premier recreational destination in itself, feeds directly into the Wild and Scenic Main Salmon River. Any negative impacts to water quality as a result of the SGP stand to influence the vast number of private boaters who float this stretch of river annually as well as the 33 licensed outfitters who operate commercial float and fishing trips along this stretch of protected water.

Wild and Scenic Rivers

Idaho is home to beautiful free-flowing rivers that are protected under the Wild and Scenic Rivers Act (WSRA) of 1968. Currently, Idaho has 891 river miles designated under the WSRA.[2] There are three distinct designations for rivers under this act: wild, scenic, and recreational. To be designated and protected under this act, a river must be free-flowing and possess at least one Outstanding Remarkable Value (ORV). A designated river's ORVs could be scenery, recreation, fish, geology, history, prehistory, water quality, vegetation, wildlife, and culture. From there, a river section will be classified as wild, scenic, or recreational largely based on the level of development and access that exists along the stretch of river in question.

The Forest Service identified that "No significant impacts were identified for special designations," (p. 4-623). Meaning that there would be no negative impacts on rivers protected by the WSRA associated with this project. However, that statement is not accurate.

Through the SGP, Idaho's designated Wild and Scenic rivers may be adversely affected by construction, operations, and closure activities. However, the SDEIS fails to recognize any of these rivers in its analysis. The Middle Fork of the Salmon River and the Main Salmon River are both protected under the WSRA and could face the far-reaching impacts of this mine. Light, visual, water, and dust pollution are direct effects that could harm ORVs on the Middle Fork of the Salmon. The Main Salmon is at risk of any pollution that contaminates the South Fork of the Salmon (SFSR) and the East Fork South Fork of the Salmon (EFSFSR) as their water flows into the Main Salmon. Both the SFSR and the EFSFSR lie near the access routes and the area of operations.

Also, some rivers are eligible and suitable to be designated under the WSRA that lie within the analysis area of this project. Under the WSRA and Payette National Forest Plan, eligible and suitable rivers must be preserved in their free-flowing state as well as have their water quality and ORV(s) protected as if there were a designated Wild and Scenic river. Within the analysis area, three rivers are deemed either eligible or suitable: Burntlog Creek (eligible), Johnson Creek (eligible), and the South Fork of the Salmon River (SFSR) (suitable).

The SDEIS admits at 3.23.4.2 that "detailed baseline data for existing water quality where the SGP components intersect the SFSR at Warm Lake Road have not been compiled." But, the SDEIS makes a premature conclusion that the water quality in the South Fork of the Salmon River would "likely be too small to measure" (p. 4-638). The same comments are also made about Burntlog Creek (p.3-488). To provide an accurate assessment of water quality, baseline conditions need to be obtained.

[2] National Wild and Scenic Rivers System– Idaho https://www.rivers.gov/idaho.php#:~:text=Idaho%20has%20approximately%20107%2C651%20miles,of%20the%20state%27s%20river%20miles.

The SDEIS states that "Construction activities could result in short-term impacts to the free-flowing condition of Johnson Creek as a result of a culvert replacement on Johnson Creek Road," (p.4-657). Similarly, construction and bridge replacement activities on Burnt Log Road are said to result in "short-term, negligible, and localized impacts to the free-flowing condition" under the Preferred Alternative. Any impacts to the free-flowing nature of these rivers for any amount of time would violate the management requirements for eligible rivers under the Wild and Scenic Rivers Act and the Payette National Forest Management Plan.

Wildlife

The mine is located in a magnificent wildlife habitat. The South Salmon River basin provides outstanding habitat for wildlife, including the black bear, bighorn sheep, mountain lion, elk, gray wolf, sage grouse, moose, and deer. Four species are either listed, proposed, or a candidate to be protected under the Endangered Species Act (ESA) in this area: the Canada lynx, Northern Idaho ground squirrel, wolverine, and Monarch Butterfly. Nonetheless, the Proposed Action and the Johnson Creek Alternative will displace wildlife species by causing disturbances from light, noise, fugitive dust, and increased human activity.

The Johnson Creek Alternative would remove about 3,096 acres of wildlife habitat, while the Preferred Alternative would remove 3,266 acres. In addition to the general loss of habitat and disturbances, habitat fragmentation is also a major concern of the project due to the mine and road construction plan. These changes to wildlife would not be short-term as the lifespan of the project is estimated to be more than 20 years. With prolonged disturbance, some of the wildlife species may not return to this area and be permanently displaced.

The SDEIS asserts that "No significant issues were identified for wildlife and wildlife habitat," (Wildlife Specialist Report, p. 25). However, their analysis admits that construction and mine operations will disturb and harm wildlife in this area, including the ESA-listed specie

Climate Change

The effects of climate change will exacerbate the impacts the SGP will have on the environment. The Forest Service points out how climate change alongside the activities in the project could harm the physical, biological, and social resources on the mine site and surrounding areas. To be exact, the SDEIS states:

> "Changes in hydrologic patterns and overall increasing temperatures are expected to result in decreased or degraded soil moisture and quality, air quality, annual streamflow, groundwater recharge, and water quality. Increased surface water temperatures; increased spread of insects and diseases; changes in the timing, duration, and severity of fire seasons; as well as habitat loss and fragmentation

> also are expected to occur. Closure and reclamation activities under the alternatives could reduce climate change impacts by improving soil quality and implementing best management practices during all phases of the SGP" (ES-10).

It is already difficult to maintain the quality of this area due to climate change alone. Adding in the influence of a massive gold mine will be detrimental to the ecosystem.

It should also be noted that the extent that climate change was considered in any of the analyses of this project is essentially limited to the above statement. The FS failed to incorporate any models that represent possible future climate variations when projecting stream temperatures or border impacts that will result from this project.

Soil and Vegetation Degradation

The SGP will result in the removal of native soils due to the construction of facilities, structures, infrastructure, and water management features. As part of reclamation, the SDEIS states to authorize the use of soils for reclamation materials that will increase arsenic levels within the area and worsen conditions. Specifically, for root zone material it is deemed suitable to use soil with up to 3,000 parts per million (ppm) of arsenic, which is incredibly high compared to the upper limit suggested by Chebyshev's rule at 450 ppm (Soils and Reclamation Cover Material Specialist Report, p. 76). Current conditions for arsenic concentrations in the area average 115 ppm, which is already 6.4 times higher than the U.S Environmental Protection Agency's ecological soil screening levels (Soils and Reclamation Cover Material Specialist Report, p. 59).

Additionally, there would be a massive deficit in growth media used in all reclamation plans across the site. The SDEIS estimates that there would be a 797,702 cubic yard deficit. Some of this may be met with material obtained from the construction of the Burntlog Route but there still exists uncertainty regarding the specific source or plan to make up this shortfall (SDEIS ES-11). One factor in this is the high concentration levels of metals that will remain in the area, causing phytotoxicity for plants trying to grow.

The reclamation for revegetation and soil recovery in disturbed areas will not be established in a short timeframe (five to ten years), but rather the SDEIS claims numerous factors contribute to the unlikeliness of soil productivity reaching 40% within a 50-year timeframe. Some of the factors include limited debris resources due to past mining activities, a short growing season that limits soil development, and the re-use of soil and rock with high metal concentrations could complicate revegetation plans. Recovering an ecosystem is already difficult, but adding mining operations would make regrowth even more difficult.

Transportation Risks and Hazardous Materials

As stated previously, the main difference between the action alternatives is which route would be used to access the mine site. Both action alternatives involve the use, storage, and transport of hazardous materials. If a spill were to occur, it would be detrimental to human health and the environment. Traffic volumes for Stibnite Road will triple and Johnson Creek Road will double due to construction. A spill along either route has the potential to pollute critical watersheds and cause incredible damage.

Not only would a spill be detrimental to the ecosystem, but it also has the potential to harm local communities. When analyzing the risk of hazardous spills, the SDEIS does not include national highways even though they will be used " to transport materials to the SGP area as far as Cascade, Idaho," (SDEIS, p. 4-136). This means that the transportation risk is only considered from Cascade, Idaho to the mine site, it does not consider the distribution points of the reagents brought to the mine or the waste that will be transported out of the mine site. However, mining traffic would utilize north and southbound routes on State Highway 55, but there are no risk analyses on local communities if a hazardous spill were to occur. The potential exposure of a hazardous spill is much larger than the SDEIS analysis.

Under the Preferred Alternative, Burnt Log Road will experience an increase in traffic of over 71%. A segment of Burnt Log Road runs within a mile of the Frank Church River of No Return Wilderness. Pollution from the road, traffic, and hazardous material spills will adversely impact the neighboring designated wilderness area. This route also crosses Burntlog Creek at multiple points. Any pollution from sedimentation and spills of hazardous materials would harm the fish ORV that the river possesses.

Air Quality

The SGP will harm air quality by increasing particulate matter and arsenic exposure from fugitive dust. Perpetua has prematurely claimed that they will be able to control >93% of the dust from roads, but the procedure they have proposed to do so has not been fully reviewed and deemed adequate by the IDEQ. The Forest Service and IDEQ's analyses on the SDEIS rely on a large assumption that the dust control methods will live up to 93.3% efficiency. However, neither agency has been able to prove that such a high target is even attainable. The IDEQ even admits in the PTC's Statement of Basis that it could be challenging to uphold the high target level of fugitive dust control for emissions from traffic.[3]

The SGP is allowed to average the life of mine impact of their arsenic emissions over a 70-year lifetime even though there is nothing in the Idaho Air Rules that allows for ambient air concentration averaging over that long of a period. The Idaho Ambient Annual Carcinogen

[3] Perpetua Resources Idaho, Inc., Stibnite - Statement of Basis
https://www.deq.idaho.gov/permits/issued-permits-and-water-quality-certifications/

Concentrations are routinely reported as annual averages. In light of this, it is recommended that the Forest Service re-evaluates the arsenic concentrations and removes the 70-year lifetime average.

However, as of now, ambient air quality monitoring is not required by the Idaho Department of Environmental Quality's (IDEQ) Permit to Construct (PTC). The Forest Service can require conditions for the SGP that mitigate the project's impact on air quality. Air quality monitoring is a crucial component, especially with the uncertainty in the efficiency of dust control and emissions from this project. Unmonitored emissions will harm local residents, recreators, and wildlife if the impacts of poor air quality are not mitigated.

Socioeconomic Impacts

A big portion of Valley and Adams County's thriving economy relies heavily on the availability and quality of recreation in the area. Degradation from the SGP to recreation areas will harm the tourism and recreation industries. The Forest Service is aware that many are concerned with the adverse effects on the environment, "boom and bust" impacts, and the influx of worker demand on public services (road maintenance, schools, etc.).

Local employment would increase for construction and mine workers during mining operations. However, the SDEIS states in the Social end Economic Conditions Specialist Report that post-closure operations could have adverse effects on the economy "from the 'bust' following the prior 'boom' from the SGP's construction and operations employment and spending" (p. 33). The Specialist Report describes that local communities may also experience a contraction in demand for private and public goods and services once the SGP has concluded.

The economic benefits to the local economy are very short-term and the project could have damaging impacts on the counties' recreation and tourism industry. A major spill or other hazardous events at the mine site could ruin these industries in this area indefinitely.

Tribal Impacts

The SGP is within the traditional homelands of the Nez Perce, Shoshone-Bannock, and Shoshone-Paiute Tribes. The SDEIS (P. ES-32) predicts "Adverse impacts to tribal rights and interests under either alternative, including preventing access to traditional lands, harming traditional fishing and hunting rights, impacting endangered salmon and concerns that it would harm the tribe's salmon restoration efforts."

Historical traditional places of hunting, fishing, and gathering that are still used today will be adversely impacted by the operations of this project. Due to the overlap of the SGP footprint and traditional resource areas for the tribes, tribal members will be prevented from exercising their

treaty reserved rights of hunting, fishing, and gathering rights due restricted access set by Perpetua Resources.

The harm to fish, wildlife, and habitat will directly decrease the availability of resources to the tribes. Some of the most important resources to the local tribes are the endangered salmon and other fish species that reside in this area. The SGP will negatively affect these fish species and their homes. Additionally, this project has serious implications to the millions of dollars that the Nez Perce Tribe has invested in salmon recovery and watershed restoration within the South Salmon drainage.

Treaty rights must be respected and upheld and given priority in the Forest Service's analysis of this project.