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April 12, 2024

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**RE: Draft 401 Water Quality Certification for the Stibnite Gold Project**

Mr. Cusack,

Please see the attached public comments on behalf of Idaho Rivers United (IRU), the Idaho Conservation League (ICL) and Save the South Fork Salmon (SSFS) in response to the 401 Water Quality Certification (Certification) for the Stibnite Gold Project (SGP).

Idaho Rivers United (IRU) is an environmental advocacy organization dedicated to protecting Idaho rivers and restoring our native fish populations. IRU represents over 5,000 members throughout Idaho and beyond. Our members and supporters expect the protection of rivers for their ecological, scenic, and recreational values; accordingly, our mission is to execute thorough river preservation and conservation work to ensure the environmental integrity of all of Idaho's rivers.

The Idaho Conservation League (ICL) has had a long history of involvement with water quality issues. As Idaho's largest state-based conservation organization we represent over 25,000 members and supporters who have a deep personal interest in ensuring that our water quality is protected throughout the state.

Save the South Fork Salmon is a Valley County, Idaho based organization whose mission is to protect and preserve the ecological, cultural, and economic resources of the South Fork of the Salmon River watershed and the well-being of the people that depend on them for generations to come.

Earthworks is a national non-profit organization dedicated to protecting communities and the environment against the adverse impacts of mineral and energy development, while seeking sustainable solutions.

Our review of the draft Certification identified significant concerns among several topics including: scope and shortcomings of the socioeconomic analysis, failure to analyze all applicable proposed activities, lack of consideration of alternative operational outcomes/scenarios, failure to analyze all pollutants of concerns, and shortcomings within imposed conditions.

Most importantly, several of these concerns demonstrate areas where the draft Certification fails to meet clear and specific 401 Certification statutory and regulatory requirements.

Members and supporters of our organizations live, own property, float, fish, botanize, hunt, camp, and hike in or around the proposed SGP. We have been closely engaged in the NEPA analysis and broader permitting process for the proposed SGP and are deeply invested in ensuring all environmental permits issued for the SGP afford the required and appropriate protections.

Should DEQ have any questions on our comments, or if additional discussion would be useful, our organizations would be happy to meet and/or further discuss any issues in order to work toward resolution. Should our organizations and DEQ fail to resolve identified issues within the draft Certification and ultimate 401 Certification compliance remains unfulfilled, we reserve the right to administratively appeal the issuance of any final 401 Certification pursuant to IDAPA 58.01.23.

Finally, we would like to thank DEQ for granting our request to provide an extension to the public comment period. The additional time has allowed us to fully and properly analyze the complex SGP Certification and provide the most informed and constructive comments.



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## 1. The Tier II Analysis and Socioeconomic Justification fails to adequately address and justify the proposed degradation.

Sections a. through g. below identify and discuss a multitude of deficiencies within Brown and Caldwell's Alternatives Analysis and Socioeconomic Justification (AASJ) presented within draft Certification materials.

### a. The AASJ fails to demonstrate how degradation is necessary to support important socioeconomic development to the local community

Section 5 of the AASJ provides data and arguments to rationalize the proposed degradation of Tier II waters by the Stibnite Gold Project (SGP). However, the AASJ fails to address and meet the statutory and regulatory requirements for socioeconomic justification. Idaho Statute 39-3603(b) states, "Where the quality of waters exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water (i.e. Tier II waters) that quality shall be maintained unless the department finds...that lowering water quality is **necessary** to accommodate important economic or social development in the area in which the waters are located..."(emphasis added). IDAPA 58.01.02.052.08.d mirrors this requirement and states, "...the applicant seeking authorization to degrade water quality must at a **minimum** identify the important economic or social development for which lowering water quality is **necessary**..." (emphasis added).

Both Idaho Statute and IDAPA regulation require that any proposed degradation of Tier II waters must be shown to be necessary for local socioeconomic development. Yet, the AASJ fails to show how any socioeconomic benefits provided by the SGP, and the water quality degradation these benefits come with, are necessary for the surrounding area as opposed to simply additive.

To be sure, the AASJ describes how the SGP would provide direct wages (Section 5.3.1) and other services to the surrounding community (Section 5.3.2) in a generic and additive way. However, the AASJ fails to consider a section of IDAPA 58.01.02.052.08 in an important way, specifically, "...The Department may allow significant degradation of surface water quality that is better than assigned criteria only if it is determined to be necessary to accommodate important economic or social development **in the area in which the waters are located** (emphasis added)." Of course a primary objective of this clause is to ensure that only socioeconomic benefits that are realized within the local economy are given weight, but it also requires an analysis of how these proposed benefits actually fit within the specifics and context of the same local economy.

The AASJ never provides any data, evidence, or argument for why the proposed socioeconomic benefits are **particularly or specifically** important for the surrounding community (i.e. how these benefits address specific local socioeconomic deficiencies). The AASJ provides no evidence that average wages in Valley County lag below the average cost of living expenses or that the SGP wage input would directly address such an issue. The AASJ provides no evidence that the type of community organizations or education resources that the "Stibnite Foundation" supports are underfunded or

struggling. The AASJ provides no evidence how roads, utilities, emergency response services, or waste management in Valley County are deficient and necessitate support from the SGP and Perpetua.

In fact, Section 5.1 of the AASJ provides ample data and arguments for why Valley County's socioeconomic status is robust and no-longer reliant on the mining industry (i.e. the mining sector's socioeconomic benefits to the county are not important). To provide just a few examples:

- "Per capita wages throughout Idaho are lower than the national average, though Valley County per capita wages are much closer to the national average."
- "With three of the top employers in Valley County related to resort lodging and activities, it is clear that the tourism industry is an important part of the Valley County economy."
- "Valley County boasts year-round recreation opportunities including skiing, snowshoeing, snowmobiling, hunting, fishing, camping, hiking, golfing, mountain biking, rafting, kayaking, canoeing, swimming, and rock climbing."
- "The contribution of natural resource industries to the Valley County economy is very low (1.5 percent in 2022; Idaho Department of Labor 2024)."

The AASJ itself presents an important question, if the socioeconomic status of Valley County is already relatively good and the economy has successfully transitioned away from boom-bust commodity industries like mining (and in fact is dependent on the very industries mining activity generally threatens), why are additive socioeconomic benefits at the expense of stream and wetland degradation necessary?

While failing to show that the economic impacts of the SGP would indeed be important for the local economy, the AASJ also fails to adequately discuss the negative socioeconomic effects that will be associated with the SGP. Throughout the entire AASJ, it appears that there are only two sentences that could be interpreted as acknowledging these negative impacts. The AASJ narrative only mentions the fact that the SGP would likely be another instance of a boom and bust cyclical economy and places the burden on the greater local economy to dampen any future negative impacts once the SGP ramps down.<sup>1</sup>

The AASJ relies heavily on the United States Forest Service's (USFS) Supplemental Draft Environmental Impact Statement (SDEIS), Social and Economic Conditions Specialist Report<sup>2</sup>, but it has cherry-picked information to present a biased assessment of the overall economic picture. With a quick review of the USFS SDEIS, one can easily find numerous negative impacts that aren't discussed in the AASJ.

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<sup>1</sup> Brown and Caldwell, "Idaho Department of Environmental Quality Alternatives Analysis and Socioeconomic Justification", February 21, 2024, p. 41

<sup>2</sup> A copy of the SDEIS, including specialist reports, can be found on the USFS's project page for the SGP (<https://www.fs.usda.gov/project/?project=50516>).

For instance, the projected in-migration of workers will likely have an adverse impact on affordable housing, a commodity that is already incredibly scarce in Valley and Adams County. With much of the economy dependent on seasonal workers, there is already a severe shortage of affordable housing suitable to house the required workforce cycles that revolve around summer and winter tourism.<sup>3</sup>

The school systems in Valley and Adams Counties are likewise already nearing capacity and struggles to retain teachers due to housing costs as is. The USFS SDEIS Specialist Report estimates that 80 new students would accompany in-migrating employees. This increase could result in the need for six additional full-time teachers to maintain current student-teacher ratios.<sup>4</sup>

There are additional concerns when it comes to public infrastructure, telecommunications, and emergency services, all of which received no attention in the AASJ, but will have very real consequences for the communities in Valley and Adams county.

Another proposed open pit mining project in the same region as the SGP can offer some additional context regarding adverse socioeconomic impacts. The CuMo Project is located 63 miles south of Stibnite in Boise County. While the CuMo Project itself is in the exploration phase, the mining company, American CuMoCo (now Idaho Copper), released a Preliminary Economic Assessment for the project should it be fully developed into an open pit mining project. Aside from environmental issues, the Preliminary Assessment Report notes that there could be challenging social changes as well:

*“Potential social issues that could arise from the CuMo project could generally include:*

- *A shortage of temporary and permanent housing*
- *Insufficient capacity of schools, health care, law enforcement, solid waste disposal, and municipal infrastructure*
- *Insufficient road network capacity leading to traffic slowdowns and degradation of road surfaces*
- *Increases in crime, drug abuse, and alcoholism” (Preliminary Economic Assessment p. 149).*<sup>5</sup>

While every mining project exists within its own unique circumstances, the CuMo Project acknowledges common socioeconomic problems associated with mine development that the AASJ doesn't appropriately address.

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<sup>3</sup> [USFS, “Social and Economic Conditions Specialist Report 2022”, p. 70](#)

<sup>4</sup> *Id.*

<sup>5</sup> [SRK Consulting, “Preliminary Economic Assessment & NI 43-101 Technical Report for the CuMo Project, USA”, May 2020](#)

Given the above questions about the socioeconomic impact of the SGP to Valley County, additional studies were pursued by local individuals and business entities. Most prominently, the Idaho Headwaters Economic Study Group (an organization of over 50 local businesses) commissioned a 2023 report titled “An Evaluation of the Potential Socio-Economic Impacts of The Proposed Stibnite Mine on Valley County, Idaho” (Idaho Headwater’s Study). The Idaho Headwater’s Study was prepared by Power Consulting of Missoula, MT. A discussion of significant findings by the Idaho Headwater’s Study is provided below in Section 2. A full copy of the Study can be found within Attachment A of these comments.

Aside from the typical economic benefits Perpetua proposes the SGP will provide, Section 5.2.2. and 5.2.3 of the AASJ describes the additional SGP benefit of site clean-up activities. However, the AASJ portrays the SGP and Perpetua as the sole remedy able to address historical contamination (without evidence) thereby inflating the proposed socioeconomic benefit of the SGP. In this attempt, the AASJ makes numerous misleading and inflating claims including: “It (the SGP) also provides the only currently identified opportunity to address environmental legacies at the abandoned site.” and “It is highly unlikely that the clean-up and restoration of the site on a standalone basis would be funded by taxpayers, the State of Idaho, or any federal agency, such as the USFS, the EPA, or the NOAA National Marine Fisheries Service.”

Both statements ignore the Nez Perce Tribe’s long standing fisheries supplementation, research, and watershed restoration efforts near and downstream of the SGP, representing millions of dollars of annual investment.<sup>6</sup> Furthermore, the Stibnite mine site has seen significant past clean-up efforts by the EPA and USFS and was proposed for CERCLA superfund designation in September of 2001 (the proposal was ultimately blocked by the State of Idaho).<sup>7</sup> While we generally support clean-up efforts of the historic Stibnite site, Perpetua and the SGP are not the sole remedy to site clean-up as they claim. More significantly, the socioeconomic importance of such a clean-up also goes unanalyzed by the AASJ failing to meet both Idaho Statute and IDAPA.

Ultimately, the draft Certification and the AASJ fail to show how the SGP’s proposed economic benefits are particularly and specifically important to Valley County, let alone, how the anticipated water quality degradation is necessary for such benefits to be achieved (as opposed to being provided by existing socioeconomic instruments of Valley County).

DEQ should 1) request additional socioeconomic analysis from Perpetua resources discussing how the proposed benefits are **particularly and specifically** important to Valley County, as opposed to generic and additive, and that they outweigh the SGP’s unavoidable proposed degradation. 2) reevaluate its draft Certification analysis accordingly.

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<sup>6</sup> [Nez Perce Tribe. “Nez Perce Tribe’s Interests And Activities In And Around The Stibnite Gold Project Area”. June 2019](#)

<sup>7</sup> [U.S. EPA. “Super Fund Site. Stibnite/Yellow Pine Mining Area Stibnite. Id”](#)

**b. The AASJ presents a biased assessment and incomplete depiction of the impacts on the local economy**

Section 5.3 of the AASJ presents an unrealistic depiction of the socioeconomic benefits to the impacted communities, most significantly within the claimed employment numbers of the SGP. Considering that the majority of the potential economic benefits to surrounding communities will be generated via spent wages, presenting accurate local employment numbers is imperative to accurately gauge local economic benefit.

AASJ Section 5.3 states that the “economic benefits of employment at the SGP would differ between the planning, construction, operations, and reclamation and closure phases.” However, there appear to be even greater discrepancies between each phase than is presented.

During construction, the AASJ explicitly states that “most local construction workers would be adequately qualified and/or trainable for mine operations.” It also assumes that 68% of the workforce would be Idaho residents. This 68% estimate is based on the 2018 report produced by Highland Economics (as referenced within the AASJ) which projected low, mid, and high values of various potential employee residencies. 68% is the combined projection of mid-level local employment for Valley/Adams County employees and other Idaho employees at large. For the sake of this 401 Certification, DEQ should only consider the projected number of employees from Valley and Adams Counties, not Idaho at large. For the Construction Phase, the mid-level projection predicts that 30% of the required workforce would be from Adams or Valley County. As stated above, Idaho regulations specifically state that the economic benefit must be contextualized to the “area in which the waters are located.”

This same 68% Idaho residence figure is used in Operations Phase as well as the Closure and Reclamation Phase estimates, despite there being separate values in the Highland Economic report and the skills required for each distinct phase cannot be assumed as equally represented in the local workforce. DEQ should request Perpetua provide an updated economic analysis based solely on the projected Valley and Adams County employee figures for a more accurate accounting of local benefits that is compliant with Idaho Statute and IDAPA.

This is particularly important when estimating the percentage of local employees during the Operations Phase of the project. Modern mining operations are highly technical and it must be assumed that Perpetua will hire employees with prior experience who have recently, or are currently, working in a mine with similar operations such as what is planned at the SGP.<sup>8</sup> To extend the same assumptions in regards to local employment percentages across all phases of operations beyond planning does not accurately represent the realities or likely hiring outcomes. Additionally, when coupled with the fact that the AASJ confirms that Perpetua plans to provide on-site housing for up to 90% of

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<sup>8</sup> As the AASJ itself notes, the natural resource industry currently represents only 1.5% of Valley County’s economy so a workforce with mining skills is reasonably assumed to be relatively low.



the workforce, it becomes increasingly likely that many employees will travel to the mine site for their two-week shift and return home afterward.

**c. The AASJ preferred alternative is short sighted and assumes an overly optimistic version of site reclamation**

Section 5.2.3 of the AASJ argues with a sense of certainty that the SGP will be fully remediated after mining operations providing a reclaimed landscape that more than outweighs the proposed degradation. There is no dispute of fact that the Stibnite area is historically contaminated and Perpetua's proposed remediation of the site would be of some ecological and socioeconomic value. However, Perpetua's reclamation plan is inadequate, overly optimistic, and its promise to complete site remediation must be weighed against realistic alternatives.

The historic impact of abandoned mine lands (AML) is well documented. The U.S. Government Accountability Office's (GAO) 2023 report on abandoned hard rock mines provides ample evidence. As stated in that report, "Releases of hazardous substances from abandoned hardrock mines have contributed to the contamination of 40 percent of the country's rivers and 50 percent of all lakes, according to the Environmental Protection Agency".<sup>9</sup> According to the same GAO report, AMLs also have a significant economic expenses, "The U.S. Departments of the Interior (Interior) and Agriculture (USDA) spent approximately \$109 million and \$10 million, respectively, from fiscal years 2017 through 2021, to clean up contamination at abandoned hardrock mines on the lands they manage."

Perpetua, along with many modern mining companies, hold that modern mining is not the same as the historical mining that is responsible for the majority of current AMLs. That is certainly true, modern technology and environmental regulation have significantly changed since the times of historical mining. However, this in no way means modern mining operations cannot be abandoned and/or pose environmental and economic risks as they have in the past. A plethora of modern reports and analyses show this to be true. A 2009 report developed by the Pew Charitable Trust found that "Since 1994, more than two dozen mine-related sites have been listed as Superfund national priorities, a designation that allows for use of federal tax dollars to expedite cleanups. Modern mines among those include the Summitville gold mine in Colorado, the Formosa zinc mine in Oregon, Brewer gold mine in South Carolina and the Gilt Edge mine in South Dakota, all abandoned by owners who reneged on their remediation obligations."<sup>10</sup>

A 2006 report published by the American Society of Mining and Reclamation compared predicted water quality to actual water quality at hardrock mines in the U.S. For the 25 modern mines in the United States selected for detailed case study, 100 percent of

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<sup>9</sup> [United States Government Accountability Office, "Abandoned Hardrock Mines, Land Management Agencies Should Improve Reporting of Total Cleanup Costs", January 2023, p. 1](#)

<sup>10</sup> [Pew Charitable Trust, "Reforming The U.S. Hardrock Mining Law of 1872: The Price of Inaction", 2009, p. 4](#)

mines predicted compliance with water quality standards, but 76 percent of mines exceeded water quality standards as a direct result of mining, and 64 percent of mines employed mitigation measures that failed to prevent water contamination.<sup>11</sup> A 2012 Earthworks review of 14 out of 16 operating U.S. copper mines, accounting for 89 percent of copper production in the U.S., found that 92 percent failed to capture and treat wastewater, resulting in significant water quality impacts.<sup>12</sup> The EPA considered the potential for unpermitted wastewater releases from Alaska's proposed Pebble Mine, stating that "[w]ater collection and treatment failures could result in exceedance of standards potentially including death of fish and invertebrates."<sup>13</sup>

Neither the draft Certification or the AASJ provide any discussion or analysis on how Perpetua's abandonment of the SGP, suspension of operations, or reasonably anticipated deviations from the preferred alternative and planned operations would affect Tier II waters. Washouts of constructed roads and culvert/stream crossings, hazardous material spills, the destabilization of the West End Pit, failure of the Tailings Storage Facility, atmospheric deposition from mining and road dust, or forest fires sparked by transmission line malfunctions are just a few examples of reasonably plausible deviations that could drastically impact water quality.

While technology and environmental regulations have changed in modern mining, the underlying economics of modern mining are still beholden to the boom and bust cycle of metals pricing. Idahoans only have to look in their own backyard to see a current example. Jervois' Idaho Cobalt Operations proposed to re-mine parts of the historically impacted Blackbird Mine Site near Salmon, ID. Permitting and planning took years, and Jervois states the mine would create 180 full-time employees.<sup>14</sup> However, in March of 2023, Jervois suspended operations at the site due to low cobalt prices.<sup>15</sup> The site remains closed to this day.

It is not difficult to imagine a scenario where the SGP progresses with its miles of constructed roads and transmission lines, large open pits, tailings storage facility and significant impacts to streams and wetlands only to suspend operations if commodity prices no longer make operations feasible (i.e. care and maintenance status). In this scenario temporal impacts and degradation would be extended with an unknown timeline much beyond the 16-year life proposed for the SGP. Despite the very real possibility of extended temporal impacts, the draft Certification and AASJ provide no analysis for this scenario. Idahoans can again look to their backyard for such a real life example. The Thompson Creek Mine near Clayton, ID commenced operation in 1983, but has sat idle in care and maintenance status since 2014 waiting for favorable

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<sup>11</sup> [Ann Maest, James Kuipers, Kim MacHardy, and Gregory Lawson, "Predicted Versus Actual Water Quality At Hardrock Mine Sites: Effect Of Inherent Geochemical And Hydrologic Characteristics", March 2006](#)

<sup>12</sup> [Earthworks, "The Track Record Of Water Quality Impacts Resulting From Pipeline Spills, Tailings Failures And Water Collection And Treatment Failures", 2012, p. 4](#)

<sup>13</sup> [U.S. EPA, "An Assessment of Potential Mining impacts on Salmon Ecosystems of Bristol Bay, Alaska", 2014, p. ES-19](#)

<sup>14</sup> [Jervois Idaho Cobalt Operations, "Overview"](#)

<sup>15</sup> [Jervois, "Jervois suspends final construction at Idaho Cobalt Operations", March 2023](#)

economic conditions to return. During this time, its road network, massive open pit, tailings storage facility, and waste rock storage facilities remain unreclaimed.

In a more dire situation, economic conditions could drive Perpetua to bankruptcy at a mid-point of SGP operations and to abandon a site that is now more impacted and contaminated than before. Of course, and as Section 5.2.3 of AASJ notes, bonding instruments to cover this exact scenario must be in place before operations begin. Yet the failures of modern mine reclamation bonding are well documented. The Biden-Harris Administration's Interagency Working Group on Mining Laws, Regulations, and Permitting produced a September 2023 report titled "Recommendations to Improve Mining on Public Lands". That report identifies significant shortcomings of current reclamation bonding stating, "Currently, there is no mechanism to collect any form of revenue or financial assurance to cover unplanned or unpredicted conditions. Nor is there a mechanism to collect any form of revenue or financial assurance to cover responding to releases or threatened releases of hazardous substances from mining operations. USFS and Interior regulations do not require public review or disclosure of financial assurance amounts."<sup>16</sup> What's more, as a private entity beholden to shareholders, Perpetua has a fundamental interest in securing a reclamation bond that is as small as possible. The issue of mine reclamation bonding amounts being too low to cover actual remediation costs is well documented. In fact, the issue is so prevalent that it has spawned entire research papers analyzing its causes.<sup>17</sup>

Idahoans can look for a third time to a mining project in their own backyard for a cautionary tail. The Triumph Mine site located near Hailey, ID was once proposed as a federal Superfund site due to underground mine operations that occurred between the late 1800s and the 1950s. However, the state of Idaho negotiated with the EPA and Asarco (the private responsible party) to address clean-up of the site under DEQ authority. Asarco completed some clean-up and reclamation work at the site, but filed for bankruptcy in 2005 and ultimately provided only a little over \$2.5 million dollars to the State of Idaho to continue clean-up. These funds have never been adequate to fully address clean-up of the site and Idaho tax payers have been left on the hook. As Idaho DEQ's own fact page on the Triumph Site states, "Settlement funds for long-term operations and maintenance are limited. In 2019, the legislature appropriated \$1.5 million for ongoing cleanup activities."<sup>18</sup> Pollution from the Triumph Mine Site is still an ongoing issue to this day.<sup>19</sup>

In the above scenarios or their variation (delaying proposed remediation, deviations from plan of operation, or full site abandonment), negative and unquantified impacts to water quality are likely. Returning to one previously mentioned example, a spill of fuel or raw cyanidation materials from trucks traveling by or along a designated Tier II stream is

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<sup>16</sup> [Interagency Working Group on Mining Laws, Regulations, and Permitting, "Recommendations to Improve Mining on Public Lands", September 2023, p. 86](#)

<sup>17</sup> [Peifang Yang, Graham A. Davis, "Why don't environmental bonds fully cover reclamation costs?", 2021](#)

<sup>18</sup> [Idaho DEQ, "Triumph Mine Site"](#)

<sup>19</sup> [Emily Jones \(Idaho Mountain Express\), "DEQ: Triumph water contaminated with arsenic, manganese", September 2023](#)

all too plausible and would have significant impacts to water quality, yet it remains unanalyzed by the draft Certification and the AASJ. One could argue that since IDAPA 58.01.02.053.08(d)(iii) requires a cost/benefit socioeconomic be completed only for the “preferred alternative”, Perpetua has no requirement to analyze the type of scenarios described above. However, both Idaho Code 39-3603(c)(ii) and IDAPA 58.01.02.053.08(d)(iii) allow for DEQ to seek additional information to determine the fundamental question of how water quality will be impacted.

Furthermore, recent updates to federal 401 Water Quality Certification regulations require such scenarios to be assessed. On November 27, 2023 the final Clean Water Act Section 401 Water Quality Certification Improvement Rule (401 Improvements) was implemented by the EPA.<sup>20</sup> The 401 Improvements included a number of enforceable and relevant updates to the 401 Water Quality Certification Process and are applicable to the SGP draft Certification (as clarified by the EPA’s official 401 Improvements Q&A document).<sup>21</sup> This same EPA Q&A also provides clarity on what “activities” must be considered under the scope of 401 Certification:

**Question:** *What is the “activity” subject to a certifying authority’s review?*

**Answer:** *A certifying authority shall evaluate the water quality-related impacts of the entire activity subject to the Federal license or permit, including the construction and operation, and not solely the aspect of the activity directly authorized by a given Federal license or permit. Certifying authorities may address not only adverse water quality impacts caused exclusively by the federally licensed or permitted activity, but also adverse impacts contributed to by a federally licensed or permitted activity. For example, a certifying authority may deny or condition an activity that will contribute to ongoing noncompliance with water quality requirements. However, a certifying authority’s analysis of any given activity is limited to adverse water quality-related impacts that may prevent compliance with water quality requirements. Certifying authority cannot condition an activity for the purpose of protecting waters that are not impacted by the activity or include conditions that do not otherwise affect compliance with the applicable water quality requirements in the waters impacted by the activity. 88 FR 66600.<sup>22</sup>*

Although it is uncertain exactly how or when DEQ plans to incorporate the 401 Improvements to applicable IDAPA requirements, they maintain supremacy over 401 Certification implementation in Idaho as they do over all States. Thus, as discussed above and further within Section 1.e. and 3 of these comments, it is clear the SGP 401 Certification and the AASJ do not meet the requirements of the 401 Improvements and do not include all water quality impacting activities.

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<sup>20</sup> For full EPA discussion on this topic please see the EPA webpage

<https://www.epa.gov/cwa-401/final-2023-cwa-section-401-water-quality-certification-improvement-rule>

<sup>21</sup> [U.S. EPA. “2023 Clean Water Act Section 401 Water Quality Certification Improvement Rule Final 2023 Rule Questions & Answers”. December 2023](#)

<sup>22</sup> Id., p.15

It should also be noted, the need to include operational water quality impacts with the scope of 401 Certification is bolstered by analogous projects, the U.S. Bureau of Land Management (BLM) includes a spill risk estimate in its 2023 Supplemental Draft Environmental Impact Statement for the Ambler road, a mine haul road proposed along the southern Brooks Range in Alaska.<sup>23</sup>

Certainly DEQ should not be expected to plan for every possible activity or unfavorable/unexpected conditions for all 401 Water Quality Certifications. However, the history and nature of hard rock mining have shown that the consideration of such activities and conditions is warranted and justified. The failure to consider such activities in the past has led to acres upon acres of contaminated mine lands and miles and miles of contaminated streams and wetlands. Furthermore, failure to require analysis for all 401 Certification applicable activities hides the SGP's true and reasonably plausible degradation from the public while exposing them to unjustified risk.

DEQ should 1) request additional analysis from Perpetua resources discussing the qualitative and quantitative water quality impacts related to all reasonably applicable operational activities and operational scenarios. Additional operational activities and scenarios include but are not limited to:

- A spill of hazardous material(s) to a variety of typifying applicable water bodies (such as the EFSFSR and smaller streams such as Burntlog Creek).
- Wildfires sparked by transmission line malfunctions/upsets.
- Atmospheric deposition of road dust and other mining activities.
- Suspension of active mine operations for an amount of time that is representative of average care and maintenance periods for hard rock mines.
- Full abandonment of the SGP by Perpetua during mid mine life.

2) Following review of an updated analysis, DEQ should reevaluate its draft Certification analysis accordingly.

#### **d. The AASJ provides little context on the high quality nature of Tier II waters**

Despite several Tier II applicable waters being particularly known for their outstanding value, the AASJ makes little reference to this fact. The USFS has done extensive analysis that highlights the outstanding nature of Burntlog Creek, Johnson Creek and the South Fork Salmon River. Any degradation and water quality impacts proposed by the SGP should be contextualized within these water bodies' USFS designations.

From 1997-2003, the USFS inventoried all of the named streams on the Boise, Payette and Sawtooth National Forests and determined that three streams within the proposed SGP area are free-flowing, possess one or more outstandingly remarkable values

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<sup>23</sup> [U.S. Department of Interior. "Bureau of Land Management, Ambler Road, Supplemental Draft Environmental Impact Statement". October 2023](#)

(ORVs) - making them eligible for inclusion in the National Wild and Scenic River System and granting them protections to safeguard these characteristics. These three streams deemed to be eligible in this study process are Burntlog Creek (Boise National Forest), Johnson Creek (Boise National Forest), and the South Fork Salmon River (Boise and Payette National Forests)<sup>24</sup>. Subsequent to the aforementioned eligibility study process, the South Fork Salmon River was deemed to be suitable for inclusion in the National Wild and Scenic River System. The North Fork and Main Payette Rivers are also eligible for inclusion in the National Wild and Scenic River System.

The South Fork Salmon River has been determined to be a Suitable Wild and Scenic River with several ORV: "The SFSR has outstanding white-water boating and nationally recognized fishing opportunities during premier steelhead and chinook salmon seasons. The river corridor also provides recreation opportunities that include hunting, hiking, camping, and snowmobiling. The many hot springs along the river corridor are beautiful and provide the visitor with a remote soaking experience."<sup>25</sup> Downstream, the South Fork Salmon River feeds into the congressionally designated Wild and Scenic Main Salmon River.

Burntlog Creek was deemed to be eligible for inclusion in the National Wild and Scenic River System for having an ORV for fish: "This is a Pacfish/Infish priority watershed that supports spawning and rearing habitat for wild native chinook salmon and steelhead, cutthroat, redband, and bull trout."<sup>26</sup> The river segment from headwaters to junction with FR447 (Sec 27 T 16N R8E) is an eligible Recreational segment. The river segment from the junction with FR447 (Sec 27 T 16N R8E) to the confluence with Johnson Creek is an eligible Wild segment.

Johnson Creek was determined to have an ORV of heritage and is deemed as an eligible Recreational segment from Bear Creek to Hansen Creek is an eligible Recreational segment: "There are twelve to fourteen historic sites and ten prehistoric sites on Johnson Creek that are eligible for listing on the National Register. They consist primarily of homestead and sites associated with the Thunder Mountain gold rush, circa 1900-1904. Two of these sites are Forest Service administered compounds: Johnson Creek Guard Station, built in the 1920s and Landmark Ranger Station, built in the 1930s by the Civilian Conservation Corps. One of the Forest's most spectacular sites, a biface cache 4,000 to 6,000 years old, is located in this area."<sup>27</sup>

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<sup>24</sup> [USFS, "Wild and Scenic River Eligibility Study, Appendix D, 2010 Boise National Forest Land and Resource Management Plan \(Forest Plan\), 2010](#)

<sup>25</sup> [USFS, "Wild and Scenic River Suitability Study, Appendix J, Final Environmental Impact Statement For The Boise National Forest, Payette National Forest, And Sawtooth National Forest Forest Plan Revision", 2003, p. J-34](#)

<sup>26</sup> [USFS, "Wild and Scenic River Eligibility Study", p. D-11](#)

<sup>27</sup> Id.

**e. The AASJ fails to assess the impacts of all Pollutants of Concern from all degrading proposed activities**

Section 2.4 of the draft Certification states, “To determine whether (Tier II) degradation will occur, DEQ must evaluate how the permit issuance will affect water quality for each pollutant that is relevant to aquatic life, salmonid spawning, and recreation uses of the receiving water bodies (IDAPA 58.01.02.052.06). These pollutants include the following: sediment, temperature, bacteria, nutrients, antimony, arsenic, mercury, methylmercury, copper, cadmium, lead, zinc, and cyanide.”

Section 3.2 of the AASJ provides some of the necessary analysis to meet this requirement but fails to address all pollutants of concern (POCs) and applicable activities. Some, but not all, of the POCs that are missing, include ammonia, manganese, sulfates, selenium, and TDS. For example, potential sources of ammonia from the SGP include residue from Ammonium Nitrate Fuel Oil, residual cyanide from the cyanide neutralization facility where oxidized cyanide forms carbonate and ammonia, and waste effluent from the housing facility. The Certification should also specify the nutrients, including but not limited to phosphate, total nitrogen, and total Kjeldahl nitrogen.

Section 3.2.1 of the AASJ specifically discusses the impact of stream crossings, road construction, and vehicle traffic. Although sediment impacts are implied within this discussion, neither baseline POC conditions nor quantitative or qualitative impacts to POCs from these activities are given. It should be noted that IDAPA 58.01.02.053.08(d)(iv) requires impacts to be quantified whenever possible. Stream crossings, road construction, and vehicle traffic would or could be expected to have impacts on all POCs (likely except for nutrients and bacteria). Given the AASJ provides little to no quantitative or qualitative discussion of these activities' impacts, it appears the provisions of IDAPA 58.01.02.053.08 are simply not being met.

The most significant POC pathways of stream crossings, road construction, and vehicle traffic include increased erosion, atmospheric deposition of dust (including POC metals) and hazardous material spills. Section 3.2.1 of the AASJ best addresses erosion control through BMPs, but it provides only limited discussion on revegetation and no discussion at all on atmospheric deposition or hazardous material spills.

Water quality impacts from road erosion and sediment are well documented and constitute significant non-point source pollution sources.<sup>28</sup> These same impacts are possible through atmospheric deposition of road dust as well. The EPA's stormwater BMP guidance notes, “Airborne particles pose a dual threat to the environment and human health. Dust that the wind carries off-site can impact nearby water bodies due to direct deposition or transport by stormwater.”<sup>29</sup> The EPA's information page on airborne particulate matter (PM) also notes that, “Particles can be carried over long distances by

<sup>28</sup> [Alan L. Gesford, P.E. and John A. Anderson, Ph.D., “Environmentally Sensitive Maintenance for Dirt and Gravel Roads”, February 2006](#)

<sup>29</sup> [U.S. EPA, “Stormwater Best Management Practice Dust Control, December 2021](#)

wind and then settle on ground or water. Depending on their chemical composition, the effects of this settling may include: making lakes and streams acidic” and “changing the nutrient balance in coastal waters and large river basins.”<sup>30</sup> Furthermore, the EPA’s AP-42, compilation of air emission factors, provides context and quantitative means for which to estimate pollution from road dust (see Chapter 13.2.2 Unpaved Roads).<sup>31</sup> Yet, despite these facts, neither the draft Certification nor the AASJ quantitatively discuss the impact of road erosion on applicable Tier II waters or discuss at all the impacts of atmospheric deposition.

The concept of atmospheric deposition of PM and metals extends well beyond the scope of Johnson Creek and Burtnlog Route activities. Atmospheric deposition of these pollutants should also be expected to impact 1st and 2nd order reaches of the EFSFSR (identified as Tier II waters due to meeting Primary Contact Recreation criteria). Table 1. “Stream Assessment Units Requiring Tier II Protection and Analysis” of the of AASJ only lists “Maintenance of two culverts on Stibnite Road and stream within new T-line ROW” as sources of potential degradation to 1st and 2nd order reaches of the EFSFSR and completely neglects to account for atmospheric deposition. This is despite the fact the air quality Permit to Construct P-2019.0047 issued June 2022 for the SGP by DEQ (SGP PTC) specifically calculates the expected amount of PM to be emitted by the SGP. SGP PTC sources of air pollution include point sources such as diesel generators and ore processing equipment, as well as fugitive sources, such as rock blasting and haul road dust (notably, sources do not include road dust from the Johnson Creek or Burtnlog Route). According to the Statement of Basis issued in conjunction with the SGP PTC, facility wide general PM emissions from the SGP are estimated to reach 3,655 tons per year (T/yr) at maximum operating conditions while PM<sub>10</sub><sup>32</sup> and PM<sub>2.5</sub><sup>33</sup> emissions are expected to reach 1,042 and 136 T/yr, respectively<sup>34</sup>. Facility wide annual emissions of significant heavy metals including arsenic and mercury are also similarly estimated at 2.4 T/yr and 244 pounds per year, respectively.<sup>35</sup>

As DEQ is well aware, 1st and 2nd order reaches of the EFSFSR are given Tier II protection for Primary Contact Recreation. Under Primary Contact Recreation protections, the “Fish Only” water quality criteria of IDAPA 58.01.02.210.01.b are applicable and include stringent standards for arsenic and methylmercury (as well as other metals). However, neither the draft Certification nor the AASJ provide any analysis on atmospheric deposition impacts to these water bodies. As discussed above in section 1.c, the 401 Improvements require DEQ to analyze, “construction and operation (activities), and not solely the aspect of the activity directly authorized by a given Federal license or permit”. Atmospheric deposition from mine operations squarely fits within this requirement and its impacts on water quality must be analyzed. Thus, it is fully unclear whether Tier II requirements, much less Tier I requirements, will be met by the SGP.

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<sup>30</sup> [U.S. EPA, “Health and Environmental Effects of Particulate Matter \(PM\)”, August 2023](#)

<sup>31</sup> [U.S. EPA, AP-42 Section 13.2.2 Unpaved Roads, November 2006](#)

<sup>32</sup> Defined as inhalable particles, with diameters that are generally 10 micrometers and smaller

<sup>33</sup> Defined as inhalable particles, with diameters that are generally 2.5 micrometers and smaller

<sup>34</sup> [Idaho DEQ, “Statement of Basis, Permit to Construct No. P-2019.0047”, June 2022, Table 3, p.21](#)

<sup>35</sup> Id., Table 6, p. 24



Beyond atmospheric deposition, unexpected hazardous material spills from industrial operations are unfortunately a predictable event. As noted by a coalition of non-governmental organizations (including Earthworks and the National Parks Conservation Council) reporting on spills from the Alaska mining industry, “Hardrock mines are large industrial facilities that generate and use large volumes of hazardous and toxic materials which present a significant environmental and public health risk if spilled into the environment.”<sup>36</sup> In particular, mining operations involve the transportation of numerous hazardous materials including fuel, cyanide, ore concentrates, and other treatment and reagent chemicals. SGP operations would presumably be no different and involve the transportation of these types of materials along the Johnson Creek and Burntlog Routes. However, the draft Certification does not include hazardous materials like hydrocarbon fuels, cyanidation materials, or treatment/reagent chemicals within its lists of POCs and neither it nor the AASJ provide any analysis on how a hazardous material spill from proposed activities would affect water quality or public health. This is also despite the fact that the SGP 404 Permit application materials note the potential harmful effects of hazardous material spills.<sup>37</sup>

Section 3.2.2 of the AASJ specifically discusses the impact of wetland conversion in transmission line ROW, but it provides no information on how this proposed activity may affect POCs. To be sure, Section 3.2.2 does note that no ground disturbance is anticipated from this proposed action and instead devegetation and wetland conversion are the focus. However, it is reasonable to assume that devegetation and wetland conversion would have impacts on temperature and sediment from altered erosion characteristics. Yet, neither the draft Certification nor the AASJ discuss any impacts to any POCs from proposed transmission line activities.

Section 3.2.3 of the AASJ specifically discusses the impacts of the diversion of West End Creek. This section provides detailed analysis of anticipated effects to temperature, but provides no analysis for other POCs reasonably anticipated to be impacted, including sediment and metals. **This is despite the fact that the draft Certification itself imposes a special condition to monitor metals concentrations on Westend Creek and Sugar Creek (See Appendix E of the draft Certification).**

Additionally, there is ample evidence for unanalyzed metals impacts to West End Creek and the West End pit lake. The USFS SDEIS identifies a number of ways in which the SGP is predicted to contribute or cause violations of applicable state water quality standards from 401 Certification applicable sources. The West End pit lake water quality concentrations are predicted to exceed potentially applicable water quality standards for antimony, arsenic, and mercury throughout the operating and closure period.<sup>38</sup> The SDEIS also predicts that water quality standards for these contaminants will be

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<sup>36</sup> [Susan Lubetkin, “Alaska Mining Spills, A comparison of the predicted impacts described in permitting documents and spill records from five major operational hardrock mines” April 2022, p. 4](#)

<sup>37</sup> “Tetra Tech, “Clean Water Act Section 404(b)(1) Evaluation for the Stibnite Gold Project”, April 2023, p. 5-13 - 17, 9-2, 10-1

<sup>38</sup> USFS, “Stibnite Gold Project Supplemental Draft Environmental Impact Statement”, October 2022, Figure 4.9-14, Table 4.9-12.

exceeded permanently post-closure, and that the pit lake would not be reclaimed or restored and would therefore have impacts on fish in perpetuity.<sup>39</sup>

The SDEIS also shows that mercury concentrations in West End Creek will increase from the baseline of approximately 4 ng/l to approximately 53 ng/l during mining operations (for 10 years).<sup>40</sup> According to EPA comments on the SDEIS (see Attachment B for full EPA SDEIS comments), “This represents an increase in mercury loading and likely impairment to West End Creek, which is fully supporting its beneficial uses and is a high-quality water under Idaho’s antidegradation policy.”<sup>41</sup> The EPA recommended that the Final EIS “add a sentence to this statement in the Executive Summary that identifies that under the proposed action West End Creek is predicted to exceed Idaho’s CWA mercury aquatic life criterion for approximately 10 years during operation.”<sup>42</sup> The EPA states that, additionally, it will also increase loading downstream to Sugar Creek, which is already listed as impaired under Clean Water Act Section 303(d) for mercury.<sup>43</sup> The EPA also notes that because mercury is bioaccumulative, effects to the system will likely extend beyond the lifespan of the SGP.

**Given the SDEIS and EPA findings that West End Creek is predicted to violate mercury aquatic life criteria, it is wholly unclear how the draft Certification and Perpetua’s proposed activities comply with Tier I requirements and IDAPA 58.01.02.052.07**, specifically, “Existing uses and the water quality necessary to protect the existing uses **must always be maintained and protected**. No degradation or lowering of water quality may be allowed that would cause or contribute to violation of water quality criteria as calculated after authorized mixing of the discharge with the receiving water (emphasis added)”. How the draft Certification further complies with Tier II socioeconomic analysis requirements for West End Creek is also fully in question.<sup>44</sup>

The AASJ routinely quotes and references the USFS SDEIS and Perpetua itself is intimately aware of the USFS SDEIS, yet the AASJ/Perpetua neglect to discuss and analyze metals and mercury impacts to the West End pit lake and West End Creek. This fact is particularly concerning and DEQ should be keenly aware of the bias presented within the AASJ and Perpetua’s application for 401 Certification.

In the end, the above examples are clear failures of the draft Certification and the AASJ to meet its own stated requirements to, “...evaluate how the permit issuance will affect water quality for each pollutant that is relevant to aquatic life, salmonid spawning, and recreation uses of the receiving water bodies (IDAPA 58.01.02.052.06)”. Furthermore, the lack of analysis on all pollutants and all degrading activities calls into question whether compliance with Tier I and Tier II analysis requirements (IDAPA are met within the draft Certification.

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<sup>39</sup> Id., p. 4-348

<sup>40</sup> Id., p. 4-251

<sup>41</sup> U.S. EPA, “Detailed Comments on the Stibnite Gold Project DSEIS Valley County”, January 5, 2023, p. 15.

<sup>42</sup> Id., p. 27

<sup>43</sup> Id., p. 15

<sup>44</sup> Per IDAPA 58.01.02.052.01, “All waters receive Tier I protection”.

In addition to our comments within section 1.c, DEQ should update the draft Certification and require Perpetua to update the AASJ to analyze the impact of all reasonably anticipated water quality degrading activities pathways for all POCs. Most critically, DEQ must address the issue of atmospheric deposition on water bodies, and antimony, arsenic, and mercury contaminations within the proposed West End pit lake and mercury contamination within West End Creek. As currently proposed, the SGP would violate Tier I requirements for both water bodies.

**f. The AASJ fails to properly assess the impacts of proposed activities to human health**

IDAPA 58.01.02.053.08(d)(iii)(3) requires a socioeconomic justification to assess the “Potential health impacts related to the proposed activity.” Section 5.3.3 of the AASJ references the USFS DEIS and SDEIS have assessed the human health impacts from the proposed activities yet fails to discuss those impacts within the AASJ. Instead a 2003 public health assessment completed by the Bureau of Health and Safety, Division of Health, Idaho Department of Health and Welfare (ATSDR 2003) is referenced as finding minimal exposure pathways and effect to the public as well as effects on drinking water and fish consumptions. The AASJ does not provide a copy of the ATSDR or where one can be obtained. However, this 2003 report appears to analyze the human health impacts of existing contamination at the Stibnite site, not the proposed activities in question.<sup>45</sup>

Many of the unplanned operational activities and scenarios previously discussed could have human health impacts than go analyzed within the draft Certification and the AASJ. Furthermore, the ATSDR undercuts the very value of site clean up that Perpetua argues. If the ATSDR ultimately found that current contamination at the site poses little risk to human health, then the need and benefit to human health of any clean-up by Perpetua is also reduced.

DEQ should 1) request additional human health impacts analysis specific to the 401 Certification proposed activities at hand from Perpetua resources 2) reevaluate its draft Certification analysis accordingly.

**g. Impacts to Direct and Indirect Uses Associated with High Quality Waters (e.g., Fishing, Recreation and Tourism)**

Section 5.3.4 of the AASJ generally minimizes the effects the SGP will have on users of Tier II waters calling various potential effects “short-term”, “minor”, and “localized”. In addition, Section 5.3.4 claims, “The SGP would not have any direct impacts on recreational river use downstream of the mine site” and “Long term, the reclamation activities should improve the quality of the aquatic habitat and sport fishing compared to

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<sup>45</sup> This would appear obvious as Perpetua’s first plan of operations, the “PRO”, wasn’t submitted to the USFS until December 2016.

the current conditions.” However, there is good reason to doubt these characterizations and claims.

As previously noted, unexpected activities, deviations from the mine plan of operations, and site abandonment all call into question the characterization of some SGP effects as “short-term”, “minor”, and “localized”. A hazardous material spill to the EFSFSR, or worse, a failure of the Tailing Storage Facility would have major impacts to aquatic life and recreation along the entire EFSFSR corridor as well as the Main South Fork Salmon. These types of incidents also question whether aquatic habitat and sport fishing would improve due to reclamation activities. If the SGP was put on long-term care and maintenance status this would delay and possibly altogether avoid these reclamation benefits.

The claim that the SGP would not have any direct impacts on recreational river use downstream of the mine site also assumes an overly optimistic view of mine operations. As already noted in Section 1.c, a 2003 study from the American Society of Mining and Reclamation found that “For the 25 modern mines in the United States selected for detailed case study, 100 percent of mines predicted compliance with water quality standards, but 76 percent of mines exceeded water quality standards as a direct result of mining,”

**Perhaps most alarming, is the fact that the AASJ cherry picks partial sentences from the USDS SDEIS, Recreation Specialist Report to highlight reduced SGP impacts while deliberately omitting parts of the same sentence that highlight impacts.** The last sentence of Section 5.3.4 of the AASJ states, “There would be no stream flow changes to streams along either the Johnson Creek Route or the Burntlog Route.” However, the full quote from the Recreation Specialist Report states, “There would be no stream flow changes to streams along either the Johnson Creek Route or the Burntlog Route but there is potential for sediment and contaminants from roadway construction, vehicle traffic, and maintenance along these streams.”<sup>46</sup>

What’s more, the very same page of the Recreation Specialist Report states, “Any reduction in fish populations could affect the success and experience of the recreational fisherman. Impacts to recreational fishing are anticipated to be localized, long term, and minor to moderate.” Yet none of these impacts are mentioned within the AASJ.

The omission of important impacts to water quality and water use, as well as the cherry picked statements from the AASJ, show its obvious bias not only to its recreational impacts analysis, but its entire socioeconomic analysis and conclusions.

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<sup>46</sup> U.S. Forest Service, “Stibnite Gold Project Supplemental Draft Environmental Impact Statement, Recreation Specialist Report” October 2022, p. 89

## 2. Additional Economic Impact Studies, Idaho Headwaters Economic Study Group

The Idaho Headwaters Economic Study Group (an organization of over 50 local businesses) commissioned a 2023 report titled “An Evaluation of the Potential Socio-Economic Impacts of The Proposed Stibnite Mine on Valley County, Idaho” (Idaho Headwater’s Study). The Idaho Headwater’s Study was prepared by Power Consulting of Missoula, MT. A full copy of the Idaho Headwater’s Study has been included within these comments (See Attachment A). The Idaho Headwater’s Study contained several conclusions that conflict with the AASJ and appropriately considered several factors that the AASJ did not. A highlight of findings and conclusions from the Idaho Headwater’s Study are presented below:

- Valley County residents currently enjoy \$7,400 of extra additional income per person compared to all other non-metro area counties in Idaho. Evidence from a Valley County Commissioners/McCall City Council 2018 analysis and a 2013 study from The Journal of Regional Analysis & Policy suggest that Valley County’s existing high protection of federal public lands was responsible for much of this additional income.<sup>47</sup>
- The total value to the local economy from the visitor-recreation sector, plus non-labor income (pensions, investment income and government support payments available to be spent in the local economy), is \$447 million annually.<sup>48</sup>
- If a stigma from the existence of the SGP itself or from direct environmental harm from the SGP (e.g. a significant hazardous material spill) led to even just a 2% suppression of the visitor-recreation sector plus the non-labor income, then the wage benefits of the mine would be wiped out.<sup>49</sup>
- The estimated state property tax revenue from the SGP would only amount to \$300,000 annually. Given the assumptions of non-resident children that will be brought to or born in Valley County as a result of the SGP, this amount wouldn’t even cover their annual anticipated education costs from the state (estimated at a total of \$670,00 per year).<sup>50</sup>

Overall, the Idaho Headwater’s Study finds the SGP presents real socioeconomic risks to the local area and provides a fair complement to the AASJ’s benefits only analysis. DEQ should carefully consider the conclusions of the Idaho Headwater’s Economic Study and reevaluate the socioeconomic benefits the proposed activity and the SGP provide to Valley County.

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<sup>47</sup> Thomas Michael Power, Ph.D. Donovan S. Power, M.S. (Power Consulting Incorporated), “An Evaluation of the Potential Socio-Economic Impacts of The Proposed Stibnite Mine on Valley County, Idaho”, December 11, 2022, p. 44-46

<sup>48</sup> Id., p. 48

<sup>49</sup> Id., p. 47-48

<sup>50</sup> Id., p. 22-24

### 3. The Tier I Analysis fails to assess all sources of degradation and potential noncompliance from proposed activities

In addition to the Tier I requirements for West End Creek and the West End pit lake above, the USFS SDEIS states that mercury concentrations in the EFSFSR downstream of Sugar Creek would not exceed the aquatic life criterion. However, “uncertainty remains whether incremental change in mercury concentration beyond baseline would increase bioaccumulation in fish tissue at concentrations exceeding the tissue-based criterion.”<sup>51</sup>

The EPA’s response to USFS SDEIS comments determined that the SDEIS mercury deposition model underestimates the potential for mercury releases in multiple ways, and recommended multiple steps to provide a more accurate analysis to ensure that impacts to surface water are “not underestimated when demonstrating compliance with the Clean Water Act and determining if additional mitigation measures for potential impacts are needed.”<sup>52</sup>

DEQ should: require a more accurate assessment of mercury deposition, and impacts to Tier I and Tier II water quality, by following the recommendations outlined in the EPA’s 2023 SDEIS comments (see Attachment B). DEQ should also require additional mitigation measures (such as additional mercury air emission controls) to preclude the predicted mercury water quality standard exceedances and ensure that the incremental increase in mercury concentration over time does not result in exceedances of fish-tissue criterion.

### 4. Imposed Conditions

Section 3 of the draft Certification outlines conditions to ensure the SGP and the proposed activities comply with Idaho water quality standards and 401 Certification requirements. Many of these conditions are boilerplate BMPs standard to all 401 Certification in Idaho while some are specific to the SGP and this draft Certification (most significantly Section 3.2 Special Conditions). Comments and questions related to specific conditions are provided below.

#### a. Special Conditions

**Special Condition 1:** This condition lacks specificity and it is unclear how it fits with the various monitoring required both by the draft Certification (Appendix E) as well as monitoring required by any other current or future requirements (DEQ groundwater Point of Compliance, USFS Final EIS requirements, or DEQ IPDES permit requirements). For example, the draft Certification Appendix E, Footnote b states, “Metals will be monitored in addition to proposed monitoring in the Water Resources

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<sup>51</sup> USFS, “Stibnite Gold Project Supplemental Draft Environmental Impact Statement”, October 2022, p. 4-353.

<sup>52</sup> Id., p. 2.

Monitoring Plan (PRII 2021). Metals monitoring will include arsenic, mercury, antimony, methylmercury, copper, cadmium, lead, and zinc.” However, special condition 1 states, “Monitoring will include all constituents of interest required by DEQ and partner agency-issued permits and is subject to modifications throughout the life of the project.” If current or future monitoring requirements outside of the draft Certification require monitoring of additional constituents, will those constituents apply to Appendix E?

Furthermore, quality assurance project plan (QAPP) requirements are vague. Numerous QAPPs are likely to be in existence covering different monitoring plans/requirements if the SGP moves forward, but it is unclear if this requirement means for Perpetua to develop a QAPP specific to Appendix E monitoring or some other QAPP may be used to fulfill this condition. In either case, this condition should be modified to require DEQ approval of any QAPP used for final Certification monitoring compliance.

**Special Condition 3:** Given the highly volatile nature of the hardrock metals market, we recommend that this condition be modified to require the proposed meeting occur once every three years (as opposed to five years). Furthermore, this condition should also be modified to require Perpetua to submit an operations suspension plan prior to SGP operations. Such a plan would describe how Perpetua plans to maintain 401 Certification compliance given the challenges of reduced resources and presence on site. Requiring such a plan is not a novel or unreasonable requirement given Idaho State rules on mine tailings impoundments require a dam abandonment plan be developed for mine tailings impoundments.<sup>53</sup>

**Special Condition 4:** We suggest clarity around QAPP requirements and DEQ approval be added (See Special Condition number 1 above).

**Special Condition 5:** This condition cites IDAPA 58.02.02 in error (it is assumed IDAPA 58.01.02 is intended). Nevertheless, it is unclear what exact metals monitoring requirements of IDAPA 58.01.02 are intended to be complied with (subsection 090.02 outlines metal sampling procedures but specifically for NPDES purposes). It is also unclear why this condition requires DEQ approval of any QAPP while special conditions related to temperature QAPPs do not (see above).

**Special Condition 7:** It is unclear exactly how this condition intends for “public access” to be maintained for project documents. Would this condition simply require Perpetua to provide project documents when asked by a member of the public or rather provide a publicly accessible format (assumedly electronic) where project documents are continuously maintained? The distinction between how this condition exactly applies to “project documents relevant to this certification” and Appendix C documents is also unclear. Finally, if the intent is for Perpetua to retain responsibility of maintaining public access to these documents, additional requirements requiring timely delivery of documents to the public should be added.

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<sup>53</sup> IDAPA 37.03.05.045.10

**Additional Special Condition(s) required:** The SDEIS and EPA comments have repeatedly raised concerns about the potential impacts to surface water from the use of soils with high metal concentrations, particularly mercury, antimony and arsenic, for reclamation purposes.<sup>54</sup> IDEQ should incorporate the EPA’s recommendations for using uncontaminated soils for reclamation, or applying specific screening criteria for soils (with supporting data) that will adequately protect surface waters from degradation or noncompliance.

## **b. Fill Material**

**Fill Material Condition 1 and 2:** These conditions specify that only “clean” material be used as fill and that “contaminated material” may not be used as fill as well as requirements for treating historic tailings or other “contaminated soils” differently from other “suitable soils” Although this condition provides some specifics on how clean and contaminated material will be evaluated, some of these specifics appear to only apply to dredge material that will be used as fill while other considerations remain unaddressed. Ultimately, given the historic contamination at the SGP and naturally elevated metal concentrations in soil/rock, we are concerned that particular care must be used in evaluating fill material to avoid degradation of water quality. Some material proposed for fill at the SGP might not be considered contaminated with respect to background conditions but would be considered contaminated compared to average background conditions elsewhere in Idaho. These conditions should be modified to add clarity and ensure that Tier I and Tier II protections are met.

**Fill Material Condition 3:** This condition is vague and does not ensure Tier I and Tier II requirements are met. The SGPs Air Permit to Construct P-2019.0047 issued by DEQ in June of 2022 includes detailed requirements to develop a Haul Road Capping Plan (Permit condition 3.13) in order to minimize road dust air pollution (including metals and general particulate matter).<sup>55</sup> Given these same pollutants can negatively impact water quality through atmospheric deposition and stormwater erosion, additional protective requirements should be added to this condition. Similar to comments presented above for fill material conditions 1 and 2, the use of contaminated site material presents an obvious pathway for water quality degradation. The same considerations for fill conditions 1 and 2 should be considered for this condition. In addition, the impact of dust suppressant agents represents an unconsidered factor that should be addressed.<sup>56</sup>

## **c. Erosion and Sediment Control**

**Erosion and Sediment Control Condition 5:** This condition should be modified to require DEQ approval of the BMP inspection and maintenance plan.

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<sup>54</sup> U.S. EPA, “Detailed Comments on the Stibnite Gold Project DSEIS Valley County”, January 5, 2023, p. 7-8.

<sup>55</sup> Note this Permit is currently under Administrative Appeal by several organizations including Idaho Conservation League and Save the South Fork Salmon

<sup>56</sup> [U.S. EPA. “Testing of Dust Suppressants for Water Quality Impacts”. September 2008](#)



**Erosion and Sediment Control Condition 7:** This condition lacks specificity to ensure revegetation is successfully implemented given the known challenges of revegetation at mine sites and the SGP in particular. The USFS SDEIS specifically notes the poor soil quality at the SGP as well as the existence of a 797,702 bank cubic yards deficit of proper growth media.<sup>57</sup> This condition should be modified to require the use of soil and growth media that is evaluated to be appropriate for the type of vegetation proposed within the specific conditions of the SGP.

**Erosion and Sediment Control Condition 10:** This condition should be modified to include chemical (or non-water) dust suppressants as well as water suppressants. Failure to do so could allow the use of chemical suppressants without proper BMPs.

#### **d. Turbidity**

**Turbidity Condition 3:** Beyond the standard conditions such as silt screens, geotextile fabrics, and silt fences to reduce increased turbidity, it is stated that visual observation will be acceptable to determine whether the required BMPs are functioning properly.

Impacts associated with the Burntlog Route will be distributed along 36.3 miles of road through dense forest. Visual inspections and verification *may* be appropriate during the initial construction efforts to widen the existing 23 miles of Burntlog Route components and the approximately 15 miles of new road connecting Meadow Creek Lookout Road. However, once the road is constructed, heavy mine traffic will be traveling along this route. With no requirement for periodical checks or mandated monitoring, it is reasonable to assume that a turbidity plume would easily be missed, rendering much of the imposed conditions ineffective.

Perpetua should be required to install continuous instream turbidity monitors in strategic locations within impacted AUs (ID17060208SL026\_02, ID17060208SL027\_02, and ID17060208SL028\_02) to ensure that BMPs are functioning appropriately.

In addition, given the large area of the SGP, its many proposed activities, and the general level of resources available to Perpetua, continuous instream turbidity monitoring is also appropriate for all monitoring sites identified within Appendix E. While continuous turbidity monitoring is not typical of DEQ 401 Certification conditions, the SGP represents a unique project of significantly larger scale than most 401 Certification projects/activities. Furthermore, it is our understanding that the SGP is also the first DEQ developed 401 Certification to undergo Tier II Socioeconomic analysis. Given the impact of the SGP and the sensitivity of the waters within and around the SGP continuous instream turbidity monitoring is justified.

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<sup>57</sup> USFS, “Stibnite Gold Project Supplemental Draft Environmental Impact Statement”, October 2022, Table 2.8-1 p. 2-138.

**Turbidity Condition 4:** Table 1 presented under this condition should be retained but modified to incorporate continuous turbidity monitoring per condition 3 comments.

**e. Vegetation Protection and Restoration**

Please see comments related to Erosion and Sediment Control above.

**f. Management of Hazardous or Deleterious Materials**

A condition should be added that requires Perpetua to develop a written spill response plan that specifically addresses reasonably anticipated hazardous or deleterious material spills to all applicable Tier I and Tier II waters. Such a spill response plan should be required to outline the nature and quantity of reasonably anticipated spills, how they will be responded to in order to minimize water quality impacts, how any long term impacts will be remediated, and how any spills will be avoided in the first place. Such plans for petroleum and oil spills are commonly required under EPA regulations (Spill Prevention Control and Countermeasure plans).<sup>58</sup> Thus the need to plan for spills of hazardous or other materials specific to water quality impacts has similar analogs and is consistent with the federal 401 Improvements. Such a plan should require review and approval by DEQ.

**g. Culverts**

**Culvert Condition 3:** This condition requires culverts to allow for fish passage but does not define what type of fish species should be considered. Given the multitude of fish species that can be found in the SGP and surrounding area (including the particularly sensitive species of Bull trout, Chinook Salmon, and Steelhead trout) and the different hydraulic conditions required for their passage, this condition should be modified to require fish passage for all fish species observed or known to be present within the waters the culvert is to be placed in.

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<sup>58</sup> See EPA SPCC website for more information  
<https://www.epa.gov/oil-spills-prevention-and-preparedness-regulations/overview-spill-prevention-control-and>

## **Attachment A:**

# **Idaho Headwaters Economic Study**

**An Evaluation of the Potential Socio-Economic Impacts of  
The Proposed Stibnite Mine  
on Valley County, Idaho**

**Prepared for  
The Idaho Headwaters Economic Study Group**

**by  
Power Consulting Incorporated**

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**December 11, 2022**

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## Executive Summary

### Section I. The Existing Valley County Economy

In the last half century Valley County has tripled in population while jobs have nearly quadrupled. The Valley County economy outperformed the national economy across a broad range of indicators of local economic vitality: population, employment, and real personal income. In the last ten years or so, the combination of natural growth and net in-migration added about 2,500 new residents in Valley County, but 87 percent of that growth was due to net in-migration, i.e., people “voting with their feet”. Many of the people that moved into Valley County, brought with them a significant amount of “non-labor” income. In 2020 the non-labor sources of personal income in Valley County totaled \$355 million. In comparison, the labor Earnings came to \$261 million. That is, the non-labor personal income was 36 percent **larger** than the total labor earnings.

The historically important goods production in Valley County, timber and mining, have declined in the last several decades as a source of jobs. That is not a unique trend found only in Valley County. Rather, it is a state and national economic change. Jobs in goods production (Non-Services-Related), a category that includes timber and mining, were largely stagnant over the thirty-year period 1970 to 2000 relative to the growth in jobs in services sectors. During that 30-year period, jobs in Services Related industries rose steadily, almost quadrupling (3.9-fold) over that 30-year period.

### Section II: Analyzing How the Proposed Mine’s Work Force and Supplies Will be Obtained and the Reason This May Limit the Positive Impacts on the Local Economy

In this section we discuss the projected economic impacts associated with the Stibnite Gold Project (SGP). While Power Consulting was able to assess a variety of the local socio-economic impacts of SGP on Valley County, as presented in this study, we find it troubling that issues of HWY 55 transportation, spill risk, local wage scale problems, housing availability/affordability, and general infrastructure concerns were not adequately examined in either the Draft Environmental Impact Statement (DEIS) or the Supplemental DEIS (SDEIS). Public officials, elected leaders, and concerned citizens should not be making decisions about the future of their communities without a full comprehensive impact analysis having been carried out to inform their decisions. Specifically, we find that the DEIS and the SDEIS socioeconomic sections presented a ‘benefits only’ analysis. We will spend much of this section and parts of the following sections describing and quantifying that shortcoming.

Knowing where a proposed mine will get its operating supplies and its workers will help to determine what the economic impacts of the mine will be on the local area. If the mine is in a relatively remote setting, as is the case with the proposed Stibnite mine, then it is quite likely that the positive local economic impacts of the mine will be muted on the local area. The reason for this is that there are fewer economic links between the mine and the local towns that might otherwise supply the mine with the things that it needs to operate. Valley County may be the source of a lot of wealth being created, and the physical location of the mine, but it will not retain much of the wealth that is created. If we look at the Construction phase of the proposed mine, for example, more than 91 percent of the spending will occur outside of the local area. If we look a little deeper, into the total spending that the local area is modeled to receive, we see that only

8 percent of it will be in the local area. Of that 8 percent, 64 percent of that spending will be on direct wages for the people that are modeled to live in the local area. Furthermore, we suspect most of the workers will not live in the local area, therefore, this relatively small percentage will shrink to a few percent since those “local” workers will no longer live in the local area and will no longer spend their direct wages in the local area.

A complicating factor in all of this is that even if the local area was able to provide the workers for the mine, the 100 in-migrants that are projected to work at the mine will have a hard time finding housing. That is because Valley County does not have a lot of idle houses that are available to rent and or purchase. The Stibnite Supplemental DEIS specifically notes that the local rental market is becoming less affordable and the data that we have collected from the American Community Survey indicates that there are not enough vacant houses for sale for all the “local miners” to purchase one. What this adds up to is a housing market that is more expensive than the national average, more expensive than nearby Boise, and a market that will become increasingly less affordable for the locals if the mine is built and operates.

When we look at the potential fiscal impacts of the proposed mine on the local area, much of the same pattern holds. For the operations phase of the proposed mine, there will be \$300,000 annually paid in property taxes<sup>1</sup> which will go to Valley County during the Operations phase, but all the other taxes are paid to state and federal governments. The \$300,000 must then cover the cost increases that the mine puts on Valley County which include schools, roads, infrastructure, and emergency medical services. If we use the DEIS’s methodology, then this increase in property taxes will not even cover the full costs of the miner’s children attending school, while leaving no tax revenues for the other increases in demand for public services that the miners may put on Valley County.

With a well-paid, predominantly young, male workforce, with weeks at a time off, there are some social problems that can accompany this type of mining. Places like the Bakken in North Dakota and Montana and remote mining locations in Canada and Australia have been a natural research area to study the impact of this type of transient workforce. Since the miners will live at the mine site for two weeks while they work and then have two weeks off at a time, a separate culture will be created by the mine. Because of its structure, its pay, and the diverse cultures of its workforce, that separate mining culture may not fit well with the existing residents of the towns and cities that are closest to that mine.

### **Section III: Amenity Values and Community Perception**

People have chosen to move to Valley County because of its natural beauty and the outdoor recreational opportunities that surround them. Additionally, people have been moving in at rates higher than the national, state, or rural county average, and they have brought “non-labor” income with them. In the economic literature these attractive local characteristics are called “amenities” and treated as economic values that improve the well-being of residents -just as the purchase of a home in an attractive neighborhood would. Recognition of the existence of these environmental values at certain locations also warns us that if we are not careful about how we manage special attractive natural landscapes, we may degrade significant existing amenities of considerable value, potentially creating a “dis-amenity” that leaves many people worse off.

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<sup>1</sup> Stibnite Gold Project DEIS. Pages 4.21-26.

In one important sense, the proposed Stibnite Gold Project represents a gamble that puts at risk a known and existing outdoor economy that is supporting economic vitality in Valley County. What is being offered in its stead is a speculative but threatening multiple open pit mining venture that, if it is commercially successful, will bring only a relatively small and short run “bump” in additional economic activity in Valley County. When a mine or other types of industrial facilities are proposed near where people live, the people that live in the area, as well as the people that know about the new facility and the area, may change the way that they think about that area. That is, a “stigma”, or negative perception, about an area caused by the negative characteristics associated with the industrial facility such as degraded air and water quality, noise, congestion, general run-down characteristics of the neighborhoods, falling property values, etc.

The stigma can be the result of many different local industrial degradations, but for the purpose of this report, we will consider spills from truck traffic delivering supplies to the mine and spills from Tailings Storage Facilities (TSF). There will be a dramatic increase in truck traffic as thousands of loads of materials are hauled from around the U.S. to the proposed mine site which will dramatically alter traffic patterns in the local area and all but assure that there will be spills. TSF are the permanent storage features at a mine that will hold back the toxic sediments that are left over from processing the ore to obtain the minerals. In the modern age of mining, and especially when dealing with open pit mines, there is an incredible volume of rock that is moved to recover a very small percentage of the mass moved as metal (in this case gold, antimony, and silver). The amount that is recovered, measured in grams per ton of rock moved, is between 1 and 2 in this case.<sup>2</sup> TSF design, in recent years, has not kept up with advances in mining technology and the statistics on failure show that the newer TSF are failing at a higher rate than the older ones.

The problem with having the proposed mine in Valley County is that so much of Valley County’s economy is based on the high-quality natural landscapes that are in it and all around it. When we compare Valley County’s economic vitality to that of the other Idaho non-metropolitan counties, we see that Valley County has significantly outperformed them. That is, people in Valley County received more income than their Idaho peers in other non-metropolitan counties. The average “bonus” to Valley County residents compared to the group of non-metropolitan counties was \$7,400 a year per person in 2020 dollars. However, a Stibnite mine- related spill that casts a shadow of stigma over Valley County, could easily erase all potential benefits that the proposed mine could bring to Valley County during the mine operation phase. For example, a spill that caused a 2 percent decline in the Visitor-Recreation and Non-Labor Income in Valley County, could erase nearly all of the benefits of having 200 highly paid miners living in Valley County.

#### **Section IV: Socio-Economic Volatility in Mining Communities**

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<sup>2</sup> Midas Gold. Midas Gold Completes Positive Feasibility Study for the Stibnite Gold Project, Idaho. 12.22.2022.

<https://midasgoldcorp.com/investors/news/2020/midas-gold-completes-positive-feasibility-study-for-the-stibnite-gold-project-idaho/>



Metal mining is notoriously volatile, and gold is a charter member of the club of volatility. In fact, the price of gold has fluctuated by almost a factor of 10 in the last 50 plus years. However, regardless of gold price fluctuations, Valley County and the City of McCall will still have to make decisions about infrastructure. Things like schools, sewers, hospitals, roads, the size of the police and fire departments etc., will still require additional investments, because of the increased use by the miners.

We agree that the jobs that the miners will get will pay them well above average wages, but there will also be costs associated with having a mine in Valley County, and those costs have not been explored. Mines are generally located near small towns in rural portions of the U.S. that will have a harder time dealing with some of the negative impacts that come with the mine. As Perpetua has correctly shown, people who reside in Valley County *and* have mining jobs will have significantly higher than average pay when compared to other Valley County residents. That is known. What is unknown is what some of the costs associated with having the Stibnite mine in Valley County will be. The economic and social science literature tells us that there will be costs in the form of retarded economic growth, increased pressure on public services that Valley County provides, reduced educational attainment, and increased negative social interactions as a transient workforce tries to integrate into the local community. What this report also will show is that Valley County's economy is currently thriving and the reason that the economy is so robust, in large part, is because of the natural amenities that Valley County has. The possibility of short-term gain associated with the proposed mine should be carefully weighed against the potential for long term harm to an otherwise thriving economy

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## Section I. The Existing Valley County Economy

### 1.1 The Relative Importance of Different Industries in the Valley County, Idaho, Economy: 2020 Jobs

Table 1 below, shows the distribution of the 7,100 jobs in Valley County as of 2020 among the various industries found in the Valley County economy.<sup>3</sup>

Although Valley County is a rural county in which 87 percent of the total land is forest land, less than one percent of the county's jobs, wage income, and economic output flow directly from the harvest and processing of the forest products from those forest lands. That is, only 36 jobs of the 7,122 total jobs in Valley County are in forest products.<sup>4</sup> Gold mining is now being widely discussed in Valley County because of Perpetua's proposal to re-start mining in the Stibnite Mining District, not because mining is a major sector of the *current* Valley County economy. Only about 100 of the 7,122 total jobs in Valley County in 2020 were in mining. See Figure 1 and the discussion below.

Other land-based economic activities in Valley County were also the sources of only a relatively small number of jobs in 2020, including farming, ranching, and fishing. The largest industries in Valley County in terms of the number of jobs reflect the relative importance of the visitor and the recreation economy. Consider, for instance, the 1,053 jobs associated with "Accommodation and food services" and the 1,439 jobs associated with Construction and Real Estate.

**Table 1.**

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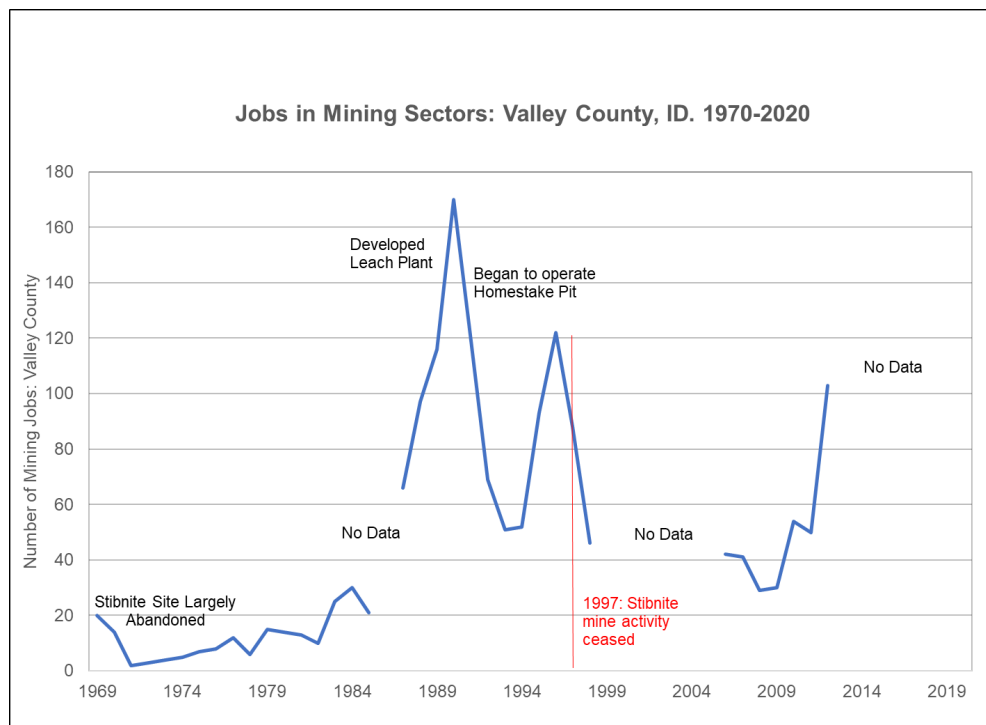
<sup>3</sup> The data in Table 1 comes from the U.S. Bureau of Economic Analysis (BEA). For the years 2001 to 2020, the BEA did not disclose the employment levels for some industries in Valley County in order to protect the privacy of the firms in some industrial classifications by avoiding the disclosure of economic information on *individual* firms. For the mining sectors, for instance, Valley County employment was not reported for half of the years. Headwaters Economics provides estimates of the missing data that were used in Table 1. This likely reduces the accuracy of the numbers reported in Table 1. However, replacing those estimated values with zeros would probably introduce a much larger error. The estimate of 2020 mining employment in Table 1 above is 103 mining jobs. That was the highest disclosed estimate BEA provided for the 2001-2020 period. It appears, however, that Valley County mining employment was declining from that peak year.

<sup>4</sup> Idaho's Forests and Forest Products Industry, University of Idaho, Policy Analysis Group, August 2019. Of course, the forested lands are a central part of the natural landscape that draws new residents and helps hold residents in Valley County. We will discuss the visitor, recreation, second home, and quality of life aspects of the local economy further below.

Number of Jobs by Place of Work Valley County, ID, Total Employment 2020	
Accommodation and food services	1,053
Government and government enterprises	1,017
Retail trade	889
Construction	766
Real estate	673
Health care and social assistance	543
Other services (except government)	353
Administrative and support and waste management	312
Professional, scientific, and technical services	272
Finance and insurance	209
Arts, entertainment, and recreation	186
Manufacturing	127
Educational services	110
Transportation & Wharehousintg	110
Mining, quarrying, and oil and gas extraction	103
Forestry and fishing	127
Farm employment	120
Wholesale trade	93
Information	46
Other	13
<b>Total Employment: Valley County 2020</b>	<b>7,122</b>

Source: U.S. BEA. CAEMP25N Total Full-Time and Part-Time Employment, by NAICS Industry. 2020

Figure 1.



Source: U.S. BEA, CAEMP 25N Total Full-Time and Part-Time Employment by NAICS Industry Economic Profile, Employment (number of jobs):. Valley, ID. 2020.

Figure 1 shows the U.S. BEA data for “mining” employment in Valley County for the 50-year period 1970-2020. Figure 1 is a bit of a mess and it is worth a little bit of time trying to understand why it is a mess and why the data does not synchronize with Table 1 above. To begin, there are several important points about the relative importance of “mining” in Valley County during that half century. As discussed above, some information on mining is withheld (“not disclosed”) because it would reveal information on individual companies, violating privacy restrictions on federal data collection and publication. For this 50-year period, about 25 percent of estimated job data for the mining sector was undisclosed in the federal data. On Figure 1, “no data” marks the time periods for which we do not have mining employment data for Valley County. The employment directly associated with the Stibnite mining and processing operation was quite modest over the last half-century, peaking at 170 jobs in 1990 followed by a steep decline to about 50 jobs in 1993. For reference, in 2020 total employment in Valley County was about 7,100 jobs. During this 50 year period shown in figure 1, mining activity in Valley County was quite volatile, varying from almost 200 to near zero. As mining and mineral recovery technologies changed and global markets fluctuated between steep war-time demands and the disappearance of demand during periods of economic depression, the jobs associated with the Stibnite mineral belt came and went as the mines were periodically largely abandoned with crucial capital equipment not maintained or sold off.<sup>5</sup>

## 1.2 Trends in Indicators of Economic Vitality in Valley County

### *i. Population Trends in Valley County*

Population trends can be looked on as evidence that people “voting with their feet” are confirming that there are positive characteristics associated with a local area that allow it to attract and hold residents. A larger population could also increase the size of the market for goods and services, boosting the sales opportunities that local businesses face. The larger population could also increase the size and diversity of the labor force available to staff existing or new businesses. The demand for housing and new businesses could also increase the value of existing land and structures in the area.

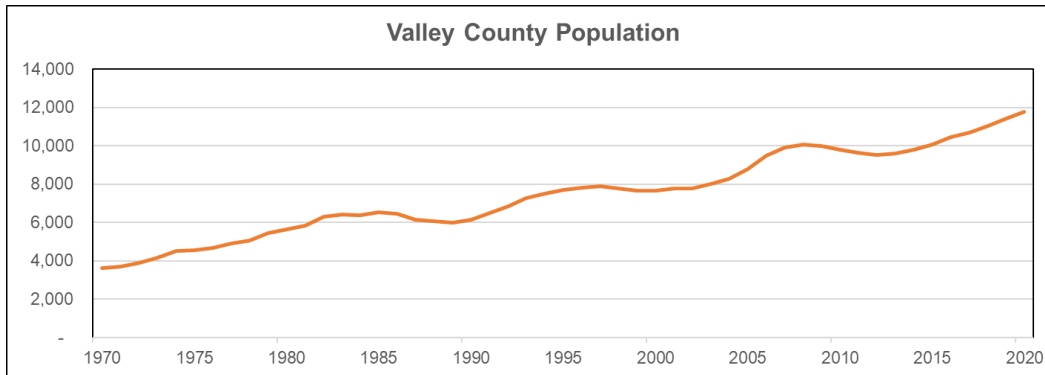
Rising population can also be looked on as a threat to the quality of life in the community facing the increased population. Larger populations increase the demand for local government services such as schools, policing, fire, safety, and basic public infrastructure such as streets and sidewalks, etc. Higher property values tend to raise the local cost of living, burdening some residents while benefiting others. The character of the community that existed before the population increase took place could change, degrading the previous quality of life.

For better or worse, Valley County has experienced ongoing population growth over the last half-century or more. Between 1970 and 2021 the Valley County Population tripled. That represents a rate of growth of about 2 percent per year over that half century. As Figure 2 shows, there were fluctuations in population growth over that 50-year period as the national economy moved into recessions and then into recovery and back into periods of growth.

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<sup>5</sup> Mitchell, V. History of the Stibnite Mining Area, Valley County, Idaho. Staff Report 00-3. Idaho Geological Survey, University of Idaho. April 2000  
[https://www.idahogeology.org/pub/Staff\\_Reports/2000/SR-00-3V1.pdf](https://www.idahogeology.org/pub/Staff_Reports/2000/SR-00-3V1.pdf).

**Figure 2.**



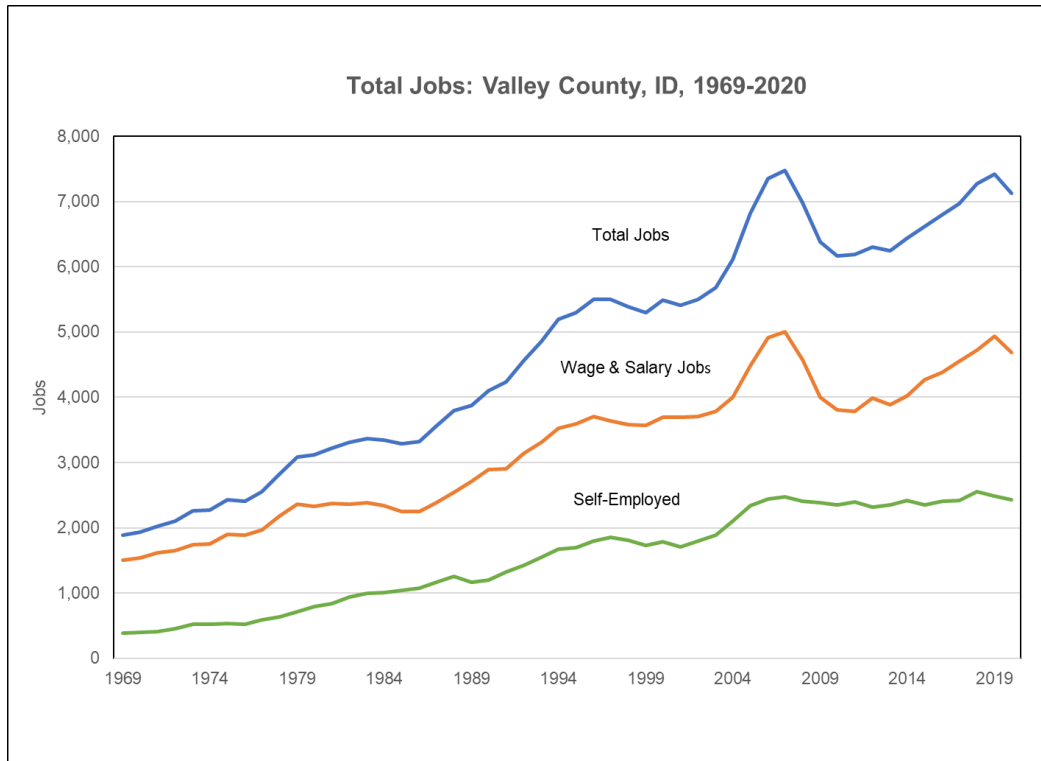
Source: U.S. BEA, Regional Economic Information System.

### *ii. Growth in Jobs in Valley County*

Over the half-century between 1970 and 2020, total jobs in Valley County nearly quadrupled. As shown in Figure 3, below, the growth in jobs was not smooth. Slowdowns in the national economy periodically led to periods when employment declined. The most dramatic example of that was in 2007 when after a boom in job growth, the financial bubble broke, the nation descended into the “Great Recession” and one out of five jobs in Valley County, at least temporarily, disappeared. The booms and busts associated with that national economic cycle can be seen in the employment data shown in Figure 3 below.

“Jobs” here does not refer only to wage and salary jobs where a worker is hired by a business. The self-employed are also included in the total of individuals “working” or “employed” or “holding a job.”

**Figure 3.**

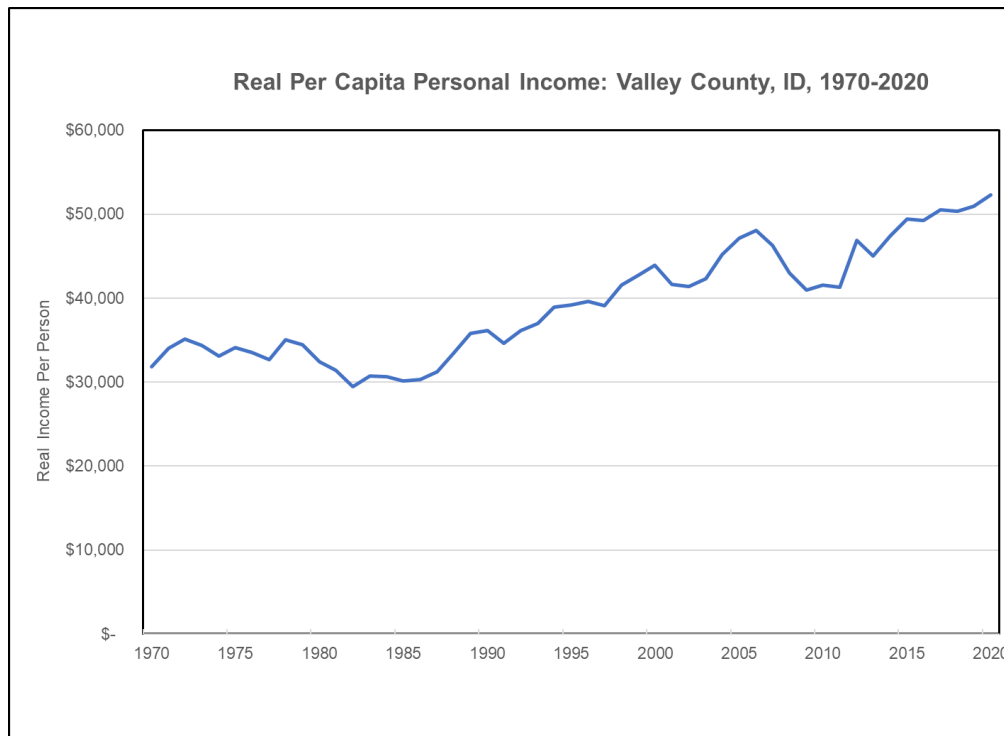


Source: U.S. BEA, CAINC4 Personal income and employment by major component, Valley County, ID.

### *iii. Ongoing Growth in Income Per Person*

During this half-century-long view of the Valley County economy, average income per person rose significantly, from about \$30,00 per person per year to about \$50,000 in 2020, a 67 percent increase. This was after the impact of inflation had been removed. This was “real growth” in the purchasing power of residents’ incomes. That was particularly true after the early 1980s when income per person increased by almost 80 percent. See Figure 4 below.

Figure 4.



Source: U.S. BEA, Regional Economic Information System. Converted to dollars of constant purchasing power using the Consumer Price Index.

#### *iv. The Contribution of Forest Products and Mining to Valley County Economic Vitality*

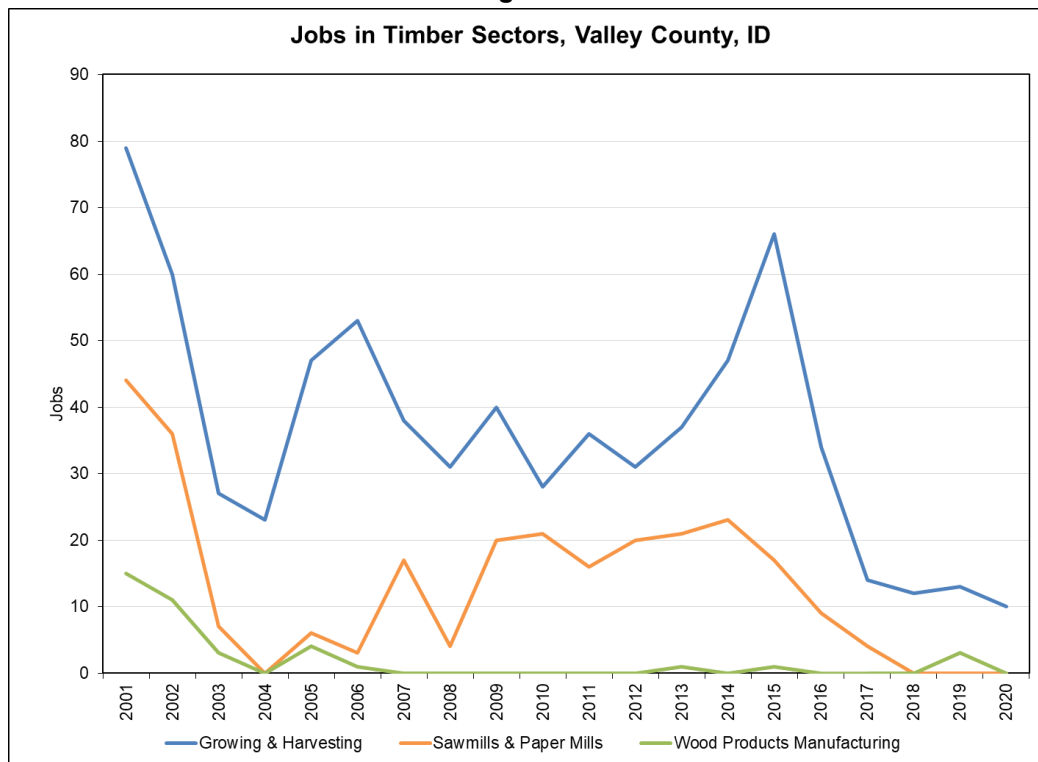
These positive economic trends in the growth of population, jobs, and real income per person over the past half-century in Valley County were not driven by the expansion in what often is asserted to be the county's historical economic base: metal mining and forest products. By 2001 those sectors of the Valley County economy provided less than a hundred jobs each, but then, during the economic fluctuations of 2001-2020, those two industries shrank to providing almost no direct jobs in Valley County and what extractive industry jobs there were, were volatile, varying in size significantly from year to year. See Figure 1 above for the metal mining industry and Figure 5 below for forest products.<sup>6,7</sup>

<sup>6</sup> Data on timber and mining sectors of the Valley County economy are somewhat limited because some of the information is suppressed to avoid reporting information on individual firms. In addition, some of the data series do not report on the number of self-employed workers. That tends to understate employment in those sectors. Finally, the data series begins in 2001 because the industry sector definitions were changed in the year 2000 from the previous Standard Industrial Classification to the North American Industrial Classification System. As a result, there is a discontinuity in the data between the economic data up to 2000 and the data reported for 2001 and later. We show only the data for 2001 and later.

<sup>7</sup> Headwaters Economics with financial support from the Bureau of Land Management, the U.S Forest Service, and other federal agencies has created and maintains a data base for each county in the United States that allows users of the system to create economic profiles of each county. See <https://headwaterseconomics.org/eps>.



Figure 5.



Source: Economic Profile System, Headwaters Consulting.

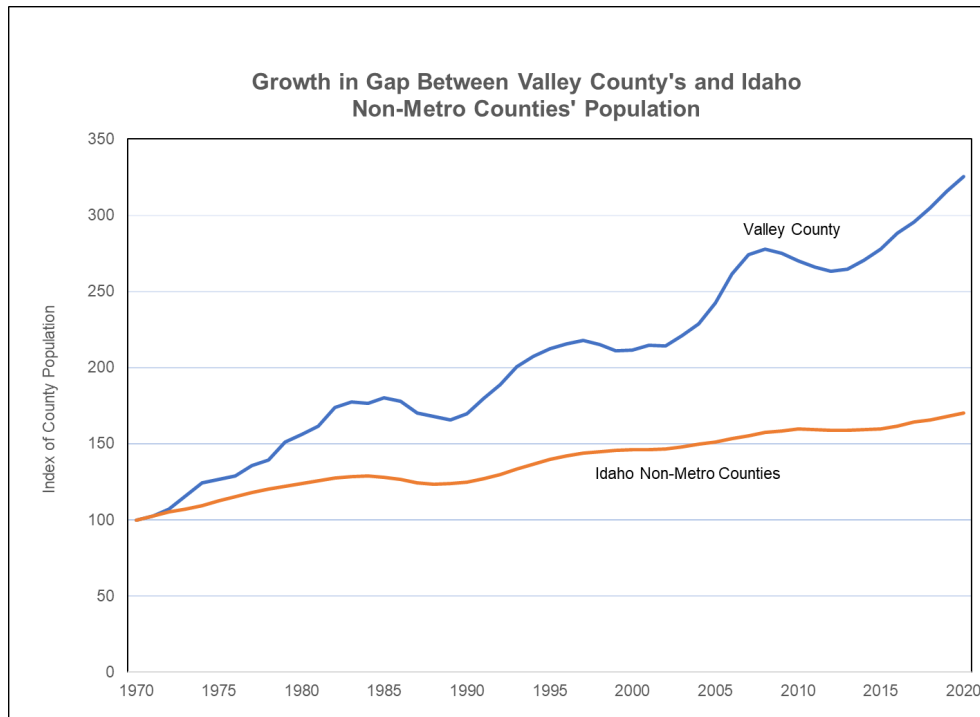
#### *iv. Comparing the Valley County Economic Performance to Other Non-Metropolitan Idaho Counties, 1970-2020.<sup>8</sup>*

The Valley County economy outperformed the other non-metropolitan Idaho counties as a group across a range of indicators of local economic vitality: growth in population, employment, and real average personal income per person. Figure 6 shows the high population growth rate in Valley County over the fifty-year period 1970 to 2020 compared to all of Idaho's non-metropolitan counties as a group. Because the population of all the non-metropolitan counties is much higher than just Valley County, we focus on the different growth rates expressing the changes in population as an index number that begins at 100 for both sets of counties. When that index value rises from 100 to 200, population has doubled, 100 to 300 indicates that Valley County population triples. etc. Clearly, Valley County was much more

<sup>8</sup> In evaluating the relative economic performance of Valley County, Idaho, we have chosen to use the economic performance of all of Idaho's other non-metropolitan Counties as a reference point. Large urban areas have socioeconomic characteristics that lead to quite different economies and societies. Given the relatively small population in Valley County, Idaho, (Just under 12,000 in 2020), it would be inappropriate to compare it to the largest urban areas of the state, e.g. the Boise or The Spokane-Coeur d'Alene Combined Statistical Areas.

successful during that half-century at attracting and holding residents than the whole group of other non-metropolitan counties in Idaho.

**Figure 6.**

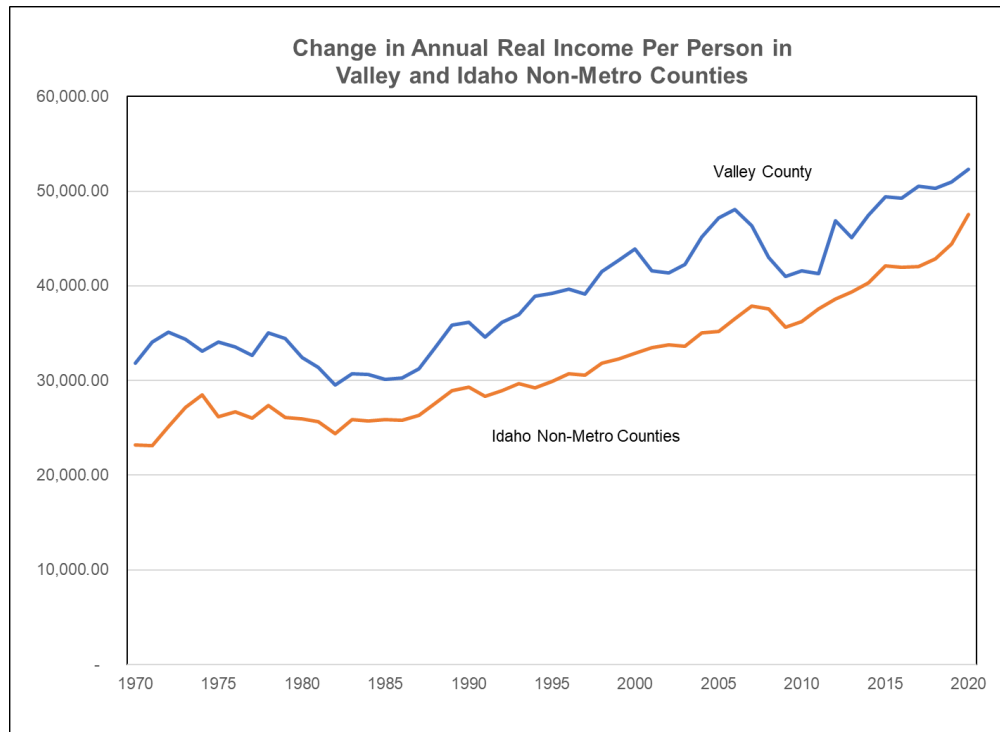


Source: U.S. BEA CAINC1, County and MSA personal income summary: personal income, population, per capita personal income.

One often used measure of overall local economic “prosperity” is average real income per person. That is calculated by summing up all of the income that flowed to individuals in the geographic area being studied and spreading all that income over the total population, i.e., dividing total personal income by the population. If we are interested in how this average income per person has changed over time, the impact of inflation should be removed by deflating the income data.

Figure 7 below compares how average income per person in Valley County to the whole group of Idaho non-metropolitan counties. Over the 50-year period we have been using, Valley County always had a higher average income per person. The distance between the two lines shows the size of the advantage Valley County had over the whole group of non-metro counties. That “bonus” average income that residents of Valley County receive varies significantly over time, from a high of \$12,000 per person per year to a low of \$4,000. The average “bonus” of the Valley average income per person compared to the non-metropolitan county level was \$7,200 a year per person.

**Figure 7.**



Source: U.S. BEA, Regional Accounts, CAINC1 County and MSA personal income summary: personal income, population, per capita personal income. Adjusted for inflation using the Consumer Price Index.

### 1.3 The Sources of the Economic Vitality in Valley County: 2000-2020

#### *i. Net In-Migration into “Attractive” Counties*

As shown above, the population in Valley County has increased significantly over the last half-century (1969-2020), more than tripling, adding over 8,200 new residents. This was not due to a higher birth rate, i.e., births less deaths. If we look at the last decade, 2010-2020, the combination of natural growth and net in-migration added about 2,500 new residents in Valley County, but 87 percent of that growth was due to net in-migration, i.e., people “voting with their feet, those moving into Valley County minus those moving out, were boosting population in Valley County. This has significant economic implications because a growing part of personal income has become more “footloose,” moving with individuals and households as they make residential location decisions.

#### *ii. The Growing Importance of Income Not Tied to Current Work Activities*

When discussing the local economy, as is demonstrated above, the tendency is to focus on jobs and the payroll that flows to workers in compensation for the work they do. That *labor income* is envisaged as circulating within the economy putting other people to work as workers spend their labor income to support their households. In doing so, they indirectly support other participants

in the local economy as those expenditures circulate from one economic factor to another within the local economy.

This economic model, of the circulation of money flowing through the local economy, correctly emphasizes the importance of the flows of income that coordinate and motivate a market economy. That focus, however, is almost exclusively on the circulation of *labor income*, which provides an incomplete view of the local economy. In the contemporary economy, people receive income from a much broader set of sources than wages, salaries, and the net income of the self-employed including:

- Investment income: returns on family assets: dividends, interest, and rent.
- A subset of the above: Retirement pension programs that provide a regular income not associated with current work efforts. Some of these are public programs (e.g. Social Security) while others are private pensions associated with past work activity.
- Government benefit programs that seek to protect access to basic necessities: medical care, food, housing, childcare, etc. Also, unemployment and disability compensation assist households during difficult times.
- Many of these are called “transfer payments” by economists because they are government economic benefits paid to individuals that are not paid in return for economic services rendered by those individuals.

There are two important aspects to these “non-labor” sources of income: First, in total, they are quite large and provide a substantial supplement to the payments households obtain from current work efforts. Second, these sources of income are often “foot loose” in the sense of moving from one location to another as the recipient moves geographically. The recipient does not have to reside in a particular local area (e.g. near a particular employer) to receive that income.

In 2020 the Non-Labor sources of personal income in Valley County totaled \$355 million. In comparison, the Labor Earnings came to \$261 million. That is, the Non-Labor personal income was 36 percent **larger** than the total Labor Earnings. Put another way, the Non-Labor Income made up 58 percent of the Total Personal Income received by residents of Valley County while Labor Income made up the other 42 percent.<sup>9</sup> See Figure 8 below.

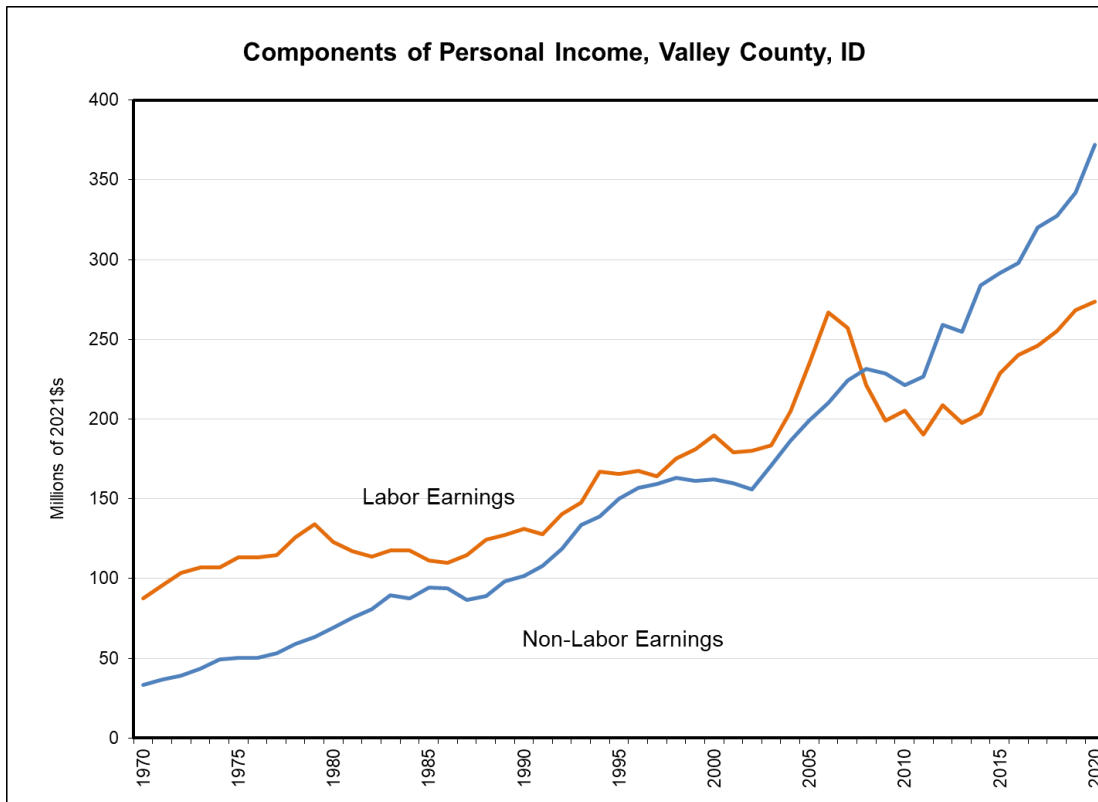
Nation-wide Non-Labor Income has been growing more than twice as fast as labor income and is one-third or more of all personal income in nearly 90 percent of U.S. counties. With the Baby Boom generation reaching retirement age, it is likely Non-Labor Income will continue to be a growing source of personal income. As mentioned above, since the Non-Labor Income follows the recipient, areas that are attractive to retirees or others who have Non-Labor Income will benefit from these other important sources of Personal Income.<sup>10</sup>

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<sup>9</sup> Headwater Economics. Economic Profile System, Valley County, Socioeconomic Trends, Tab 2. 2022

<sup>10</sup> “[Economy Surprisingly Dependent on Non-Labor Income](https://headwaterseconomics.org/economic-development/trends-performance/economy-surprisingly-dependent-on-non-labor-income/)”. 2017. Bozeman, MT: Headwaters Economics.

Figure 8.



Source: U.S. BEA. Regional Economic Accounts, reported by Headwaters Economics' Economic Profile System, Socioeconomic Trends. 2021.

Note that in Figure 8 above, Valley County residents saw labor earnings increase relatively slowly between 1969 and 1999 and had more downturns than Non-Labor Income which had a more or less steady increase. Clearly, when thinking about income flowing into a local economy, the focus cannot be only on “payroll” or “wages and salary.” Property Income as well as government support payments and pension programs provide a substantial non-wage supplement to labor income, boosting the flow of personal income to households.

### *iii. Economic Well-Being in “Recreation” Counties*

Many rural counties have “economic bases” like Valley County’s in the sense that visitor and recreation activities play a very important role in supporting the local economy. This has led to studies of the impact of such economic specialization in providing services to “visitors” and “second-home” owners on the local economic well-being of residents. Given that jobs in retail sales, food service, and accommodations are typically relatively lower paid, one might suspect that economic expansion that emphasized the proliferation of jobs in those sectors of the economy would not necessarily boost household or worker incomes.

But this type of casual empiricism is too superficial. Residents of a local area who receive “property income,” i.e. dividends, interest, and rent, or those “senior citizens” who retire with

pensions that they and their employers contributed to over decades of employment are not likely to be classified as “low income.” Similarly, residents whose medical costs are covered by Medicare or Medicaid will support local medical services providers, many of whom are not low-income either. Residents who build or purchase second homes in a “resort” community will help to support local people working in construction, real estate, finance, interior decorating, architecture, etc. Again, professions that are not necessarily low paid.

More careful economic analysis is required before sweeping generalizations about changes in local economic well-being can be made about communities that specialize in outdoor recreation or capitalize on local high quality natural landscapes and community quality of life. Economists have tried to identify local areas that have specialized in “recreation” by looking at the share of local jobs that go to eating and drinking places, accommodations, guided recreation, entertainment, and art. In addition, they have focused on the share of vacant housing units that are used seasonally to identify communities with a high percentage of second homes and rental units. These economic statistics are used to identify “recreation-dependent” county economies.

The analysis of economic characteristics and dynamics of these “recreation” counties show several important characteristics of recreation counties like Valley County.<sup>11</sup>

- a. Recreation counties are more likely to attract in-migrants, especially in rural counties.
- b. Migrants to recreation counties have higher incomes relative to in-migrants who move to non-recreation counties and relative to existing residents.
- c. Recreational counties tend to provide longer-term support by recruiting new residents who may be business owners, entrepreneurs, or workers, supporting growth in earning per job across a community.
- d. If the recreation county is a rural county, the in-migration will stimulate the local economy, offsetting the economic drawbacks rural counties otherwise have.
- e. Average pay per job in rural recreation counties were lower but were increasing much faster than in non-recreation counties.
- f. Recreation counties were much less likely to have out-migration exceed in-migration.

This tends to maintain or increase population in rural counties which often have had to cope with population declines. This study summed up its conclusions as follows: “Recreation, especially in non-metro places, draws new residents, higher incomes, and faster earnings growth than places without [high economic concentrations in] recreation.”<sup>12</sup>

#### *iv. The Shift of Economic Activity from Goods Production to Providing Services.*

As indicated above, the historically important goods production in Valley County, forest products and metal mining, have declined in the last several decades as a source of jobs and income. That is not a unique trend found only in Valley County. Rather, it is a state and national economic change. As shown in the Figure 9, below, jobs in goods production (Non-Services-Related) were largely stagnant over the thirty-year period 1970 to 2000 relative to the growth in jobs in services sectors. During that 30-year period, jobs in Services-Related industries rose steadily, almost quadrupling (3.9-fold) over that 30-year period. Economic areas

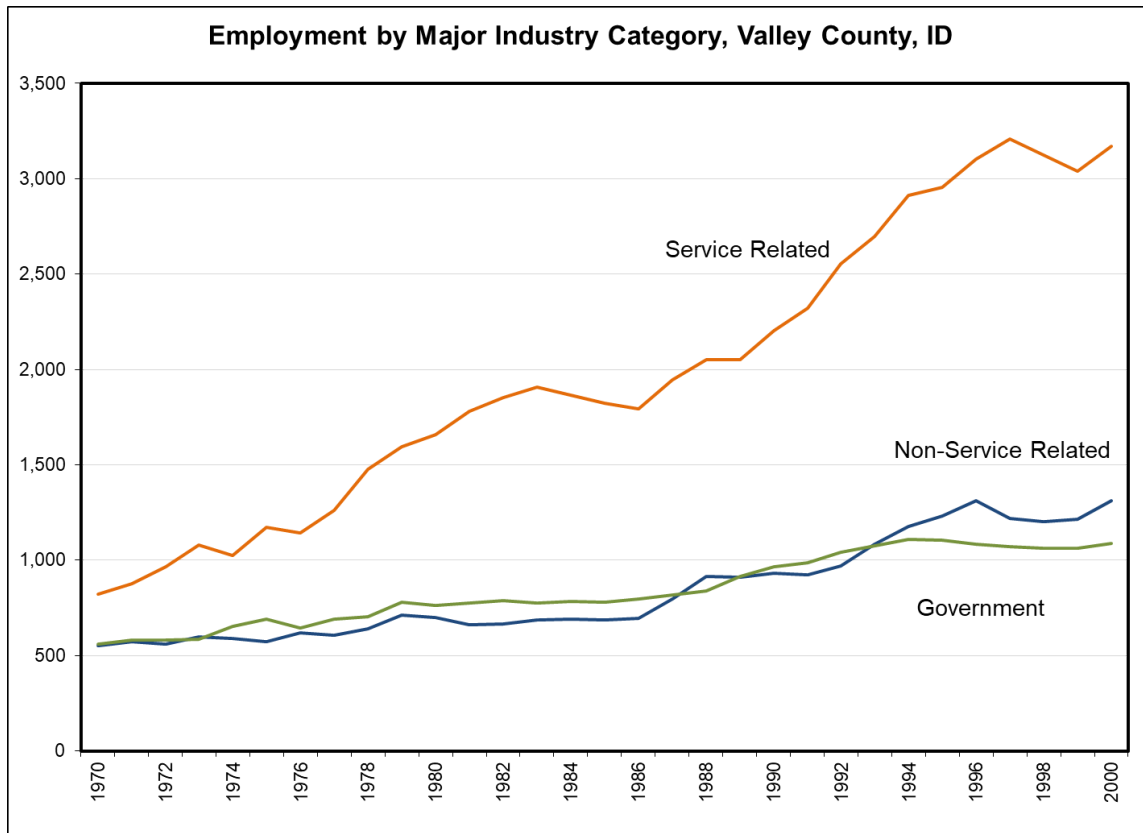
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<sup>11</sup> Headwater. Recreation Counties Attracting New Residents and Higher Income. Page 1. January 2019.

<sup>12</sup> Ibid.

that could meet those shifting demands of the market for services as opposed to goods, were more successful in serving those new markets and maintaining their economic vitality.

**Figure 9.**



Source: U.S. BEA. Regional Economic Accounts, reported by Headwaters Economics' Economic Profile System, Socioeconomic Trends. 2021.

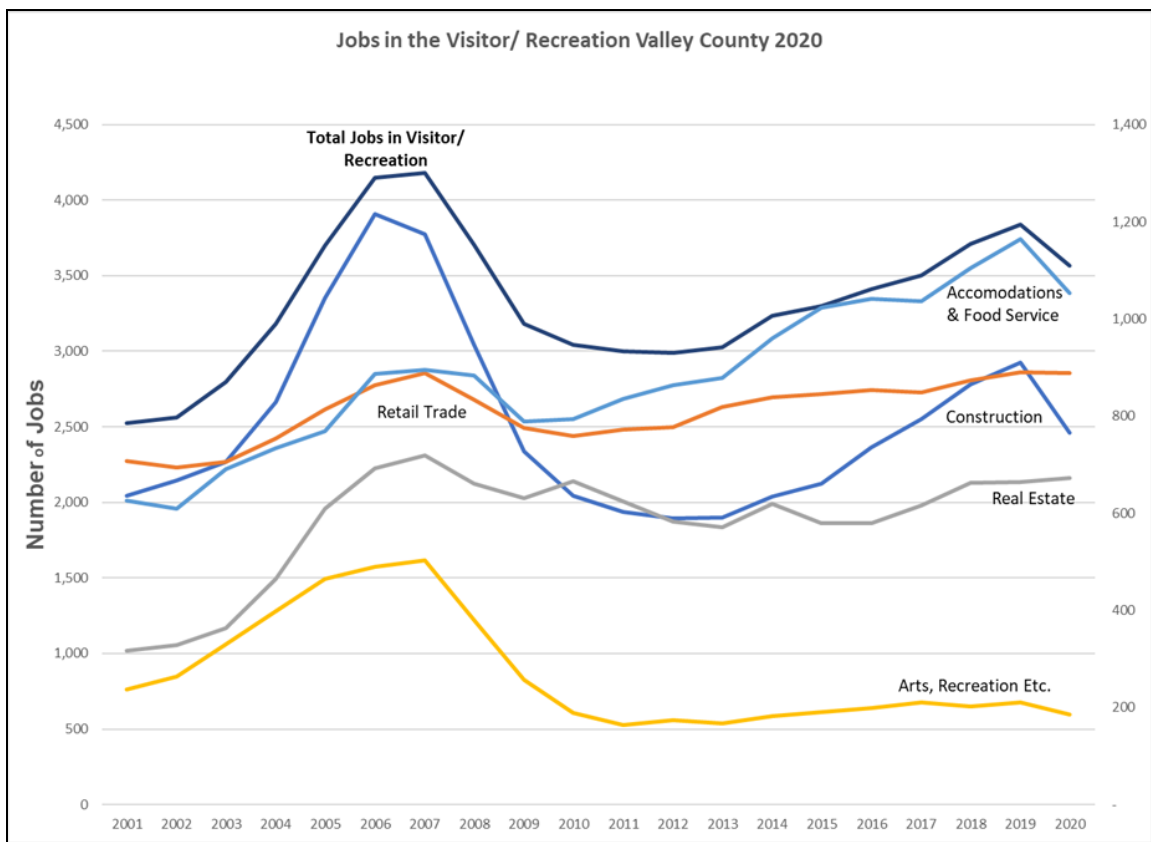
This shift from extracting “goods” from the landscape and processing them into products to be sold into national and international markets was dramatically visible in Valley County and the City of McCall. A “visitor” economy often somewhat mislabeled as “tourism,” was being drawn to this relatively isolated location by the quality of the natural environment and the recreational activities that the natural landscape supported. Defining and measuring the “visitor” or “recreational” components of the economy is difficult because most of the economic activities that served residents also served visitors. The building of new and second homes, expansion of retail trade activities, the development of “food services” and the proliferation of guided recreation firms are some of the economic activities serving both residents and visitors. The growing visitor economy also strengthened and supported the long-run growth the Valley County economy as it ultimately attracted net in-migrants and the economy expanded and became more diverse.

Some of the new economic activity was clearly “visitor-related,” e.g. lodging at hotels, resorts, etc. while “food services,” for instance, served both residents and visitors. Home and business construction also served both seasonal visitors and new “permanent” residents. The same was

true of retail trade establishments. For these reasons, we have approximated the “visitor and recreation economy” by combining accommodations and food service, retail trade, construction, real estate, and art and recreation. These categories have been part of federal economic statistics for some time and collection of this “visitor” economy data has been given more emphasis by the federal “bean counters” in recent years.

Using these economic categories for the “visitor/recreation” economy, the total Valley County jobs in those categories peaked in 2007 at 4,200 jobs. This, not coincidentally, was the peak in the speculative boom that ultimately brought us the Great Recession when it collapsed in 2008. Recovery was slowed by Covid and is now threatened by economic uncertainty across the global economy. See figure 10 below.<sup>13</sup>

**Figure 10.**



Source: U.S. BEA. Regional Economic Accounts, reported by Headwaters Economics' Economic Profile System, Socioeconomic Trends. 2021.

<sup>13</sup> The “Total Jobs in Visitor/ Second Home Economy” are shown on the left vertical axis. All of the sub-categories are shown on the right vertical axis.



## II. Analyzing How the Proposed Mine's Work Force and Supplies Will be Obtained and the Reason This May Limit the Positive Impacts on the Local Economy

In this section we discuss the projected economic impacts associated with the Stibnite Gold Project (SGP). While Power Consulting was able to assess a variety of the local socio-economic impacts of SGP on Valley County, as presented in this study, we find it troubling that issues of HWY 55 transportation, spill risk, local wage scale problems, housing availability/affordability, and general infrastructure concerns were not adequately examined in either the Draft Environmental Impact Statement (DEIS) or the Supplemental DEIS (SDEIS). Public officials, elected leaders, and concerned citizens should not be making decisions about the future of their communities without a full comprehensive impact analysis having been carried out to inform their decisions. Specifically, the analysis that was done in the DEIS and SDEIS socioeconomic sections was largely a 'benefits only' analysis. In this section we will spend some time pointing out many of the different costs that were not quantified and showing why that is important.

Knowing *where* a proposed mine will get its operating supplies and its workers will help to determine what the economic impacts of the mine will be on the local area. If the mine is in a relatively remote setting, as is the case with the proposed Stibnite mine, then it is quite likely that the positive local economic impacts of the mine will be muted on the local area, which in this case is Valley County. The reason for this is that there are fewer economic links between the mine and the local towns that might otherwise supply the mine with the things that it needs to operate. The miners will work two-weeks-on and then two-weeks-off shifts and will live on site, at the mine during their "on" shifts. The mine will procure its supplies for itself and the miners ahead of time and will seek to lower their costs as much as they can. While there are small towns that are slightly closer to the proposed mine, larger cities like Boise are negligibly farther away, and will likely be the source of much of the mine's operating supplies that are purchased. This should not come as a shock to those that live in Valley County, since many of the residents of Valley County use Boise in precisely this same manner. Valley County is not a hub of industrial mining supply and has not been dependent on mining activity for some time. In fact, as we showed in the previous section, mining is not what drives the Valley County economy, and it is not what is driving the growth in Valley County. Valley County had a population of 11,085 in 2020 and 9,846 in 2010. This 12.6 percent increase, representing 1,239 people, is more than 10 times as many people as are projected to move to the local area by the DEIS for the operating phase of the proposed mine.<sup>14</sup> What we want to point out here is that many people are choosing to move to Valley County, and it is because of the current economy, the growth in the Valley County economy, and the natural bounty of the landscape, that they have decided to make that move.

As the previous section of this report documented, according to several economic metrics, Valley County has been doing well for itself in the recent past, and so it should look carefully at a proposed gold mine to make sure that the mine will be compatible with the sources of economic wellbeing that Valley County currently enjoys. In this section we will look at where the impacts of the proposed mine are likely to occur, where the miners and secondary workers for the mine are likely to come from and where they are likely to live, what the impact of the fiscal revenues

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<sup>14</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-21. August 2020.

generated by the mine are likely to be for the local area, and what the impact of having miners living in Valley County, but working such non-traditional shifts, will be.

## 2.1 Where Will the Impacts Be?

In the parlance of economics, 'multipliers' are often offered as an explanation of how any given project may benefit a community from a socioeconomic point of view. Multipliers, as the name suggests, describe the way that money created by a project circulates, or multiplies, in the local or regional economy. The more connected and complete the local economy, the more the local economy can capture and circulate the money created by a project. In this case, the project is the proposed Stibnite mine and the multipliers that have been discussed are associated with the mine workers spending their pay, or not, in the local area (Valley County) and the mine procuring the operating supplies that it needs, or not, from the local area. The higher the multipliers, the more the local area can support the mine by supplying the workers with the things that they need to live as they spend their pay, and the more the mine can procure its supplies from the local economy. The problem with this metric is that there are often very large multipliers for mines when the geography analyzed is very large, i.e. at a state or national level. But when we study impacts on smaller local areas, those multipliers may in fact be quite small. The reason that this is the case is that mines are often located in remote areas that are far from the supplies that a mine and or its miners need.

When economic impact modeling is done, as it was in this case, with a model named IMPLAN, the results are often quite surprising for people. When IMPLAN is used to model a local area, if there is a connection in the area, then IMPLAN will allow that connection to be made. If, for example, there is a gas station in Valley County that sells diesel fuel, then IMPLAN will assume that the mine can and will procure its diesel from that local supplier. The problem with this assumption is that the local supplier is likely incapable of supplying the volume of diesel that the mine will need, and the mine is unlikely to purchase it at a much higher price from the local supplier. The mine will instead attempt to minimize their costs and have the diesel fuel brought in from a regional or national supplier that can give them a much better price and more secure supply. If one is not very careful with the results of IMPLAN, specifically in a small, isolated economy, one can, mistakenly, allow connections that do not have an economic logic to them. We strongly believe that this is the case with the modeling done for the proposed mine. We will not turn this report into a referendum on the application and use of IMPLAN, but we do find it highly suspect that the mine will even procure a modest number of supplies from the very small towns found in the local area.

Valley County may be the site where a lot of wealth will be created, and the physical location of the mine, but it will not retain much of the wealth that is created. Section 4.21 of the DEIS describes the very large multipliers that will be created during the construction period, but it also shows that most of the positive impacts will occur outside of Valley County. For example, if we look at the total spending on the Construction Phase of the project, as shown in Table 2 below, we can see that the local area will be the source of a little less than 9 percent of the spending. The state of Idaho, which includes the local area, will be the source of 34 percent of the spending, and 66 percent of the spending will be from outside of Idaho. Put slightly differently, more than 91 percent of the spending on the Construction Phase will occur outside of the local area.

**Table 2.**

<b>Total Spending For Construction Phase</b>		
	Total Spending (Million)	% Of Total
<b>Local</b>	\$ 28.1	8.6%
<b>State</b>	\$ 110.9	34.0%
<b>Nation</b>	\$ 215.5	66.0%
<b>Total</b>	\$ 326.4	100.0%

Source: USDA Forest Service. Stibnite Gold Project. Page 4.21-8. August 2020.

The spending from the mine, on local supplies, is called “indirect” spending, and the combination of indirect and “induced” spending, where miners spend their direct pay, together represent the multiplier, or secondary impacts, that circulates money in the local area:

“Construction activities are projected to support a total of \$7.4 million indirect and \$3.3 million per year (in 2017 dollars) in induced income within Valley and Adams counties’ economies during the 3-year construction period.”<sup>15</sup>

Based on the quote above, the \$17.4 million in direct wages, created \$10.7 million in indirect and induced income. This would then represent a multiplier of 0.615. In other words, for every dollar spent on direct wages, for the construction of the mine, 61.5 cents of “other” dollars are created. While the multiplier for the U.S. may be very high, perhaps as much as an order of magnitude higher or more, the fact is that the local area will receive only a very small fraction of the total spending during the Construction Phase. If we take this one step further and look at the assumed value of *all* of the minerals that are going to be recovered, which totals into the billions, and all of the local spending (direct, indirect, and induced)<sup>16</sup> on the three phases of the mine, then the local area stands to receive about 8 percent of the value of the minerals that are extracted from the mine.<sup>17</sup> Recall from Table 2 above, that this is quite close to the local spending percentages that are assumed in the DEIS. Put slightly differently, about 92 percent of the wealth that is created at the proposed mine will leave the local area.

In fact, 64 percent of the reported spending in the local area will be based on the direct pay of the miners who are purported to live in the local area.<sup>18</sup> In other words, the vast majority of the spending in the local area will be on the direct pay of the workers at the mine who are modeled to live in the local area. If, as we suspect, most of those workers will not live in the local area, then most of the local area’s *direct* benefits will also leave. Since a large percentage of the multipliers for the local area are associated with the local workers spending their pay from the mine in the local area, this would then take a large percentage of the “secondary” pay out of the

<sup>15</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-6 through 4.21-8. August 2020.

<sup>16</sup> Although we do not believe that Valley County will receive many of these benefits, we are using this as an example of the small percentage of benefits that will come back to the local area.

<sup>17</sup> This is a rather lengthy computation that uses the total spending in the local area from each phase of the Mine (pages 4.21-8,24, and 33), the length of time that each phase operates for, and the assumed volumes and value of the metals produced found on page 4.21-22 of the USDA Forest Service. Stibnite Gold Project DEIS. August 2020.

<sup>18</sup> If one adds all of the direct “local” pay from each of the three phases of the mine, then it represents 64 percent of the total local spending.

local area. The result is that we believe that assuming 8 percent of the value of the mine's production being spent in the local area is a very generous view of things. In our estimation, this value is likely to be only a couple of percent of the total value of the mine, at best.

While we believe that the local spending that is reported in the DEIS is likely too high, the exercise of calculating it is valuable to show that the local area will receive only a fraction of the wealth that is created. There will undoubtedly be many within Valley County who would be happy to have *any* amount of local employment and total spending. However, we feel that it is unlikely that Valley County will even see the meager impacts that are projected in the DEIS. The reason that we think this is that the locals themselves often shop in the greater Boise area. As the McCall 2018 Comprehensive Plan points out:

“McCall gradually lost the traditional economic base (logging, milling, and crop-based agriculture) that drove local wealth in the 20th century. The region now imports most of its goods and services from the Boise metro area. It is paying for these imports with money brought in primarily by visitors, retirees, and the Forest Service.”<sup>19</sup>

This makes economic sense. There is a large metro area (Boise) that is a little more than two hours away from McCall. While the residents of McCall likely do some of their shopping locally, for example when someone runs out of cream for their coffee, or eggs for breakfast, then the local store is the obvious choice. But given time to plan, many local people will plan to shop in Boise which has a more varied selection and cheaper prices. The same is true of the mine and the operating supplies that it will procure from the local area. It is certainly *possible* that the proposed mine may purchase some of its supplies in Valley County when they are in a bind, but generally they will plan to purchase them from a vendor that has cheaper supplies and a more varied selection. The other side of this basic argument is that Valley County does not have the ability to supply the proposed mine with many of its needs. Valley County, for example, does not produce mining equipment; nor is it a retail supplier of such equipment. Similarly, Valley County is not likely to be a competitive wholesale diesel supplier at the volumes that the mine will be purchasing. Remember that the ability to circulate money in the local economy is directly related to the local economy's ability to provide for the needs of the mine and/or mine workers. When those mine needs are very specialized, for example, mining supplies in rather large volumes such as explosives, various chemicals, mining, and chemical engineers, etc., it is easy to see why the multiplier impacts will be low.

This is the problem with relying on a model, like IMPLAN, which was used to model the impacts of the mine for the DEIS. The model assumes that because something *can* be purchased in the local area, that it will be. In practice, we find that it is unlikely that many of the supplies that are assumed to be purchased from the local area, namely Valley County, in the IMPLAN modeling, will be purchased there. Given the large volumes of supplies and the time to plan, the mine will choose to import supplies from the greater Boise metro area, or the U.S., or even the world. Remember that we are discussing the purchase of more than \$260 million in materials, equipment, and services for the construction of the mine.

To a large degree, the same can be said about the potential for locals to work at the proposed mine. While some of the mine construction and operation jobs can be filled by locals that have

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<sup>19</sup> McCall in Motion: 2018 McCall Area Comprehensive Plan. 2018. Page 74.

some construction experience, for example, Valley County is unlikely to have many unemployed mining engineers and hard rock geologists sitting around unemployed, waiting to find employment locally. For a host of reasons, including the very low unemployment rate in Valley County, the cost and availability of housing, the work schedule of the proposed mine, and the availability of workers in a County with relatively few residents, it is unlikely that many locals will be hired and unlikely that many of the proposed mine workers will relocate their residence to Valley County. Next, we will discuss why we believe that to be the case.

## 2.2 What is Local and Who is Likely to Live in the Local Area?

The boundaries of the physical area that is the economic impact study area is extremely important in determining the results of the study. The DEIS and the subsequent studies that it was based on are no different. If, for example Boise had been included in the “local” area for the DEIS, it would have dramatically skewed the results. The reason for this, as was discussed earlier, is that Boise can capture and circulate far more mine and worker spending than a small rural town in Valley County can. For *this* study, we have designated Valley County as the “local area”. For the DEIS, it was Valley and Adams Counties<sup>20</sup> which is an acceptable alternative. Either of these *might* be appropriate, although we choose to focus on a narrower geographic area, and the county that would be the site of the mine. What is important is that the socioeconomics are described in a way that the people who will see the impact of the proposed mine, the locals, get a clear view of what may be in store for them. As we have already pointed out, the state of Idaho or the U.S. might well enjoy the benefits of the proposed mine, but they will not have to deal with the potential costs of the mine. Here we choose Valley County because it is where many of the projected impacts will take place. For example, it is the source of most of the DEIS’s 100 local people projected to be hired for the mine work and the site of 100 others moving into the local area to work at the proposed mine.

“Under the mid-value scenario, SGP [Stibnite Gold Project] operations would provide employment for 470 *Idaho* residents, of which 200 would live in *Valley County or Adams County*. As shown in the DEIS Table 4.21-3, it is expected that about 100 of these jobs could be filled by workers relocating to such a local two-county area.”<sup>21</sup>

In this scenario there will be 100 local people working at the proposed mine and there will be 100 other mine workers that relocate to the local area. While this is possible, there are some compelling reasons to believe that neither of these scenarios will come to pass. First, when discussing the 100 locals that will work at the mine, which is slightly more plausible than some of the other reasons we will examine next, the unemployment rate is quite low in Valley County. The DEIS they assume that:

“It is expected that most of the local construction workers would be adequately qualified and/or trainable for mine operations work and that many construction workers living locally or elsewhere within Idaho would likely accept mine operations jobs.”<sup>22</sup>

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<sup>20</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-1. August 2020.

<sup>21</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-21. August 2020.

<sup>22</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-21. August 2020.

While this is a fine *idea*, the reality is that there are not enough “construction workers” in the local area to accomplish this. Looking at the 5-year American Community Survey (ACS) data from the Census for Valley County, there are 523 construction workers. It is possible that 100 of them will either quit and work at the mine or are already unemployed. However, that will only put upward pressure on the need for construction workers, and it is unlikely given the unemployment rate in Valley County. According to the St. Louis FED, the unemployment rate for Valley County was 3.1 percent in August of 2022.<sup>23</sup> Looking at the ACS data for Valley County there were 4,940 workers that worked between 1 and 52 weeks.<sup>24</sup> Combing the St. Louis FED and ACS data yields 153 available workers that are unemployed for the *whole* of Valley County. It is unlikely that *all* the unemployed people in Valley County are construction workers and is instead much more likely that somewhere around 16 of those 523 construction workers are unemployed, given the 3.1 percent unemployment rate. It seems unlikely to us that two-thirds of the unemployed people in Valley County will be qualified to work in the proposed mine. There is, of course, the possibility that the construction workers in Valley County will go to work for the mine in place of the jobs that they already have. If this happens then there will be a ripple effect through the construction industry as it will be harder to get people to do the construction jobs that they previously had been doing. All of us are now familiar with the different shortages of workers and supplies that is a result of the global Covid pandemic. This would only add to the current construction delays that are plaguing the U.S. and Valley County.

What is far more likely, is that the mine workers will simply come from outside of Valley County. The reason that we believe this, aside from the lack of available workers that we already discussed, is the work schedule of the mine. The mine will house people on site and will have them working two weeks on and then two weeks off. The mine will also be providing a shuttle service that runs from the Boise area which is a little more than a two-hour drive from McCall:

“...non-local communities closer to Boise would offer greater housing options, amenities, and public services options within a relatively close travel distance (i.e., less than 2 hours) from the proposed employee bus/van pool pick-up locations in Cascade, McCall, and Donnelly (Highland Economics 2018).”<sup>25</sup>

Given that the mine workers will be commuting back from the mine every two weeks already, an extra two hours, or so, past the small-town pick-up locations does not seem like a terrible burden. It is, in fact, very likely that many of the mine workers will travel back to an airport like Boise and fly home to their residence somewhere other than Boise.

A complicating factor in all of this is that even if the local area was able to provide the workers for the mine, the 100 in-migrants that are projected to work at the mine will have a hard time finding housing. That is because Valley County does not have a lot of idle houses that are available to rent and or purchase. At first glance it may seem that this is not the case since the ACS data indicates that there are far more vacant houses than occupied houses in Valley County.<sup>26</sup> In fact, that data says that there are 8,621 vacant houses and only 3,920 occupied houses indicating that about 69 percent of all the housing in Valley County are vacant. However,

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<sup>23</sup> FRED. Unemployment Rate in Valley County, ID. Sep. 2022.  
<https://fred.stlouisfed.org/series/IDVALL5URN>

<sup>24</sup> Census. American Community Survey. 5 year estimates. Valley County.

<sup>25</sup> Stibnite Gold Project DEIS. Pages 4.21-9.

<sup>26</sup> U.S. Census. American Community Survey. 5 year estimates. Valley County.

if one travels to Valley County, you will notice that those vacant houses are second homes or vacation homes to which people from the surrounding area are very attached. That same ACS data shows that there were 91 houses for rent and 68 houses that were for sale. Again, it is possible that the 100 proposed in-migrants will purchase *all* 68 houses available and then rent 35 percent of the available houses, but this seems unlikely. Given that the median home value in Valley County in 2020, expressed in 2021 dollars, according to the ACS was more than \$321,000,<sup>27</sup> which is about 34 percent more than the U.S. as a whole and about 14 percent more than Boise, it seems like a pricey option for potential miners to choose Valley County over Boise or the U.S. as a whole. In the DEIS, a rather fun idea is presented to get around the lack of available housing in Valley County. The idea is that it may be possible that the new in-migrant mine workers will be former residents of Valley County and that they will simply go back to living where they did in Valley County before! However, we find this suggestion speculative and unconvincing.

“Some in-migrants may be former local residents who may reside with current residents when they return.”<sup>28</sup>

And...

“Coupled with an increased prevalence of multi-generational households, a sizeable number of the in-migrating population may take up residence with friends or relatives that are existing residents and thereby have a lesser impact on local housing demand (Highland Economics 2018).”<sup>29</sup>

What we find convincing is that the people that work at the proposed mine will choose to live outside of Valley County. If they do choose to live in Valley County, then the residents of Valley County will see the available houses for sale go to near zero and the price of housing and rent increase. That has the potential to make Valley County an even less affordable place to live. Remember from Table 1 above that the number one industry in Valley County is “accommodations and Food Services.” The problem with this is that this industry is also one of the lowest paid industries in Valley County. This necessarily means that increases in the price to rent or buy a home in Valley County will impact Valley County’s largest group of workers the most.

Because there is a lack of available workers, because of the working shifts at the mine provide ample time off to travel back to wherever your home might be, and because there is not very much available housing and that housing that is available is expensive, it is unlikely that Valley County will be the residence of the mine workers. The Special Economic Report that was produced as part of the Supplemental DEIS process also points out that the house rental market in Valley County is becoming less affordable:

“Conversely, median rental rates increased in Valley County by 4.5 percent (\$727 in 2010 to \$760 in 2018) ... Between 2010 and 2018, the percentage of Valley County households paying more than 30 percent of their household income on rent grew from

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<sup>27</sup> U.S. Census. American Community Survey. 5 year estimates. Valley County.

<sup>28</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-12. August 2020.

<sup>29</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-12 and 13. August 2020.

33.5 percent to 59.1 percent (Census 2010, 2018b). This increase indicates that the local rental market is becoming less affordable”<sup>30</sup>

## 2.3 Fiscal Revenues

Often, when a mine is sited in a rural area, the communities around the mine are encouraged by the mining company to think about all the desirable things that the local communities could do with the new tax revenue that would flow to local governments from the mines. The picture that is often painted is of local municipalities with coffers that suddenly overflow with tax revenue from the new mine. However, depending on the way that the taxes are structured, it may be very important to see how the taxes are allocated to other beneficiaries even if they are collected by the local governments. There are some taxes, for example, a general sales tax and its redistribution in Idaho, that is distributed to communities largely based on population.<sup>31</sup> This is important to understand because although there may be an increase in the collection of a sales tax, the distribution of that sales tax may not be representative of a change in the physical place where it is collected. Boise, for example, will see a far larger benefit from a mine buying supplies in Valley County, with respect to the sales tax, than those in Valley County. Valley County should also think about the potential increase in the demand for services that it might see directly or indirectly. While it can be very lucrative, for example, for a rural county to have a new metal mine, there may be a series of costs that come with the mine and its impacts. For example, what will be the impact on the roads, the schools, the EMS services, etc.? It would be important to be able to weigh the cost of the new mine in terms of the services local governments would have to provide to them. Directly or indirectly the mine would impose costs on the County, that the County would have to be able to pay for out of the new revenue that the County stands to gain from the mine. In this case, for Valley County, there appear to be no local fiscal benefits from the construction phase of the mine at all.<sup>32</sup> All of the projected taxes are state or federal. For the operations phase of the proposed mine there is \$300,000 annually paid in property taxes<sup>33</sup> which will go to the local government, but all the other taxes are state and federal taxes. These cold facts are summed up in the DEIS:

“As a result, Alternative 1 construction activities are expected to result in negligible tax revenue benefits for the local area’s economy.”<sup>34</sup>

With respect to the \$300,000 in property tax that is paid annually by the proposed mine during the operations phase, we must remember that there is a cost that the mine is imposing on the local area. There is likely to be an increase in use of Emergency Medical Services (EMS), roads, schools, etc. The important question is then *if* the property taxes that are paid by the mine will offset the costs that the mine imposes on the local area. This point is made in the DEIS, but not explored.

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<sup>30</sup> USDA Forest Service. Stibnite Gold Project: Social and Economic Conditions Specialist Report. Page 19. August 2022.

<sup>31</sup> State of Idaho. Title 63: Revenue and Taxation, Chapter 36, Sales Tax. <https://legislature.idaho.gov/statutesrules/idstat/title63/t63ch36/sect63-3638/>

<sup>32</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-17. August 2020.

<sup>33</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-26. August 2020.

<sup>34</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-18. August 2020.



“The extent that the SGP- (Stibnite Gold Project)- related increase in local tax revenues would result in a net benefit to Valley County’s public services would depend on the extent that they offset increases in costs to provide public services.”<sup>35</sup>

Given that the Valley County budget for fiscal year 2021 is about \$23.5 million,<sup>36</sup> this increase in property tax revenue would represent 1.3 percent of the County budget. If we look at total property taxes that were collected in Valley County in 2019, the most recent year available, then we see that a little more than \$7.8 million was collected.<sup>37</sup> In this setting, the property taxes paid by the proposed mine would then represent a little less than a 4 percent increase. Neither of these metrics are negligible additions to the Valley County budget, but neither of them represents very large changes to the budget either. Without a careful accounting of how many people are likely to move into town and their impacts on the local systems, all that we can say with certainty is that the fiscal benefits are likely to be small, and the costs associated with the mine on Valley County are largely unknown.

To try and elucidate the uncertain net impacts of the proposed mine on the local government’s fiscal balance we can look at some of the basic costs that a new resident might put on Valley County. The first cost that one might consider is that of schools. In Idaho, which spent the least amount on school per pupil, *in the country*, for fiscal year 2021, the state spent \$8,376 per student.<sup>38</sup> The \$300,000 per year in projected property taxes could then cover about 36 of the in-migrant miners’ children attending school. The question is then, of the workers that will move into the local area, how many will have children of school age? The DEIS takes a guess, but does not then incorporate the cost of school into their analysis:

“The public school system within the local area consists of several independent school districts located in McCall, Donnelly, Cascade, New Meadows, and Council. Under the mid-value worker residency scenario for Alternative 1, it is projected that up to 121 children may relocate to the local analysis area. In which case, the potential increase in school enrollment demand would be approximately 80 students (Census 2015; Highland Economics 2018). If these new students are evenly distributed across grades, then the average enrollment increase per grade would be approximately six additional students in each grade.”<sup>39</sup>

If we believe that 80 students is the right number, then this will cost Valley County more than \$670,000, which is significantly more than the increase in property taxes that the proposed mine

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<sup>35</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-26. August 2020.

<sup>36</sup> Valley County. Proposed Valley County Fiscal Year 2021 Budget. August 2020.

[https://www.co.valley.id.us/media/Departments/Clerk/Budgets\\_Audits/Budget/FY2021/Publish-Revenue-Fiscal-Year-2021.pdf](https://www.co.valley.id.us/media/Departments/Clerk/Budgets_Audits/Budget/FY2021/Publish-Revenue-Fiscal-Year-2021.pdf)

<sup>37</sup> Valley County, Idaho. Report on Audited Basic Financial Statements and Supplemental Information. 2019. Page 7.

[https://www.co.valley.id.us/media/Departments/Clerk/Budgets\\_Audits/Audits/2019-Valley-County-Audit-1.pdf](https://www.co.valley.id.us/media/Departments/Clerk/Budgets_Audits/Audits/2019-Valley-County-Audit-1.pdf)

<sup>38</sup> Thorington, J. Idaho again ranks last in education spending per student. Idaho Post Register. 5-11-2022.

[https://www.postregister.com/news/local/idaho-again-ranks-last-in-education-spending-per-student/article\\_4035d895-223a-58ba-8f36-796c3aa47d6e.html#:~:text=According%20to%20the%20report%2C%20Idaho,the%20national%20average%20of%20%2414%2C360](https://www.postregister.com/news/local/idaho-again-ranks-last-in-education-spending-per-student/article_4035d895-223a-58ba-8f36-796c3aa47d6e.html#:~:text=According%20to%20the%20report%2C%20Idaho,the%20national%20average%20of%20%2414%2C360).

<sup>39</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-15. August 2020.

will pay.<sup>40</sup> Put another way, those 80 students would take up all the property tax money that is gained due to the presence of the mine in Valley County, and then some, and leave none for the other services which will have added costs because of the population increase. If those students, instead of being evenly distributed in each grade level, are more clustered in similar grade levels, then the County may have a harder time accommodating them.

“Furthermore, if the in-migrating student population consists of more similarly aged children, then the increase for their corresponding grades would be higher and more likely to be difficult for the local school systems to accommodate. If this occurs, the adverse impact on the public school system could be very substantial if the current programs and facilities have insufficient capacity to absorb that additional student enrollment.”<sup>41</sup>

One could try to make the argument that an individual’s taxes cover the cost of children in school, but this is almost never the case. Our system is set up so that the whole of our society helps pay for the education of our children as a societal good. We wholeheartedly believe in this philosophy, but it does not discount the fact that if an additional 80 children are enrolled in Valley County schools, there will be an increased cost to Valley County residents. Funding of schools in Idaho is rather complex, but the largest portions of the state funds come from the property tax and sales tax<sup>42</sup> that are paid by residents of Idaho. In Valley County, which we already mentioned, the average home price is about \$321,000 which equates to a property tax of around \$1500 annually.<sup>43</sup> While digging into the sales tax part of this equation, since it largely runs through the state government and then is redistributed to the county and local governments, our point is the same. The individual taxes that are paid by the potential in-migrating miners will not cover the added cost to the schools. Finally, with respect to schools, which the last DEIS quote alludes to, there will likely not be enough room in the school systems for the additional 80 school children, which dramatically increases the potential costs. While we will not speculate on the cost of renovating or adding classrooms to the existing school systems

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<sup>40</sup> Although this is meant as an exercise to show that there are lots of undisclosed costs associated with the proposed mine, this is a rather tough task to complete with any fidelity. Although it is likely beyond the scope of this report, we have looked into this as deeply as we thought necessary. In a more nuanced look, it appears that McCall/Donnelly School district spends about \$11,538 per student per year according to Idaho ED Trends. [http://www.idahoedtrends.org/schools/173?question\\_id=2](http://www.idahoedtrends.org/schools/173?question_id=2) If we then look at the average spending in Idaho per student, which is broken into State and Federal dollars, which are constant, and local dollars, which are not constant, we can see that McCall/Donnelly spends more than the average county, likely because of their slightly larger school mills according to Idaho ED Trends and “How Schools are Funded” from the Panhandle Alliance for Education. Following this thread, we can see that, if we accept McCall/Donnelly as a proxy, about \$5,371 per student is paid by resident through property taxes. This would then assume that the \$300,000 in increased property taxes would help to fund an additional 56 students and not, as we have stated above 36 students. However, aside from this being a rather circuitous route that is hard to follow, there are some assumptions that must be made to come to this calculation and in the end the numbers are relatively similar, so we will stick with the calculations in the main body of this report which are far easier to understand.

<sup>41</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-16. August 2020.

<sup>42</sup> JA and Kathryn Albertsons Foundation. Five questions about education funding in Idaho. Page 22. [https://dontfailidaho.org/pdf/JKAF\\_Rethink-Id-Ed-Funding.pdf](https://dontfailidaho.org/pdf/JKAF_Rethink-Id-Ed-Funding.pdf) and Panhandle Alliance for Education. How Idaho Schools are Funded. <https://panhandlealliance.org/how-idaho-schools-are-funded/>

<sup>43</sup> Idaho State Tax Commission. Estimated Property Tax. <https://tax.idaho.gov/i-1072.cfm>

to accommodate the children of the miners, it would be far more expensive than simply accommodating them in the existing school infrastructure if the capacity is available.

The reason that we looked a little deeper into the school issue as it relates to the additional cost of in-migrating miners, is to show how little of the costs have been quantified in the DEIS or by Perpetua Resources. We have already shown that the additional property taxes will not cover the cost of the additional students enrolled in school. This does not address all the other costs that Valley County will incur if hundreds of new miners move in. For example, it does not cover the cost of the damage that will be done to the roads in Valley County as all the heavy mining equipment and supplies for the mine pass through. The state of North Carolina looked at all the highway cost allocation studies that they could find and summarized them in their own cost allocation and revenue attribution study, and found that, in all of the State sponsored studies that they could find, heavy trucks, like the ones that will move equipment and supplied through Valley County, going to and from the potential mine, underpaid their incremental costs significantly.<sup>44</sup> The studies specifically noted that the heavier the vehicle, the more they underpaid. In Oregon, the underpayment was as much as 66.87 percent, in Nevada it was 73 percent, in Texas it was 35-49 percent, and in Idaho it was 27-33 percent. In every state study that was presented, the heavier the haul truck, the more they underpaid for the damage that they did to the roads. The corollary is obvious here, but we will lay it out to be crystal clear: The state of Idaho and Valley County will incur road damage from Stibnite bringing in the things that the mine needs to operate and the concentrate that the mine ships back out. The fees that the mine will pay will not cover the cost of those damages. This does not consider the potential for increased traffic accidents with large trucks, increased congestion in Valley County, or the nuisance of having thousands of large trucks constantly travelling through Valley County. It will also not cover the nuisance in the back country that is the attraction that the visitors and local recreationalists seek. These are some of the costs associated with the proposed mine that should have been discussed and quantified in the DEIS. There will undoubtedly be additional costs to the police, the fire department, the hospitals, the sewers, the roads, the telecommunications, etc.:

“The population increase under Alternative 1 would likely result in limited effects to local police and fire protection services. Adams and Valley counties’ telecommunications and internet infrastructure operate at near capacity and, therefore, may have difficulty in maintaining service levels from increased service demand in some locations.

Public service impacts under Alternative 1 would depend on both the location of any SGP-related population growth and the specific circumstances of the affected public services. It is possible that adverse public service impacts could occur to the local analysis area’s water and public school system, particularly if in-migrants are more highly concentrated in individual communities such as McCall (though this is hard to predict). In which case, there could be substantial adverse impacts to those public services.”<sup>45</sup>

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<sup>44</sup> Hasn, M. at et al. North Carolina Highway Cost Allocation and Revenue Attribution Study. North Carolina Department of Transportation. NCDOT Project 2019-14. September 2021. Page 20, table 2.4

<sup>45</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-16. August 2020.

In the above discussion of the potential impacts of the proposed mine we are not “talking out of both sides of our mouth.” We would like to be very clear about this. Although we do not think that most of the miners will reside in Valley County, and, in fact, think that only a fraction of the hypothesized 200 miners will live in the local area, if they do find affordable homes there, they will bring a rather large cost to Valley County that is not offset by the small increase in Property Tax.

There are other potential costs associated with the siting of large industrial facilities in a “small town, rural area,” other than the potential overuse of public and private infrastructure that then requires higher regular repair and maintenance costs and, possibly earlier replacement. Just as population growth could lead to the demand for housing to rise faster than housing supply, driving housing costs up, raising the local cost of living, something similar can happen when a large increase in the demand for workers is created by a large new industrial development.

The projected gross wage that Perpetua expects that it will be paying its Stibnite Mine work force will be about \$91,000 per year.<sup>46</sup> This is far in excess of the prevailing wage in Valley County, even the prevailing wage for mining jobs in Valley County<sup>47</sup>. The SDEIS reports on the average wages by industry in Valley County using the Idaho Department of Labor data. The average wage across 12 different industries in Valley County was about \$36,000 per employee. The average wage in Mining was about \$80,000, over twice as much.<sup>48</sup>

Perpetua will be seeking its workforce for the proposed mine from local, as well as regional, and national, labor markets. This will, in effect, set up a competition for skilled workers within Valley County and the surrounding labor markets within commuting distance of the mine. Both government agencies and private businesses will find that some of their more capable employees will be attracted by the much higher wages that Perpetua will be offering potential employees. To retain their current work team, government agencies and private businesses will have to pay higher wages or accept less productive employees. This will increase the operating costs of organizations or reduce their productivity. For local government organizations that are already likely to be stressed by the increased usage of the infrastructure for which they are responsible, this will be a double cost burden.

Labor cost increases could adversely affect the capacity for public agencies that rely on lower paid, skilled workers for their operations (i.e., school bus drivers, garbage haulers, etc.) to continue providing their services. In addition to increasing their operating costs, in more serious cases, the labor shortages could result in business contractions and reduced public services if their work positions remain unstaffed. Contraction also could occur for private businesses relying on lower-wage or competing wage workers.

The DEIS and the socio-economic report that much of Section 4 of the DEIS is based on, clearly believe that the miners will move to the local area. What we are attempting to do here is to say

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<sup>46</sup> “Social and Economic Conditions Specialist Report,” Supplemental Draft EIS, p. 38. “The “fully burdened compensation of all SGP employees (i.e. including management staff) is calculated to be \$90,600 in 2017 dollars.”

<sup>47</sup> The average mining wage for miners in Valley County was about \$79,000 while Stibnite estimated its mining wages for its proposed operation would be about \$91,000, about 15 percent higher. The Perpetua average included company management staff in addition to miners.

<sup>48</sup> Ibid., p. 21, Table 6-8. All values in 2018 dollars.

that we do not find much evidence to support this, but if it happens, the costs, which are largely unreported, will be far larger than the benefits, which have been reported by Perpetua and the Stibnite DEIS. While we will not attempt to explicitly quantify the costs of having the miners move to Valley County, we will continue to lay out some of the social costs associated with having them in Valley County. We feel that this is important so that the local people of Valley County know exactly what is being proposed for their communities.

## 2.4 Social Issues

While some of the impacts of the potential miners living in the local area are possible to quantify, many are not. For example, if we knew how many of the miners were moving to the local area, and if we knew how many of them had kids of school age, then we could quantify the cost of having the additional children in the schools in Valley County. This potential cost to Valley County was noted, but not quantified in the DEIS. As quoted above:

“Furthermore, if the in-migrating student population consists of more similarly aged children, then the increase for their corresponding grades would be higher and more likely to be difficult for the local school systems to accommodate. If this occurs, the adverse impact on the public school system could be very substantial if the current programs and facilities have insufficient capacity to absorb that additional student enrollment.”<sup>49</sup>

What is more difficult to quantify is the impact that the mine may have on the social fabric of Valley County. The proposed mine represents something of an anomaly for the local area. The miners will be living at the mine site for 2 weeks at a time in what are often referred to as a “man camp”. When the workers two weeks of work are up, they will be bussed back through the local area, and, if you accept the numbers in the DEIS, hundreds of them will live in the local area. While we believe that most of them will live either in the greater Boise area or elsewhere in the U.S., it is instructive to look at some of the social issues associated with miners living in local communities.<sup>50</sup>

With a well-paid, predominantly young, male workforce, with weeks at a time off work, there are some social problems that can be expected to accompany this type of industrial development. If we assume that two hundred mine workers take up residence in Valley County, they will be outsiders by virtue of their odd schedule, even before they may or may not engage in some of the other social maladies are considered in the text below. Working away from your community, and for some workers, their family, for two weeks, and then not working and living in the community for two weeks, is not a schedule that most people would want to keep. Adding in a higher-than-average pay, a predominately young male demographic, and a culture that is created in a remote camp for weeks at a time, necessarily separates the workers from the other people that call Valley County home. In fact, there are other places that have dealt with this for some time that we can look to and see how they fared with similar mining work, demographics of workers, and similar work schedules. Places like the Bakken in North Dakota and Montana and remote mining locations in Canada and Australia provide a “natural experiment” to study the

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<sup>49</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.21-16. August 2020.

<sup>50</sup> For a review of the socioeconomic studies of the impact of mining “man camps” on rural communities, see Kerry Carrington & Margaret Pereira, 2011 “Assessing the social impacts of the resources boom on rural communities,” *Rural Society* 21.1.2.

impact of this type of transient workforce. There are many important social issues associated with mining in rural areas that have significant impacts on the well-being of residents and communities, and workers, e.g., increases in alcohol and drug consumption, increased pressure on local law enforcement, increased incidence of sexual and aggravated physical assaults, increased presence of convicted felons, etc. These impacts will not show up in the typical commercial statistics on jobs and income that are typically used to document the benefits of expanded mineral extraction, but these social changes can have substantial impacts on resident well-being. These impacts can be felt as workers move to the local area to work for the mine, but they can also be felt when the mine shuts down, as pointed out in the Social and Economic Conditions Specialist Report from the Forest Service that was part of the SDEIS.

“However, as discussed above, in the absence of interim measures, there would be potential for substantial “bust” impacts following the cessation of the SGP’s mining operations from the subsequent local job and income losses. If there are insufficient replacement job opportunities for the local residents no longer employed (directly or indirectly), then the local area economy would experience increased unemployment and reduced economic activity. Depending on the severity and duration of the economic dislocation and recovery, many of the local residents formerly employed (direct or indirectly) by the SGP’s mining operations may choose to relocate out of the local area to find employment.”<sup>51</sup>

An increased population requires the police and other social services providers to do more work. While this is likely happening already in Valley County, as the population has been expanding rapidly for at least the last 30 years, it is likely that a new population of miners in Valley County might put a larger strain on EMS than the in-migrants of the last 30 years. Archbold studied this in “Policing the Patch”, where “the Patch” referred to the Bakken “oil patch” on the North Dakota-Montana border.<sup>52</sup> In that study Archbold reported that 80 percent of the police officers interviewed said the oil boom had affected their work. While the impacts were many and varied, the most basic impact was that the officers were called out for service significantly more than they had been before the oil boom in the Bakken. In fact, “...Four out of the eight police agencies included in this study have had triple the number of calls for service since 2008. One agency had double the number of calls for service...”<sup>53</sup> Police get called out on all sorts of service calls, but the basic fact that the Bakken area had 2-3 times the service calls to the police during the oil boom points to something in the community dramatically changing. Whatever changed, it was serious enough that residents asked the police for assistance much more often than they previously had. That there was an increase in violent crime in the Bakken mirrors directly the experience in the Marcellus Shale region of Pennsylvania which saw a 30 percent increase in violent crime as the unconventional gas boom developed there.<sup>54</sup> The same sort of story is told in Australia where mining towns in Queensland experienced rates of violence

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<sup>51</sup> USDA Forest Service. Stibnite Gold Project: Social and Economic Conditions Specialist Report. Page 41-42. August 2022.

<sup>52</sup> Archbold, C. Policing the Patch: And Examination of the Impact of the Oil Boom on Small Town Policing and Crime in Western North Dakota. *Police Quarterly*. 2014.

<sup>53</sup> Archbold, C. Policing the Patch: And Examination of the Impact of the Oil Boom on Small Town Policing and Crime in Western North Dakota. *Police Quarterly*. 2014.

<sup>54</sup> Komarek, T. Crime and natural resource booms: evidence from unconventional natural gas production. *Annals of Regional Science*. 2017.

to which police responded increased between 1.4 and 2.3 times the state average at the five different mining communities studied.<sup>55</sup> While no two communities are identical, the added presence of a significant number of new mine workers is likely to increase the service calls to the police and other public social services, and there will likely be a rise in the number of assault cases.

Much of the literature on mining camps and mining town maladies attempts to draw a correlation between community dependence on mining and alcohol and other drug use and abuse. In the Northwest Territories of Canada, which have seen a large increase in mining in the last decade, Gibson has quoted the Royal Canadian Mounted Police (the RCMP): “The RCMP estimates that 80% of crime is directly or indirectly related to alcohol or drug abuse.”<sup>56</sup> In the United States, in fact, mining has had the top billing as the drunkest industry. According to Bush:

“Workers in the mining (17.5 percent) and construction (16.5 percent) industries had the highest rates of past month heavy alcohol use.”<sup>57</sup>

This was the second time in a row that mining had topped this list of industries by level of alcohol use. While we might be tempted to think that this was just a U.S. problem, studies focused on mining-impacted communities around the world show that heavy alcohol use is a common problem no matter where the mining town is located.

The influx of strangers into areas experiencing a mining boom may undermine existing community’s social controls on resident behavior and create an environment attractive to those with a history of criminal behavior. One study of energy development in the Greater Yellowstone region found that the number of Registered Sex Offenders grew about 2-3 times faster in counties dependent on oil and gas extraction relative to those dependent on recreation or agriculture.<sup>58</sup>

One should not be shocked by these findings. A large group of relatively young, single, transient, males, generally unburdened by families, who work long and demanding hours out of sync with the local standard work week, who have a large amount of money to spend and long blocks of idle time, are not likely to make good neighbors without significant public planning and provision of support services. While the miners’ barracks or man- camps may indeed be “dry” in the sense that alcohol is banned on mining company property and the mining company may have very stringent rules about what the miners can and cannot do when on company property, the same rules cannot, and likely should not, be applied to towns in the vicinity of the mine when the miners are on their own time pursuing their private interests. Many of the cultural dislocations that they acutely experience are felt throughout mining towns all around the world. Parkins recognized those experiences in his paper on social structure, fragmentation, and substance abuse in resource-based communities:

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<sup>55</sup> Carrington, K. The resource boom’s underbelly: Criminological impacts of mining development. *Australian and New Zealand Journal of Criminology*. 2011.

<sup>56</sup> Gibson, G. Canada’s Resilient North: The Impact of Mining on Aboriginal Communities. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health* 3(1).

<sup>57</sup> Bush, M. Substance use and substance use disorder by Industry. The CBHSQ Report from the National Survey on Drug Use and Health. April 2015.

<sup>58</sup> Berger, J. Sexual Predators, Energy Development, and Conservation in Greater Yellowstone. *Conservation Biology* 24(3):891-896. 2010.

“Specifically, the linkages between social structure, community fragmentation, and family dysfunction offer a way of understanding differential resistance and susceptibility to substance abuse. Five thematic areas were linked to susceptibility in this study: (1) an economy based on multiple divergent sectors, which gives rise to income disparity and social inequality; (2) a highly transient population, which results in social distancing and lack of social support; (3) shift work, which prevents opportunities for consistent and productive family and community relationships; (4) high incomes, which lead to material competition and financial stress; and (5) a culture of entitlement, which produces certain expectations and perceived privileges among some workers and their families.”<sup>59</sup>

These “thematic” areas are exactly those that must be carefully considered when evaluating the social impacts of mining. It is the combination of these social impacts that leads a mining town, or a man camp, or the local area around a mine to become separated from the mine workers and leads to social dysfunction. A separate culture is created by the mine that, because of its structure, work scheduling, its pay, and the diverse cultures of its workforce, may not fit well with the existing residents of the towns and cities that are closest to the mine. The results are the specific social maladies discussed above. In this report we are not attempting to say that if the Stibnite mine is developed, then Valley County will be overrun by menacing mine workers. We are trying to point out that there will likely be an increased need for many of the services that Valley County provides. These services include emergency medical services, the police, and various social services that should all come together and plan to help mitigate some of the social maladies that are associated with mining which we discussed above. There will be increased time, money, and energy that needs to be spent in Valley County to accommodate the rather unique workforce that could be the Stibnite mine.

### III. Amenity Values and Community Perception

#### 3.1 Net-Migration, Amenities, and Local Economic Vitality

For several decades economists and economic development analysts have puzzled over the fact that among rural American counties, where slow economic growth and loss of population have usually been the rule, there have been a significant number of rural counties showing considerable local economic vitality in the form of population growth tied to net in-migration. Often that population gain has taken place despite the decline in the fortunes of the land-based economic activities that historically dominated the local rural economy: mining, agriculture, forest products, fishing, etc.<sup>60</sup> Clearly, people, voting with their feet, were indicating a more positive evaluation of the economic potential of some of these rural counties that were attracting in-migrants, often to some of the poorest areas of the nation.

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<sup>59</sup> Parkins, J. Linking social structure, fragmentation, and substance abuse in a resource-based community. *Community work and family*. 2011.

<sup>60</sup> For a review of the economic literature dealing with “The Economics of Amenities and Migration” see Garber-Yonts, Brian E. *The Economics of Amenities and Migration in the Pacific Northwest: Review of Selected Literature with Implications for National Forest Management*. 2004. United States Department of Agriculture, Forest Service, Pacific Northwest Research Station, General Technical Report, PNW-GTR-617, October 2004.



There was an obvious geographic pattern to some of this persistent local economic vitality. Much of it was associated with areas with more sunshine and warmer winter temperatures, hence the adoption of the “sun belt” label to identify those anomalous, more rapidly growing, rural areas. The general economic principle was that some locations had characteristics that made them attractive to potential inter-county migrants, such as a sunnier climate or a lower cost of living or a lower risk of being a victim of violent crime. Because the quality of local schools is also very important to many families, that too could serve as an “attractant” to particular areas. Local air and/or water pollution that may contain irritants or health hazards could also affect household location decisions.

Economists have labeled such site-specific positive characteristics of a particular location *amenities* and negative site-specific characteristics of a location, *dis-amenities*. But, if climatic characteristics could change migration patterns and the location of economic activity on a national scale, what other site-specific characteristics might support or undermine local economic vitality? Although cataloging such site-specific characteristics might seem like a hopelessly subjective undertaking, market economies for centuries have dealt with such subjective characteristics in every interaction of supply and demand as both consumers and producers evaluated in quantitative detail what the market opportunities were.

The location of economic activity involves both business firms and households evaluating the advantages of locating in one place as opposed to another. Both business firms and households will look at some of the same characteristics: What will pay levels be? What is the balance of labor supply and demand locally? What will the cost be of delivering different sets of goods and services to markets at different locations? Some of the local characteristics may be quite subjective: What is the quality of the schools and other basic urban infrastructure? How hostile or supportive is local government to the concerns of residents and businesses? Etc.

The economic importance of “climate” at certain times and places suggests that other *environmental* characteristics could be important to potential and actual residents: Levels of air and water pollution; crime levels, noise and congestion, urban density, the quality of public park systems and open space, diversity of cultural and commercial choice, the level of social and political conflict. Etc. This is certainly the case in Valley County, and their planning shows this.

The “comprehensive planning process” in Valley County, Idaho, and the City of McCall, Idaho, solicited input from over 3,000 residents and visitors to develop a set of values shared by both residents and visitors about what was attractive about Valley County. As the “2018 McCall Area Comprehensive Plan” has made explicit,<sup>61</sup> it is local environmental values that appear to be responsible for the net in-migration of new residents, the retention of visitors, and the accompanying vitality of the local economy. In the “Community Choices” survey that was part of the development of the Comprehensive Plan, “the number one value for residents and visitors [was] the mountain character and small town feel of McCall. That character was defined by the natural setting, open space, agricultural lands, good air and water quality.”

“Access to nature-based amenities and an abundance of recreational opportunities were ranked second and third in the top reported values for the Valley County-City of McCall area. These features are part of what make McCall a thriving destination for

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<sup>61</sup> P. 50

visitors and place to live for residents...The community embraces environmental sustainability by managing its impact on the environment, including water and air quality, wildlife, soundscapes, the natural landscape, and trees.”<sup>62</sup>

Open space and valued natural areas surround McCall. Public lands in the area are managed by state and federal agencies including the Bureau of Land Management (BLM) and United States Forest Service (USFS). The Payette and Boise National Forests surround McCall to the north and portions of them lie in both the area of impact and the study areas associated with the proposed Stibnite Gold Project.

These forests are composed of extremely diversified terrain including rugged mountains, high meadows, lakes, streams, and rivers. The USFS manages the Frank Church River of No Return Wilderness, a popular summer location with hiking and fishing opportunities, hot springs, historic homesteads, and Native American cultural resources.<sup>63</sup> That is just one of several federally protected wilderness areas and landscapes managed to support and protect a broad array of wildlife and the ecosystems on which that wildlife rely and, in turn, human visitors, also, highly value.

To some, this linking of natural landscape amenities along with enhanced human-crafted social, cultural, and urban physical amenities in Valley County, to local economic vitality may appear fanciful or just biased wishful thinking. As a practical matter, we are trying to understand why the economic vitality of Valley County continued and grew despite the near disappearance of much of the historical economy which had been the basis for the original development of those communities. The net in-migration that has boosted the region’s population is real and hard to dispute. The high and rising property values are real as is the shift in ownership of residences from full-time residents to second-home or seasonal rental use. The ongoing increases in the share of total employment and payroll in accommodations, eating and drinking establishments, and recreation services tell a very compelling story that confirms residents’ and employees’ descriptions of their experiences living and working in Valley County.

There appears to be a consensus that Valley County is one of the many “mountain towns” in rural areas of the U.S. that have attracted in-migrants that stimulate population and economic growth. Scenic beauty, recreation features of the natural landscape, relatively low population density, wildlife habitat, clean air and water, etc. This economic transformation of “mountain towns” does not eliminate all economic problems or make it easy to develop a consensus about the objectives of public policy and the appropriate public policy tools to use to obtain those objectives. But a clear understanding as to what the economic forces are that are driving the dramatic changes in Valley County are necessary before rational public policies to protect and enhance the local economic vitality and quality of life there can be successfully implemented.

### 3.2 The Real Estate Agent’s Mantra: “Location, location, location”

The underlying economic logic behind the reality of “amenity-driven” or “amenity supported” local economic vitality may look more familiar if we briefly talk about residential real estate markets. Some aspects of the value of residential property can be easily quantified: the square feet of floor area, the size of the lot, the age of the home, the number of bathrooms and

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<sup>62</sup> Ibid. p. 50.

<sup>63</sup> Ibid. p. 88.

bedrooms. It is not that these quantitative measures can be combined to determine exactly what purchasers would be willing to pay for the residence or what sellers would accept as a reasonable price, but this information *is* somewhat correlated with the likely market price of a residential property.

However, all those quantitative measures have little to do with “location, location, location.”<sup>64</sup> Most of us are able to identify “high rent neighborhoods” in the general region in which we live. We know what suburbs that have invested heavily over time in their schools. We know where the run-down public schools are. We hope we know what neighborhoods are relatively safe from crime. We know which neighborhoods have relatively uncongested and quiet traffic. In large urban areas, the level of air pollution may be much higher in some neighborhoods than in others because of air movements and temperature gradients. We probably know what neighborhoods are in transition from upper middle class to lower middle class or are moving in the opposite direction: gentrifying old, poor, neighborhoods.

Note that the evaluation of all these characteristics involves subjective judgements that involve placing a dollar value, at least implicitly, on very “subjective” characteristics. These are relative values in the sense that the evaluator would have to consider how important each of these characteristics was compared to the others: What would we be willing to sacrifice in travel distance, time, frustration, and accident risk, for example to gain access to higher quality of schools to which our children would have access.

It should be noted that real estate researchers and economists use the same statistical tools to determine what quantitative judgements in dollar terms buyers and sellers of residential properties make. That is, the variation in sales price of residential properties across large and diverse real estate markets will reveal the relative prices that buyers and sellers are implicitly placing on different qualitative characteristics of residential properties, including those associated with different location characteristics. Juggling all those different characteristics of alternative residential properties that we are considering may be difficult but participants in residential property markets regularly and successfully decide what price they are willing to pay for a residence or require before they will sell a residence. Residents and potential in-migrants to Valley County are regularly making similar judgements about moving-in or moving-out or staying put.

Residents and potential residents will have to balance all the different economic aspects of inhabiting a particular area to find the local mix of benefits and costs that best suits their preferences. Business firms will also have to adjust to the changing labor costs as well as the rest of the local cost of doing business. Business owners and managers have preferences for where they live too!

The U.S. Forest Service, not surprisingly, given the millions of acres of public lands it manages, has done some of the leading economic research evaluating the environmental services and

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<sup>64</sup>Large, “park-like,” lots are almost certainly likely to be associated with “high rent” neighborhoods. The same might be said about very large homes: “McMansions”. Part of the point of the large lots and residences is to separate the very rich from other citizens. The well to do may also lobby for zoning restriction that pursue the same goal of providing the well-to-do with a culturally more homogeneous neighborhood.

values associated with forest lands.<sup>65</sup> The titles of some of that work indicate some of the findings, “Intra-Regional Amenities, Wages, and Home Prices: The Role of Forests in the Southwest.” “Forest Amenities and Location Choice in the Southwest.” In fact, the Forest Service, in its Social and Economic Conditions Specialist Report, filed as part of the SDEIS, points out how attractive Valley County is and how that attractiveness has enticed new residents.

“Both Valley and Adams counties include large areas of federally administered lands. These federally managed lands, as well as the private lands surrounding them, are prized for their remoteness and natural beauty. In recent years, both counties have attracted new residents including recreationists and retirees looking for small towns, natural beauty, and wide-open areas and landscapes.”<sup>66</sup>

### 3.3 Creating Dis-amenities by Degrading Amenities

Most of the discussion above has focused on the environmental or recreational values associated with locations in and around Valley County and how recognizing those amenities helps us explain some land use patterns and outcomes. Recognition of the existence of these environmental values also warns us that if we are not careful about how we manage special landscapes, we may degrade significant existing amenities of considerable value, i.e we can degrade an amenity, potentially leaving a dis-amenity behind that leaves many people worse off. We can burden ourselves and others with losses, leaving them worse off because they have lost something of value to them and/or have had to take costly steps to shield themselves from that loss.

Of course, the same economic tools that can be used to estimate the value of the amenities at a particular location can be used to measure the cost of a dis-amenity created by degrading existing environmental qualities. In fact, those economic tools often have been used to calculate the damage done by the creation of noxious sites at particular locations, e.g. the locating of polluting activities such as coal-fired electric generators, the building of radioactive waste processing facilities, the locating of large regional waste disposal facilities. The noise associated with many contemporary economic activities: The hum associated with operating large numbers of electronic servers; the noise associated with regional airports and congested trucking routes; noxious odors associated with the ponds of animal waste created at “factory farming” sites or urban sewage treatment and disposal facilities. Etc.

Metal mining has the potential to convert what are now amenities, namely world class natural landscapes of mountains, forests, streams and rivers, and the wildlife that inhabits them, into dis-amenities. Existing valuable benefits may be converted into their opposites: waste lands that may deteriorate indefinitely into the future.

The Executive Summary for the USFS initial Stibnite Gold Project Draft Environmental Impact Statement provided the following description of the Stibnite Gold Project:

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<sup>65</sup> Ibid.

<sup>66</sup> USDA Forest Service. Stibnite Gold Project: Social and Economic Conditions Specialist Report. Page 22. August 2022.

“The Stibnite Gold Project proposed for the mountains above the Valley-McCall area would be a large and complex industrial operation. That Project consists of a mine site and processing facilities, associated access roads, and off-site facilities located in Valley County in central Idaho. The mine site is in the East Fork South Fork Salmon River (EFSFSR) drainage basin.

The Stibnite Gold Project site area is a complex blend of both remote wilderness lands with high recreational values and potential wilderness characteristics, and areas impacted by historical gold, silver, antimony, and tungsten mining, processing, and resulting legacy contamination. The potentially affected area encompasses approximately 3,500 acres.

[The Stibnite Project] plan of operations would conduct mining operations that produce gold and silver doré, and antimony metal concentrates using three open pit mines, transportation equipment, ore processing facilities, development rock storage facilities, a tailing storage facility, a water treatment facility, road construction, electrical transmission lines, and various other facilities needed to support mining activities.

The Project would require upgrades and new construction to electric infrastructure outside of the mine site and subject to different approvals. The plan of operations incorporates closure and reclamation activities, and mitigation that may avoid, minimize, or compensate for adverse environmental effects caused by the Project and also incorporates actions that mitigate legacy contamination at locations within the mine site. Under the Project plan the construction, operations, closure, and reclamation phases of the Project would take place over a period of approximately 20 years, not including the period of time required for long-term monitoring and maintenance. Environmental monitoring and maintenance would continue for as long as needed to demonstrate that the site has been fully reclaimed.<sup>67</sup>

The “processing” of the ore to produce gold and silver doré as well as antimony ore concentrates will involve many different industrial chemical and physical processes at the mine site in the mountains of Valley County, including:<sup>68</sup>

- The crushing and grinding of the currently mined ore as well as reclaimed historical tailings.
- The use of flotation technology to concentrate the antimony and gold/silver ores.
- The leaching of the gold and silver from the concentrates using sodium cyanide.
- The gold-cyanide complex would be treated with activated carbon and the carbon with the gold-cyanide complex would be washed with an acid solution and then a hot alkaline solution.
- The resulting gold-bearing solution would then be transferred to the electrowinning refinery.
- The molten material from the induction furnace, principally gold and silver, would be poured into doré bars that would be shipped offsite for further processing and refining.

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<sup>67</sup> Page ES-2.

<sup>68</sup> Chapter 2 of the original USDA Forest Service. Stibnite Gold Project DEIS. August 2020.

- Stibnite expects to store the liquified waste (tailings) from all of these processes in a pond behind a 460-foot-high dam that it will construct on federal National Forest lands. The pond will ultimately occupy approximately 423 acres.<sup>69</sup>
- In the processing of the various streams of metal ore, caustic alkaline and acidic washes are used to increase the concentration of the metals being sought. Those liquids have to be neutralized before being disposed of.
- The metal ore concentrates and gold and silver doré must be shipped from potentially isolated rural mine and ore processing sites to national or international markets where they can be further processed to convert them into manufactured products. This can lead to congestion and pollution in the mountains, valleys, and rural areas through which the metals and metal ore concentrates must be moved.

Mining, mineral processing, and transportation of potential noxious or toxic material can degrade environmental quality from the mine to the concentrators to the huge waste tailings storage facilities that often permanently damage ground water and present the risk of catastrophic failure of the dams holding back huge amounts of toxic liquified waste to the local population. It is important to keep in mind that the proposed Stibnite Gold Project would site a large industrial chemical project in the head waters of one of the most important recreational rivers in the Inland West, namely, the Salmon River. The Stibnite Mine is located on the East Fork of the South Fork of the Salmon River. The Salmon River would become the mine's waste disposal facility. In one important sense, the proposed Stibnite Project represents a gamble that puts at risk a known and existing recreational economy that is supporting economic vitality in Valley County. What is being offered in its stead is a speculative but threatening open pit mining venture that, if it is commercially successful, will bring only a relatively small and short-run "bump" in additional economic activity in Valley County.

### 3.4 Stigma

When a mine or other types of industrial facilities are proposed near where people live, the people that live in the area, as well as the people that know about the new facility and the area, whether they live there or simply travel there, may change the way that they think about that area. To help understand how this might play out, we present two scenarios to help illuminate how people might think differently about an area after an industrial facility or mine is sited nearby. In one scenario, there is a mine that is sited right on the boundary of a National Park, directly adjacent to a river that flows into the park. In the second scenario, there is an industrial facility that is sited right next to multiple other industrial facilities in a manufacturing hub in the upper mid-west of the U.S. In the first scenario, it is likely that there would be some sort of public outcry. This would likely happen because if the mine is permitted and begins operating, people's view of the National Park and the nearby towns might change to some degree. It is likely that people would not see the National Park, the river that flows into it, and the nearby towns as environmentally pristine as they did before. In the second scenario, there might not be much of a mindset shift because the area in which the industrial facility was sited already had been thought of as polluted and dirty. However, in both scenarios the facilities would be thought of as having a "stigma" attached to them associated with the environmental degradation assumed to be associated with a particular industry located there.

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<sup>69</sup> Ibid. p. 2-33.

The phenomenon of *stigma* is something that economists have been studying for some time. In fact, there is a relevant economic literature dealing with how the stigma associated with a place might affect economic decisions. The stigma that this literature analyzes was created by concerns about an environmental pollutant or a source that taints people's perception of the attractiveness of an area. This could be a landfill, a coal mine, a metal mine, an industrial facility, a polluted river, etc. For example, a place that would otherwise be considered desirable to live in, to move to, to vacation or recreate at, has a stigma associated with the environmental degradation from an industrial facility nearby that discourages people from going there. This literature has paid special attention to what is called the "new West" as much of the western U.S. has transitioned from resource-based economies to service-based economies. With that transition, many former mining towns, like Park City, UT. for example, have been able to erase and/or mitigate their stigma to become high-amenity destinations. Colocousis succinctly described stigma in this way:

"However, scholars have more recently documented the relationship between negative external perceptions of poor communities and their inability to attract new investment, a dynamic in which community stigma functions as a sort of "Achilles heel" in attempts at redevelopment (e.g., Erickson et al., 2008; Sampson and Raudenbush, 2005)...The processes through which certain places become stigmatized on the basis of perceived environmental risks and are therefore viewed as undesirable have also become a focus of study in recent years."<sup>70</sup>

What Colocousis found was that even in high amenity areas, areas that were situated near intact forests, mountains, or near rivers that people would otherwise want to visit or live near, in-migration, tourism, and redevelopment were not evenly distributed. Skouloudis links a "place-identity" to local areas that can be impacted by high-risk industrial facilities. This is an argument that almost everyone will readily recognize. When we think of the areas that we would like to visit, or have visited, that are high-amenity locations, we attach a place-identity to them when we think of them as in the National Park example above. McCall, ID., for example, is another location that is associated with pristine high-mountain lakes that are surrounded by mountains and forests. The identity to McCall is inseparable from that of a high-quality mountainous lake environment. This desirable mountainous area is presumably the reason that, as we pointed out earlier in this report, almost 70 percent of the homes in Valley County are second homes of people who spend their free time in the area. This attachment of place and identity is why, when an industrial facility is sited in one of these high-amenity areas, the potential for a negative impact on that area could be considered.

"Wester-Herber's review paper (2004) points out the need to include local attachment to a specific geographical place in the debate on industrial risks and delineates how aspects of place-identity can be negatively affected when changes are made to a landscape by the introduction of high-risk industrial ventures."<sup>71</sup>

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<sup>70</sup> Colocousis, C. "It Was Tourism Repellent, That's What We Were Spraying": Natural Amenities, Environmental Stigma, and Redevelopment in a Postindustrial Mill Town. *Sociological Forum*. 2012.

<sup>71</sup> Skouloudis, A. et al. Industrial pollution, spatial stigma and economic decline: the case of the Aspos river basin through the lens of local small business owners. *Environmental Planning & Management*. 2016.

In the most recent Supplemental Draft Environmental Impact Statement that was released in October of 2022, there was a Social and Economic Conditions Specialist Report<sup>72</sup> that pointed out the same attachment that is described in the economic literature. Instead of a “place identity” that we just described, they call it a “sense of place.”

“The central Idaho region provides residents and visitors a natural and rural setting with a remote character, outdoor recreation opportunities, natural beauty, and scenic quality of public lands. Many area residents value these characteristics. The “sense of place” experienced and valued by central Idaho communities is based on the region’s remote and rural setting, natural and undeveloped landscape, along with topography and vegetation, and the presence of cultural and traditional uses (e.g., open rangelands). “Sense of place,” can be described as an unquantifiable value that attracts people to specific locations, generates a community identity, and ultimately contributes to the overall quality of life for residents (Williams 2014).”<sup>73</sup>

The quote above is exactly in keeping with our analysis. It is a connection with the land that the local people feel. They are drawn to the area because the lands are “prized for their remoteness and natural beauty. In recent years, both counties have attracted new residents including recreationists and retirees looking for small towns, natural beauty, and wide-open areas and landscapes.”<sup>74</sup> Again, this is exactly what our report is attempting to point out. The extra step that we are taking now, that is not taken in the Special Report nor in the DEIS/SDEIS, is that there is a very real potential that the proposed mine will impact the character of Valley County and make it a less attractive place to live.

What this stigma literature makes clear is that even if we are focused on a high-quality amenity area like Valley County, it *can* be negatively impacted by the possibility of a new high-risk industrial source, like the proposed Stibnite mine. Even though a particular town might be in a high-amenity area, if it had a source of known industrial pollution nearby, or the potential for a new source of industrial pollution, its growth might not be the same as the county or regional growth. For example, in rural Coos County, NH., and the City of Berlin, NH. that were studied by Colocousis, the “tourism sector is the second largest in the state and account for a fifth of Coos County’s economy, but only 4% of the city’s.”<sup>75</sup> In other words, in the County that was known for tourism (Coos), that was specifically related to high amenity outdoor experiences, the town that had these same amenities but had been stigmatized by their past industrial pollution, there was a drop of 16 percent between the tourism that the County received (20 percent of their total economy) and the 4 percent that the stigmatized City received. Or put another way, tourism represented 5 times as large a place in the County’s economy as it did in the City’s. In fact, this City has taken to encouraging motorized recreation, which is more resource intensive and has a much larger impact on the local land, as opposed to Coos County, which has in general adopted lower-impact recreational activities like mountain biking, hiking, and less resource-intensive

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<sup>72</sup> USDA Forest Service. Stibnite Gold Project: Social and Economic Conditions Specialist Report. August 2022.

<sup>73</sup> USDA Forest Service. Stibnite Gold Project: Social and Economic Conditions Specialist Report. Section 6.4 Page 22. August 2022.

<sup>74</sup> USDA Forest Service. Stibnite Gold Project: Social and Economic Conditions Specialist Report. Section 6.4 Page 22. August 2022.

<sup>75</sup> Colocousis, C. “It Was Tourism Repellent, That’s What We Were Spraying”: Natural Amenities, Environmental Stigma, and Redevelopment in a Post-industrial Mill Town. Sociological Forum. 2012.



activities. In this case, the stigma associated with the industrial pollution has dramatically altered a small town's ability to capture tourism dollars and has forced them to embrace a much more resource-intensive section of the tourism economy that is not faring as well. The city, and the surrounding area, are perceived as being polluted and so it has, as a strategy to deal with its stigma, catered to a type of outdoor recreation that perpetuates that perception with real negative economic consequences.

### 3.5 The Possibility of a Spill from a Traffic Accident

The proposed Stibnite mine is in a remote location in Valley County. Regardless of which one of the different alternatives is being considered, the supplies that the mine needs to operate will have to be sourced from far away. A few of the supplies will come from Valley County, but the vast majority, as we have carefully laid out in the preceding sections, will come from outside of Valley County, and many from outside of Idaho. Because the Stibnite DEIS was so vague about the potential for a spill while transporting supplies to the proposed mine, the Idaho Conservation League and Advocates for the West hired Susan Lubetkin to review the Stibnite DEIS in 2020.<sup>76</sup> The result of that review is a rather sobering take on the potential for a spill along the transportation corridor to the mine.

“More than 30 different hazardous materials will be brought to and from the mine site if the SGP is approved. Those hazardous materials include fuels, explosives, acids, and toxic materials, but the dangers posed by the reagents are not discussed. Under Alternatives 1, 3, and 4, more than 7.7 million gallons of bulk liquid hazardous materials in at least 1,100 truckloads, as well as more than 143,000 tons of bulk solid hazardous materials in at least 5,300 truckloads, will be transported along the roadways every year. Under Alternative 2, more than 9.2 million gallons of bulk liquid hazardous materials in at least 1,300 truckloads and more than 95,000 tons of bulk solid hazardous materials in at least 3,300 truckloads will be moved along the transportation corridor annually. Although the SGP DEIS promises that there will be a pilot vehicle to accompany bulk liquid transport, only 522 pilot cars per year are shown in traffic impact studies. Spills from SPCC facilities may be twice as likely as spills from vehicles, but the SGP DEIS did not discuss the possibility of spills from storage facilities.”<sup>77</sup>

While we will get into the possibility, that is mentioned at the end of the quote above, of a spill from a Tailings Storage Facility, here we are focused on the transportation of materials. As the quote above alludes to, and we have spent some time discussing, most of the material for the mine will be sourced outside of Valley County. The result is that the mine materials, many of them hazardous, will have to come from far away and be brought through Valley County to the proposed mine site.

“I was able to find potential distributor locations nearest to Cascade, Idaho for 21 supplies that would be used at SGP. Only five supplies (propane, gasoline, nitric

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<sup>76</sup> Lubetkin, S. Review of the Transportation Corridor Risks of Hazardous Material Spills in the Proposed Stibnite Gold Project Draft Environmental Impact Statement. 10.27.2020.

<sup>77</sup> Lubetkin, S. Review of the Transportation Corridor Risks of Hazardous Material Spills in the Proposed Stibnite Gold Project Draft Environmental Impact Statement. 10.27.2020. Page ii.

acid, sulfuric acid, and hydrogen peroxide) were available within 100 miles of Cascade, Idaho. Diesel fuel was available inside a 250-mile radius. The remaining reagents I was able to find distributors for were only available from cities that were up 500 or 1,000 miles away.”<sup>78</sup>

The problem with sourcing the mining supplies from far away is, of course, that they need to travel a much longer distance before they reach the mine. The way that the potential for a spill is calculated is based on the mileage that the material will have to travel as well as the type of road and the conditions of the road that the truck that is hauling the supplies must travel on. The farther away, or the rougher the road, the more potential there is for a spill. Since many of the supplies must travel a great distance and there is a lot of dirt road that needs to be traveled to get the supplies to the proposed mine, this increases the chance that there will be a spill. Because there are often rivers and bodies of water in this portion of Idaho, there is also an increased potential that if there is a spill, it will impact a body of water. After considering more appropriate and recognized spill rates, considering the condition of the roads, and considering more than just the SH-55 to mine portion of the haul routes, Lubetkin found that:

**“Overall, spills and crashes involving heavy vehicles are near certain to occur for all Alternatives.** The calculations shown here serve as an example of the general process for estimating spill and crash numbers and likely underestimate the risks. Still, these numbers indicate that the impacts that spills and accidents may have on the environment and human safety along the transportation corridor should be seriously and thoroughly considered.

The SGP DEIS’s rudimentary attempt at quantitatively estimating the risk of hazardous materials spills was constrained to a limited analysis area and a single source (trucks) of potential spills. This narrow consideration of the possible impacts of the transportation corridor and hazardous materials misses other effects. Transportation impacts extend beyond the risk of spills. Mine-related spills of hazardous materials can come from many processes besides transportation. The conclusions in the DEIS that spills along the roadway will have limited if any impacts on fish and the aquatic environment are not justified. Neither are conclusions that spills from chemical storage will be rare or small.”<sup>79</sup>

We will now turn to the possibility of a spill from the proposed Tailing Storage Facility.

### 3.6 The Possibility of a Tailings Storage Facility Failure

Tailing Storage Facilities (TSF) are the permanent storage features at a mine that will hold back the toxic sediments that are left over from processing the ore to obtain the metals. In the modern age of mining, and especially when dealing with open pit mines, there is an incredible volume of rock that is moved to recover a very small amount of metal (in this case gold, antimony, and silver). The metal that is recovered, measured in single grams per ton of rock

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<sup>78</sup> Lubetkin, S. Review of the Transportation Corridor Risks of Hazardous Material Spills in the Proposed Stibnite Gold Project Draft Environmental Impact Statement. 10.27.2020. Page iii.

<sup>79</sup> Emphasis added. Lubetkin, S. Review of the Transportation Corridor Risks of Hazardous Material Spills in the Proposed Stibnite Gold Project Draft Environmental Impact Statement. 10.27.2020. Page iv.

moved, is between 1 and 2 in this case.<sup>80</sup> In other words, the percentage of gold in the rock ore being mined is thousandth of one percent. Aside from this being an amazing example of the value of gold, we bring this up also to point out that 99.999 percent of the rock that is mined and processed will have to be carefully stored in or as part of the TSF. The overburden, and any other rock that is either below the threshold that makes sense for them to process and or does not react poorly with the air or with water, can be used to help buttress the “downstream” TSF. This specific TSF design (downstream) is among the soundest TSF designs that are currently being used. The waste rock from the processing, as well as waste rock that cannot be in contact with the air and or with meteoric water (rain), will have to be stored in the TSF. The TSF will then be entrusted with keeping those toxic sediments out of the Salmon River until *the end of time*. This is one of the most serious problems with metal mining in the world. Although the design of the TSF for the proposed Stibnite Mine appears to be a good one, it will eventually suffer the same fate of all TSF, it will fail. No one knows when the Stibnite TSF will fail, and it has been designed so that it can, for example, stand up to a once in 475-year seismic event.<sup>81</sup> But the fact is that it will eventually fail. While one might think that this seismic event is a very high standard to require a TSF to meet, what it means is that in any given 50-year period, there is a 10 percent chance that there will be an earthquake that exceeds this standard.<sup>82</sup> While this might seem like a low probability event, the potential damage that comes with it is extreme. These low probability, high impact events need to be taken very seriously and approached with extreme caution. We are not exaggerating the risks associated with the possibility of the TSF failing. In recent research, and research that we report on here, the rate of TSF failure is increasing and not decreasing as one would expect with technological advances, and or time.<sup>83</sup>

In January of 2017, the Center for Science in Public Participation released an updated list of worldwide TSF failures.<sup>84</sup> This list includes data on 291 TSF failures including the location and year of the failure; for 42 of the locations the list also includes the date that the associated mine or processing facility became active. We used this list and added the active starting date for 56 additional facilities with failures that occurred since 2000 to determine the maximum age of storage facilities that failed.<sup>85</sup> Out of the 59 TSF failures that occurred since 2000, we could determine the active starting date for 46 facilities. The average age of TSF that between 2007 and 2016 failed is 43.4 years with a maximum TSF age of 134 years and a minimum TSF age of 1 year. This average age of TSF failures is slightly less, but not significantly different from the

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<sup>80</sup> Midas Gold. Midas Gold Completes Positive Feasibility Study for the Stibnite Gold Project, Idaho. 12.22.2022.

<https://midasgoldcorp.com/investors/news/2020/midas-gold-completes-positive-feasibility-study-for-the-stibnite-gold-project-idaho/>

<sup>81</sup> USDA Forest Service. Stibnite Gold Project DEIS. Pages 4.2-8. 2020.

<sup>82</sup> Gould, N. Understanding the Language of Seismic Risk Analysis. Expert Commentary from IRMI. 2003. <https://www.irmi.com/articles/expert-commentary/understanding-the-language-of-seismic-risk-analysis>

<sup>83</sup> See citations and research below.

<sup>84</sup> Center for Science in Public Participation. Tailings Dam Failures 1915-2016. <http://www.csp2.org/files/Tailings%20Dam%20Failures%201915-2016-4%20.xlsx>

<sup>85</sup> The maximum age of the failed TSF are calculated by the year of the failure minus the year that the facility became active.

average age of 45.2 years for the TSF failures between 1940 and 1999.<sup>86</sup> Although the data is sparse, they indicate that the average age of facilities at which TSF failures occur has not greatly improved with advances in tailings dam construction. This is not surprising considering that most tailings dam failures occur at active dams (see table 3 below).<sup>87</sup> In other words, the technology clearly has not been improving with the mining methods because TSFs are failing before the mining is over. The TSF, in years old, is not even zero years since it has not begun its "long watch" which begins when the mine is officially closed.

**Table 3.**

Recreated from Table 9-1. Number and cause of tailings dam failures at active and inactive tailings dams.			
Failure	Number of Tailings Dam Failures*		
Failure Causes	Active Dams	Inactive Dams	Total
Overtopping	20	8	28
Slope Instability	30	1	31
Earthquake	18	0	18
Foundation	11	1	12
Seepage	10	0	10
Structural	12	0	12
Erosion	3	0	3
Mine Subsidence	3	0	3
Unknown	15	3	18
TOTALS	122	13	135

\*Data are presented for 135 tailings dam failures for which causes were reported, from 1917 to 2000  
Source: ICOLD 2001.

Further, a 2015 study of TSF failures shows that the occurrence of "Serious" or "Very Serious" TSF failures has increased decade-by-decade since 1940.<sup>88</sup> This study also shows a negative correlation between increased number of serious or very serious TSF failures and copper ore grade, copper production cost, and copper price (See the table 4 below). In other words, as either the price of copper, the production cost of copper, or the grade of copper ore decrease, the number of serious or very serious failures increases. While we do not want to speculate on the mechanisms that cause the failure, the correlation would suggest that when there is less money coming into the mine, the failure rate increases. As we have shown, as mines go after lower and lower grades of ore, the size of the TSF must increase at an exponential rate. For example, an ore that has 1 percent gold has 99 percent waste rock that must be stored somewhere. A mine that has .1 percent gold, or 10 percent of the initial value has ten times as much waste rock as our initial condition, or 99.9 percent waste rock.

**Table 4.**

<sup>86</sup> Between 1940 and 1999 there were 225 TSF failures, 52 of which we have active starting dates for. A decade-by-decade breakdown of the average age of TSF failures from 1947-2016 ranges from 19.5 years (1947-1956) to 61.9 years (1957-1966).

<sup>87</sup> U.S. EPA. An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA 910-R-14-001A-C, ES, 2014. CHAPTER 9. TAILINGS DAM FAILURE

<sup>88</sup> Bowker, L., and Chambers, D., 2015. The risk, public liability, & economics of tailings storage facility failures.

<http://www.csp2.org/files/reports/Bowker%20%26%20Chambers%20-%20Risk-Public%20Liability-Economics%20of%20Tailings%20Storage%20Facility%20Failures%20%E2%80%93%202023Jul15.pdf>

Table 3.1 Correlation Between Failure Severity and Mining Metric Indicators

	Cu Ore Production	Cu Metal Production	Cu Grade	Cu Prod Cost	Cu Price
Very Serious Failures	0.860	0.881	-0.794	-0.788	-0.427
Serious Failures	0.720	0.826	-0.884	-0.682	-0.126
Other Failures	-0.265	-0.099	0.298	0.300	0.489
Other Accidents	-0.216	-0.050	-0.312	0.281	0.485

Abbreviations:  
 Cu Prod Cost = Cost to produce copper concentrate from copper ore, including waste disposal  
 Cu Grade = grade of copper in the ore  
 Cu Prod = copper ore production  
 Other Failures = tailings dam failures and incidents other than Serious or Very Serious Failures  
 Serious Failures = Serious tailings dam failures  
 Very Serious Failures = Very Serious tailings dam failures  
 Sources: USGS Metal Statistics (2014a), Schodde (2010), ICOLD (2001), WISE (2015) & additional

The authors further conclude that, with respect to TSF design, the ability to recover smaller percentages of valuable minerals has not been accompanied by better TSF.<sup>89</sup>

“The advances in mining technology over the past 100 years which have made it economically feasible to mine lower grades of ore against a century of declining prices have not been counterbalanced with advances in economically efficient means of managing the exponentially expanding volume of associated environmental liabilities in waste rock, tailings and waste waters.”

Finally, with respect to studies on TSF dam failures, the most recent data, from 2022, comes to the same conclusions:

“...since 1915, a total of 257 failures have been recorded with circa 2,650 fatalities and 250 million m<sup>3</sup> of contaminated residues released to the environment. Almost 50% (115 million m<sup>3</sup>) of the released volumes have been recorded after 2000, with circa 640 fatalities. These data highlight that the challenge of safely storing mine waste is growing in scale and complexity”<sup>90</sup>

In other words, advances in TSF design and safety have not kept up with advances in mining, resulting in greater environmental risk associated with TSF from more recent construction. It is our understanding that this, in large part, has to do with the massive volumes of waste rock that are created at these open pit mines coupled with the increased incidence of heavy rainfall events.<sup>91</sup> The proposed Stibnite mine is no different. A recent study by Piciullo et al. sums things up quite neatly:

“Tailings dams are commonly built incrementally to increase the storage capacity of the Tailings Storage Facility (TSF), usually without interrupting the mining activities. Dam management practices, lack of knowledge on tailings behavior and the poor

<sup>89</sup> Bowker, L., and Chambers, D., 2015. The risk, public liability, & economics of tailings storage facility failures. <http://www.csp2.org/files/reports/Bowker%20-%20Chambers%20-%20Risk-Public%20Liability-Economics%20of%20Tailings%20Storage%20Facility%20Failures%20%E2%80%93%202023Jul15.pdf>

<sup>90</sup> Piciullo, L. et al. A new look at the statistics of tailings dam failures. Engineering Geology. 2022.

<sup>91</sup> Piciullo, L. et al. A new look at the statistics of tailings dam failures. Engineering Geology. 2022.

performance of monitoring and management processes have resulted in disastrous tailings dam failures with human and economic losses, as well as huge environmental consequences to ecosystems and local communities.”<sup>92</sup>

We bring up these failures with TSF to highlight that there is a very real chance that the TSF will fail while Valley County is still a populated human settlement. If that failure happens and the Salmon River is polluted by the waste rock and cyanide that is used to process the gold, then there will be a massive environmental cleanup that has to take place. That cleanup will have some stigma attached to it and it will, as we have described above, negatively impact Valley County. In fact, there does not have to be a spill from the proposed Stibnite mine for the stigma to impact Valley County. Just the presence of a gold mine with the potential to create a massive environmental disaster in Valley County is enough to have some stigma attached to Valley County. While we are not using this example as a direct corollary or forecast a massive TSF breach that poisons the Salmon River, or that there will be a 16 percent drop in tourism associated with the proposed mine as described earlier in this section, Valley County should certainly think long and hard about the potential for the proposed mine to impact their economy.

### 3.7 The Economic Value of High Quality Natural and Social Environments

As discussed *above*, residents of and visitors to Valley County recognize the important *economic* values associated with the natural and social setting of McCall and Valley County. The 2018 McCall Area Comprehensive Plan, developed under the guidance of the Valley County Commissioners and McCall City Council, reported on a survey of 3,000 residents and visitors it carried out as to what the values were that made Valley County an attractive place to live, work, and do business.

“[T]he *number one value* for residents and visitors [was] the mountain character and small town feel of McCall. That character was defined by the natural setting, open space, agricultural lands, good air and water quality.” “Access to nature-based amenities and an abundance of recreational opportunities were ranked second and third in the top reported values of survey participants for the Valley County-City of McCall area. These features are part of what make McCall a thriving destination for visitors and place to live for residents...”<sup>93</sup>

Our discussion also documented the high level of economic vitality that Valley County has been able to attain and maintain over the last half-century. Compared to all of Idaho’s other non-metropolitan counties as a group, Valley County has significantly outperformed these other non-metropolitan counties. One often-used measure of overall economic “prosperity” in a particular area is *average real income per person*. That is calculated by summing up all of the annual income that flowed to individuals in the geographic area being studied and spreading all of that income over the total population, i.e. dividing total personal income by the population. If we are interested in how this average income per person has changed over time, the impact of inflation should be removed by deflating the income data to the current value of the dollar.

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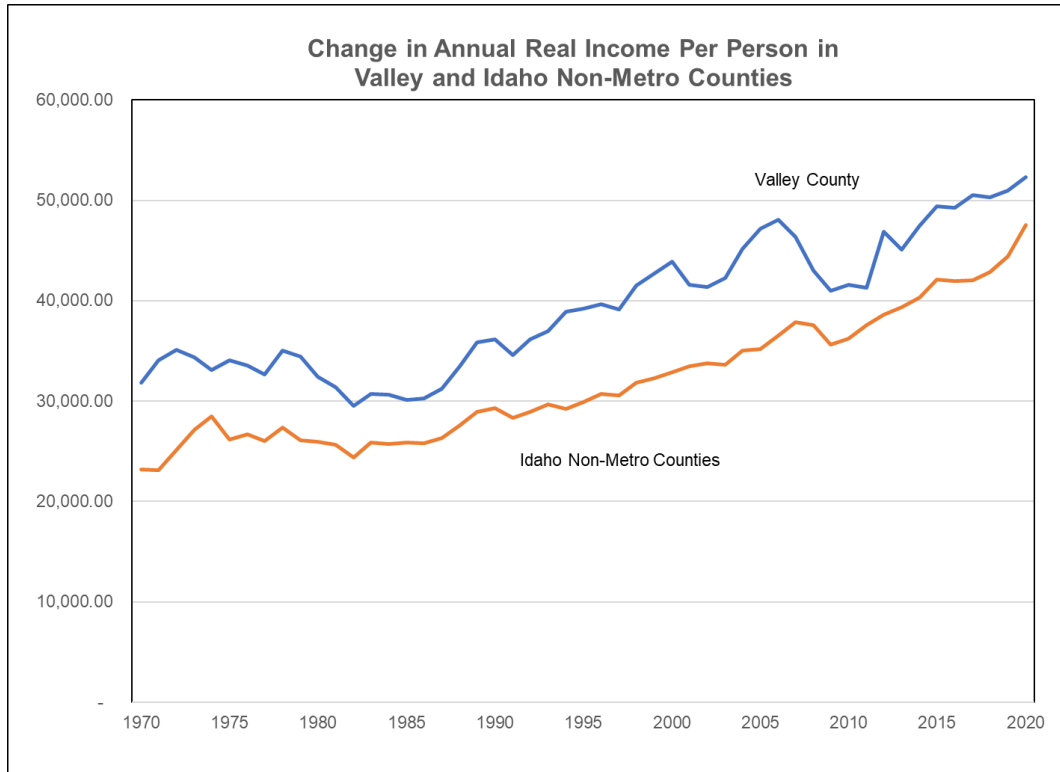
<sup>92</sup> Piciullo, L. et al. A new look at the statistics of tailings dam failures. *Engineering Geology*. 2022.

<sup>93</sup> Op. Cit. “Comprehensive Plan,” p. 50.

Figure 11, below, shows this inflation adjusted average annual income per person in Valley County over the last half-century. As can be seen, over the 50-year period we have been using, Valley County always had a higher average income per person than the group of all Idaho non-metropolitan counties. The distance between the two lines in the chart shows the size of the advantage Valley County had over the whole group of non-metropolitan counties. That “bonus” average income that residents of Valley County received varied significantly over time, from a high of \$12,000 per person per year to a low of \$4,000. The average “bonus” to Valley County residents compared to the group of non-metropolitan counties was \$7,400 a year per person in 2020 dollars. The sum of those benefits across all Valley County residents in 2020 was \$87.3 million per year.

Of course, to the extent that the productivity of the local economy can be maintained, this “bonus” income will be a recurring annual benefit to the residents of Valley County. A stream of income over time, of course, is worth more than just one of those payments.

**Figure 11.**



Source: U.S. BEA, Regional Accounts, CAINC1 County and MSA personal income summary: personal income, population, per capita personal income. Adjusted for inflation using the Consumer Price Index.

The hypothesis offered to explain the relatively high measures of local economic vitality in the City of McCall and Valley County “Comprehensive Plan” was that the landscapes in and surrounding Valley County were largely managed for conservation purposes by Federal Agencies. These lands provided a wealth of recreational opportunities to residents and visitors. In addition, the City of McCall had managed to protect its small-town community “feel” despite the relatively fast growth and transformation of the city into a recreation destination. This

attracted visitors some of whom became residents and helped the city to hold on to its residents, supporting modest ongoing growth.

This hypothesis, that protected natural landscapes would stimulate local economic vitality was analyzed in a 2013 study, appropriately titled “The Effect of Protected Federal Lands on Economic Prosperity in the Non-metropolitan West.”<sup>94</sup> “Protected” lands were public lands managed by government agencies for conservation purposes rather than commercial extractive activities. National Parks, National Wilderness Areas, wildlife refuges, and Wild and Scenic Rivers etc. are examples of such “protected lands”. Valley County was one of the western non-metropolitan counties that was included in the study. The study calculated the part of the average income per person in each county that was due to the amount of protected federal lands in that county.

There were 284 non-metro counties in the west, containing 46.2 million acres of protected public lands. Sixty-one non-metro western counties contained no protected public lands. Only nine non-metro western counties contained more than one million acres of protected public lands. Valley County was one of those: Valley County had the third highest number of protected public acres in the west.

The study’s conclusion about the impact of this high level of protected federal lands on average income per person in Valley County was that in 2010 dollars, average income per person in Valley County was \$11,626 higher than it otherwise would have been. That added about one-third to what the average income per person in Valley County would have been without any protected public lands.<sup>95</sup>

As the study summarized its results:

“These estimates represent the average effects of protected public lands after accounting for the presence of other public lands, the presence of other natural amenities, the degree of access to markets, the growth or decline in commodity sectors, and the presence of protected public lands in neighboring counties.”<sup>96</sup>

If we adjust this impact on income per person in Valley County for inflation between 2010 and 2020 and use the population of Valley County in 2020, the implied total additional income due to the protected federal lands in Valley County was \$163.1 million per year.

Figure 11, above, provides a less sophisticated measure of the advantage residents of Valley County have over the group of all non-metropolitan counties in Idaho as measured by real income per person. The average difference between real income per person in Valley County and the same income measure for the group of all Idaho non-metropolitan counties was \$7,400 per person. The sum of these annual bonuses in income per person across all residents of Valley County would be \$87.3 million per year.

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<sup>94</sup> Rasker, Ray et. al. 2013 The Journal of Regional Analysis & Policy, 43(2):110-122, MCRSA.

<sup>95</sup> “Per Capita Income Explained by Protected Federal Lands in the Non-Metro West.”

<http://headwaterseconomics.org/land/protected-public-lands-increase-per-capita-income/>

<sup>96</sup> Ibid. p. 118.



### 3.8 The potential impact of a spill on the Salmon River from the proposed Stibnite mine

We have spent some time and care in describing the link between the Valley County economy and the natural environment in which it is immersed. That economy is very sensitive to the potential for environmental degradation at the proposed mine. We will not go into details about what a potential spill might look like or how it might happen. We have already laid out the literature that describes how often a TSF releases toxic material in one form or another, and we have already discussed the stigma that comes with a mine and or a spill from a mine. What we seek to do here is to present a scenario where there is some sort of toxic release, or a series of releases, from the proposed mine and the South Fork of the Salmon River is impacted. Again, we will not talk about a specific event, but we will assume here that there is a need to mitigate the damage done to the river system and that it will take time to evaluate the damage and design and carry out remediation measures. For this exercise, we will assume that there is a series of spills over the life of the mine and that it takes an additional ten years to complete the cleanup once the mine has finished operations. We are not suggesting that the spill will be so massive that it takes ten years to clean it up. We are suggesting that remediation takes some time to be planned, carried out, and monitored. The extent of the pollution must be quantified, a plan to clean up the mine site and the downstream affected environment must be thought through, and then the cleanup process must be completed. Once the cleanup has been completed, it will take some time for the natural environment to recover, and it will also take some time for the stigma associated with the mine and the environmental degradation to abate.

In our scenario this process is assumed to take 25 total years. This is the 15 years that the mine is planning to operate as well as the time that it will take to close the mine, plus an additional ten years to clean up, allow the environment to recover, and the stigma associated with the mine and the spill to wear off. This is a time frame that is consistent with recent monitoring work on mine abatement work in the U.S. that showed that:

“A new study based on long-term monitoring data from four sites in the western United States shows that cleanup efforts can allow affected streams to recover to near natural conditions within 10 to 15 years after the start of abatement work.”<sup>97</sup>

In this scenario, the visitor and recreation sectors of the Valley County economy as well as the Non-Labor Income sector of the economy are assumed to take a relatively small hit. Those sectors of the Valley County economy, which we have already shown are directly related to the natural amenities of Valley County, will decline by 2 percent during this period. Again, we are not assuming that these sectors of the economy *will* decline by 2 percent if the mine is allowed to begin operations. It is quite possible that the impact could be far larger. What we seek to do here is to show that even if there is a relatively small decline in these sectors of the economy, it will have an impact that rivals the potential benefits that the mine could provide to Valley County. Recall from our earlier discussions that the Visitor and Recreation sectors of the Valley County Economy are about one-third of the total in terms of employment in 2020,<sup>98</sup> and that the

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<sup>97</sup> Stephens, T. Long-term monitoring shows successful restoration of mining-polluted streams. UC Santa Cruz News Center. 5.4.2021. <https://news.ucsc.edu/2021/05/mine-remediation.html>

<sup>98</sup> Headwaters Consulting. Economic Profile System. Valley County Travel and Tourism. 2022.

Non-Labor Income represents about 58 percent of total personal income.<sup>99</sup> We are also not assuming that these sectors of the economy would be growing steadily as they have in the past, with a few exceptions associated with the Great Recession and the Covid Pandemic. We are taking a static view of the year 2020 and looking at the potential impact on the existing economy in Valley County if it did not change for the next 25 years. While this is an unlikely scenario, we are not attempting to accurately project what the Valley County economy will look like in 25 years. We are simply trying to show that a small slowdown in these important sectors can have an outsized impact on the overall county economy. Since both the Visitor and Recreation sectors and the Non-Labor Income in Valley County are likely to continue to grow, while we know that the proposed mine's resident workforce will not, we are confident that this exercise will produce a conservative result.

Remember that the proposed Stibnite mine is projected to directly employ 200 "local" people and that their total pay is projected to be \$18.7 million annually.<sup>100</sup> When we look at the combination of the Visitor-Recreation sectors and the Non-Labor Income, it totals \$447 million annually. If we assume that the proposed mine will run for the longer of the time periods given (15 years), then it will produce a total of \$280.5 million dollars in direct pay to the 200 local workers. The total of the Visitor-Recreation sectors and the Non-Labor Income, over the 25 years that the stigma is associated with the mine, is \$11.2 billion. In this scenario, the impact of the mine workers' direct pay is 2.5 percent of the total of the Visitor-Recreation sectors plus the Non-Labor Income. In other words, the benefit of having 200 highly paid miners in Valley County for 15 years could be almost completely wiped out by a 2 percent decline in the Visitor-Recreation sectors plus the Non-Labor Income.

This small modeling exercise should not come as a surprise. Above we discussed economic analysis by Rasker that showed that more than one-third of Valley County income per person was directly tied to the natural amenities in the form of public land, in and around Valley County. In the preceding sections we investigated the large amount of Non-Labor income and how people effectively "vote with their feet" by moving to areas with high quality natural amenities. Remember also that the Non-Labor Income represents a larger portion of the economy than labor income does in Valley County. Finally, it is important to remember the dramatic differences in response by local economies to environmental impacts that we presented in the stigma section of this report. Areas that become stigmatized because of industrial pollution of one kind or another can have vastly different impacts on Visitor and Recreation sectors of their economy, even when the two economies are geographically very close. While it is very likely that the Valley County Visitor and Recreation sectors and the Non-Labor Income sector of the economy are likely to continue to grow and will continue to represent a larger portion of the Valley County economy, there is no growth projected for the SGP work force. The mine plan seeks to remove all the economically feasible minerals found there.

All this evidence points to a basic modeling exercise that is likely to be a conservative estimate of the potential impacts of the proposed mine having some type of spill or toxic release that impacts the Salmon River. What this shows us is that even a very small impact to the Valley County economy, because of the proposed mine polluting the Salmon River, will very likely wipe

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<sup>99</sup> Headwaters Consulting. Economic Profile System. Non-Labor Income. 2022.

<sup>100</sup> USDA Forest Service. Stibnite Gold Project DEIS. Page 4.21-22. August 2020.

out all of the benefits that Valley County has been told it would enjoy from the Stibnite mine being developed.

## Section IV: Socio-Economic Volatility in Mining Communities

### 4.1 A Critical Review of the Perpetual Narrative That the Stibnite Mine Will be Good for the Environment and Supportive of a New Sustainable, Low Carbon, Green Economy

There has been a lot of coverage of the new “green economy” in the news recently and the supply chain shortages that have plagued the U.S. and the world since the beginning of the pandemic. To address some of these issues, and because the U.S. must procure many different things, including metals and metal ore concentrates, from countries with whom we are not on very good terms, the U.S. federal government has deemed certain minerals “critical” to our national security.<sup>101</sup> Antimony, a metal that is on that critical list for the Inflation Reduction Act, is one of the metals that could be mined at the proposed Stibnite mine and its production could allow Perpetua Resources a small tax cut, from the Federal Government for their production of antimony. How that plays into the new green economy will be something that we will explore a little later in this part of our report. Also in the Inflation Reduction Act are tax credits that will be given to Americans who purchase electric vehicles that are assembled in the U.S.<sup>102</sup> As many news stories have pointed out recently, the demand for electric vehicles, and the potential tax cut for Americans, far outweighs the current production of those vehicles which makes it “difficult or impossible to take advantage of the tax credits in the short term while manufacturers adjust.”<sup>103</sup> As battery technology rapidly evolves and we are all forced to learn a little more about what makes up these new “green” technologies, minerals that formerly merely occupied a part of the periodic table, to which most of us never really paid much attention, are now ever present in the news. For example, lithium is hard to find in the U.S., although there are now many different mines that are vying for permits to mine lithium in the U.S. to help satisfy the demand for it. While there may be a long line of different mining companies trying to begin mining for lithium, the process is long and cumbersome, thanks in part to antiquated mining laws like the 1872 Mining Law that still governs federal mining claims. As states and local municipalities scramble to keep up with the proposed mines and understand where they might fit into the new green economy, the Federal Government is trying to sort out the complicated system that tries to both encourage mining on federal lands as well as make sure that it does not permanently degrade those same lands. In this part of the report, we will attempt to sort out where the U.S. is attempting to go to meet the demands of the new green economy and where the proposed Stibnite mine may fit in.

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<sup>101</sup> Congress. H.R. 5376- Inflation Reduction Act of 2022. 2022.

<https://www.congress.gov/bill/117th-congress/house-bill/5376/text?q=%7B%22search%22%3A%5B%22inflation+reduction+act%22%2C%22inflation%22%2C%22reduction%22%2C%22act%22%5D%7D&r=1&s=1>

<sup>102</sup> Electrification Coalition. Inflation Reduction Act Impact on Electric Vehicles.

<https://www.electrificationcoalition.org/work/federal-ev-policy/inflation-reduction-act/>

<sup>103</sup> Jones Day. The Inflation Reduction Act: Impact on Electric Vehicles and Transportation Industries. August 2022. <https://www.jdsupra.com/legalnews/inflation-reduction-act-impact-on-1691338/>

## 4.2 What is Perpetua Proposing to Mine?

While the Perpetua website advertises a variety of claimed benefits that the proposed Stibnite mine will provide to the U.S. and our transition to a green economy,<sup>104</sup> the fact is that the Stibnite mine *is* a gold mine and *not* an antimony mine. This is not meant to be a criticism; it is a simple statement of fact. Many, if not most, mines have other valuable trace metals or secondary objectives that can add real value in making the mine more profitable, and that is certainly the case with the proposed Stibnite mine. We mention this because, if you look at the Perpetua website, you might not know that the proposed Stibnite mine is a gold mine first and foremost. The name, Stibnite *Gold* Project should remind us as to what Perpetua is pursuing. However, much of what Perpetua is talking about is the antimony that they will potentially produce, or the cleanup of environmental damages from past mining, but that is not what the mine is being developed for. If we look at the mine in terms of the value of the resources that Perpetua plans to produce, which we feel is the most sobering assessment possible, then we can see that most of the value of the proposed Stibnite mine is in its potential for gold.<sup>105</sup>

About 11 percent of the total projected value of the mine is antimony, with about 1 percent being silver, and about 89 percent being gold. A different valuation process, carried out by the previous owner, Midas Gold, for its Feasibility Study, placed the value at 94 percent for gold,  $\frac{3}{4}$  of a percent for silver, and about 5.5 percent for antimony.<sup>106</sup> Whatever the percentages are, the point is that this is a gold mine and not an antimony mine. This is important because this is not an antimony mine that is being developed to ease the pressure of the U.S. reliance on other countries for critical metals. This is a gold mine that will produce some antimony. That the U.S. happens to designate antimony, one of fifty critical metals to get the designation, is a coincidence that Perpetua is now trying to take advantage of by highlighting what would otherwise be a small component of its proposed mining operation. We are not denigrating the ‘critical’ designation that antimony has been given, we are simply pointing out that Perpetua is here for the gold and happy to talk about the antimony.

While it is true that Perpetua would like to produce antimony, it is unclear where the antimony will go once it is concentrated. When the DEIS was written the antimony’s destination was not specified.

“The antimony concentrate would be transported from the mine site for off-site smelting and refining. It is unknown at this time where or how the concentrate from the mine would be processed, and depending on the buyer, it could be processed by any number of companies, in any number of states or foreign countries.”<sup>107</sup>

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<sup>104</sup> Perpetua Resources. Antimony is Critical. February 2022.

<https://perpetuaresources.com/wp-content/uploads/February-2022-Antimony-Its-Critical.pdf> and Perpetua Resources. Antimony. April 2021.

<https://perpetuaresources.com/wp-content/uploads/Antimony-White-Paper.pdf>

<sup>105</sup> USDA Forest Service. Stibnite Gold Project DEIS. August 2020. Pages 4.21-21. 2021.

<sup>106</sup> Midas Gold. Midas Gold Completes Positive Feasibility Study for the Stibnite Gold Project, Idaho. 12.22.2022.

<https://midasgoldcorp.com/investors/news/2020/midas-gold-completes-positive-feasibility-study-for-the-stibnite-gold-project-idaho/>

<sup>107</sup> USDA Forest Service. Stibnite Gold Project DEIS. August 2020. Pages 4.4-9. 2021.

It would seem then that this source of antimony will not necessarily secure America's green energy future after all since its destination is unknown. Or at least it was unknown when the DEIS was published. Since that time, "Perpetua Resources entered into a partnership to supply a portion of our antimony production to support the commercialization of Ambri's liquid metal battery for large-scale storage of clean energy."<sup>108</sup> Here again, we are left wondering what "a portion of our antimony" really means and how much of the critical metal will stay within the U.S. We are not the only people that are questioning this claim about the antimony that Perpetua wants to produce. In an opinion piece in the Idaho Statesman in September of 2022, Will Tiedemann<sup>109</sup> asks many of the same questions that we do, taking it one step further stating:

"First, Perpetua has not yet secured a domestic refinery to process the SGP antimony ore into a finished product of usable grade for battery applications. To our knowledge, no domestic refinery currently has the capability or capacity to do so. Instead, international refineries, likely in either Mexico or Oman, will have to be contracted to process SGP's antimony ore. By utilizing international refineries, it remains unknown whether Perpetua will retain ownership of their processed antimony ore and to whom it ultimately will be sold."<sup>110</sup>

The only antimony processing facility in the U.S., is in Montana and that facility is "in a sold-out condition"<sup>111</sup> meaning that they cannot process any of Stibnite's antimony. Even if Ambri could process the antimony in the U.S., they do not, as of yet, have a commercial scale battery that is available for commercial use.<sup>112</sup> What the antimony from Stibnite will *not do* is go into the electric vehicles that we have heard so much about recently and will not be associated with the tax cuts that citizens can get from purchasing an electric vehicle or the battery related production location specifications of the Inflation Reduction Act. What has been laid out in the DEIS and by Perpetua, is that a small component of the total value of the proposed mine (11 percent) will be antimony. Of that small component, an unknown amount will go to a U.S. based battery manufacturer to produce "low-cost, large-scale batteries",<sup>113</sup> that have no current commercially available products, and the destination of the rest of the antimony is unknown and could go to "any number of states or foreign countries."<sup>114</sup> Again, the point that we are trying to raise here, is that Perpetua wants to run a gold mine but is happy to talk about the very small volume of antimony that *might be available* to support American efforts to reduce carbon emissions.

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<sup>108</sup> Perpetua Resources. Antimony: Powering our Clean Energy Future.

<https://perpetuaresources.com/antimony/>

<sup>109</sup> A Conservation Associate of the Idaho Conservation League.

<sup>110</sup> Tiedemann, W. A mine to provide a rare mineral for batteries? Or for gold to make the rich richer. Idaho Statesman. 9.12.2022.

<https://www.idahostatesman.com/opinion/readers-opinion/article265465541.html>

<sup>111</sup> USAC. Home. 2022.

<https://www.usantimony.com/#:~:text=Our%20antimony%20smelter%20and%20precious,where%20the%20plant%20is%20located.>

<sup>112</sup> Ambri. Ambri Announces Its Innovation Hub - Expanding Manufacturing Capacity with New Facility in Massachusetts, a Major Milestone in Its Commercialization. 6.2.2022.

<https://www.prnewswire.com/news-releases/ambri-announces-its-innovation-hub--expanding-manufacturing-capacity-with-new-facility-in-massachusetts-a-major-milestone-in-its-commercialization-301560038.html>

<sup>113</sup> Perpetua Resources. Antimony: Powering our Clean Energy Future.

<https://perpetuaresources.com/antimony/>

<sup>114</sup> USDA Forest Service. Stibnite Gold Project DEIS. August 2020. Pages 4.4-9. 2021.

### 4.3 Antiquated mining laws

As the country attempts to wean itself from the critical metals that we procure from rather dubious sources, there has been a rather strong pull to look at the permitting process for mines in the U.S. On the 150<sup>th</sup> anniversary of the most notorious of U.S. mining laws, the General Mining Law of 1872,<sup>115</sup> the Biden administration convened an interagency working group (IWG) to review the antiquated law.

“This meeting was the first external engagement of the Department of Interior-led Interagency Working Group on Mining Regulations, Laws, and Permitting, which is charged with providing recommendations to Congress on how to reform the mining law to ensure new production meets strong environmental standards throughout the lifecycle of the project, ensure meaningful community consultation and consultation with Tribal nations, and reduce the time, cost, and risk of mine permitting.”<sup>116</sup>

Anyone that has been involved in the mine permitting process can see the immediate need for this type of reform. Likely anyone that takes the time to critically read this report will be able to agree with this sentiment also. This is reform that was asked for by the Government Accountability Office in 1989.<sup>117</sup> An example of part of the 1872 law that needs reform, is the money, or lack thereof, that is paid to the Federal Government for a mining claim. Currently, somewhere between \$2.50 and \$5 per acre is paid for mining claims on federal land depending on whether it is a “lode or placer claim.”<sup>118</sup> The IWG is made up of experts from all different fields and has a list of objectives too long to quote in this report. What is clear from their goals is that they want to make sure that the U.S. gets a fair return for allowing mining to take place on its land, that the natural environment will be looked out for during the construction, operation, and closure of mines, that the land be restored, the environmental problems mitigated, and that the currently convoluted process of mine permitting be sped up. We bring this up here because all of this is needed, in this specific mine, although it is unlikely to help in this case. Any objective viewer can see that the U.S. needs to be able to source some of its critical minerals from the U.S., but we need to be able to do so in a fair and environmentally responsible way. That is the rub in the argument for the proposed Stibnite mine. If they were going after critical minerals that would help the U.S. effort to transition to a greener economy, and if the mine were permitted in a way that could ensure that the water, land, and environment would be looked after during the entire mining process and once the mine is gone, as the revision of the antiquated 1872 Mining Law promises, then perhaps this mine would be worth pursuing. That question, however, is not one that we have been asked to answer. What we are trying to point out is that the Federal Government is trying to reform the mining laws so that these questions are not so hard to

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<sup>115</sup> BLM. About mining and minerals.

<https://www.blm.gov/programs/energy-and-minerals/mining-and-minerals/about>

<sup>116</sup> The Biden Administration. Readout of the White House’s First Stakeholder Convening on Mining Reform. 5.11.2022.

<https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/11/readout-of-the-white-houses-first-stakeholder-convening-on-mining-reform/#:~:text=The%20General%20Mining%20Law%20of,it%20to%20promote%20westward%20expansion>.

<sup>117</sup> GAO. Federal Land Management: The Mining Law of 1872 Needs Revision. **3-10-1989**.

<https://www.gao.gov/products/rced-89-72>

<sup>118</sup> Penn State College of Earth and Mineral Sciences. Lesson 2.3: The General Mining Law of 1872 (as amended). <https://www.e-education.psu.edu/geog000/node/8>

answer, and if the answer is that the mine should be permitted, then it is done in a much safer and more expedient fashion.

In conclusion, we find that the proposed Stibnite mine is a gold mine with the value of the gold representing at least eight times that of antimony. The antimony, although designated a critical metal by the Biden administration, will largely go to an unknown refinery, likely outside of the U.S. The antimony that stays within the U.S., which is an unspecified fraction, will be sold to a company that wants to produce industrial scale batteries and not, as many will assume, batteries for the electric cars. The mining laws within the U.S. are antiquated and complicated and put far too large of a burden on local areas that will host the mines. Because of this, the Federal Government is in the process of overhauling the 1872 Mining Law. It is the hope of the Biden administration that when that law is revised, it will allow local communities, like Valley County, to make sure that the mines are responsibly developed to ensure that the U.S. can source the critical metals that it needs while also ensuring that the local environment is protected, and the mining companies fairly compensate U.S. citizens for the leasing of public land and removal of valuable minerals. While it is likely that the mining laws will not be reformed in time for the decisions that need to be made with respect to the proposed Stibnite mine, it helps to highlight the complicated nature of deciding to open a metal mine and what the impacts, short and long term, will be on local communities.

#### 4.4 Volatility in the Metal Mining Market

Metal mining is notoriously volatile, and gold is a charter member of the club of volatility. In the last 50 years or so, the price of gold has fluctuated from a high, in real 2022 dollars, of a little more than \$2,500 per ounce in January of 1980, to a low of \$264 per ounce in August of 1970. Put another way, the price of gold has fluctuated by almost an order of magnitude in the last 50 plus years. Lest one think that we are cherry picking the data, and it is only low at the beginning of the last fifty years which was shortly after the United States gave up on the Gold Standard, in April of 2001, gold fell to \$430 per ounce. For a more complete view of things, see figure 12 below.

**Figure 12.**



Source: CPI is From the Federal Reserve Economic Data (FRED) and is based on CPI for all urban consumers: all items. The gold price is from LBMA Precious Metal Prices.  
<https://www.lbma.org.uk/prices-and-data/precious-metal-prices/>

Keeping the figure above in mind, even if we only look at the volatility of the last 5 years, we can see that there was a high of \$2208 per ounce in August of 2020 and a low of \$1382 per ounce in September of 2018. The difference between the two, separated by less than two years, is \$826, which is 60 percent of the lower, September 2018 value. Anyone with a basic understanding of business would be able to tell you that if your business loses 83 percent of its value over a two-year period, as was the case between 2000 and 2018, that the business is going to have trouble surviving. Of course, the reciprocal can happen also. Perhaps you would rather focus on the fact that the same hypothetical business increased its value by more than a factor of 5 over a ten-year period, between April 2001 and September 2011? For the point that we are making, both are a symptom of the same issue, and that is the volatility of international metal markets. In this case it is the international gold market, but the same can be said about most of the metal markets. Metal markets are notoriously volatile.

In this case, when we are talking about the potential to have the Stibnite mine located in Valley County, we are then talking about the mine's ability to continuously operate in the face of the roiling seas of the international metal market. If we look back to Figure 12 again, we can see that the horizontal portion of each of the gridded boxes in the background of the figure can be representative of the 5 years. Since the mine plans to operate for 12- 15 years, the lifetime of the mine can then be thought of as three grid squares.<sup>119</sup> There are a couple of periods where one might be able to argue that there was continuous growth in the gold market, but for most 15-year periods, there is rather serious volatility. In the face of such volatility, there are only a couple of things that can be done. If the price of the gold is increasing, then you might well

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attempt to increase your output. If the price is decreasing, then you will likely reduce your output or idle your mine. Now, clearly this will not happen if the price of gold changes by some very small amount, as it does daily. However, if, over a 3-year period, the value of the gold that you produced dropped by 63 percent, as it did between 1980 and 1982, then you would be very likely to idle your operation in hopes of a speedy market recovery.

The reason that this is important to consider, is that metal mines that are idled do not pay the people that work in the mines. If those people recently moved to your local community, as the DEIS and Perpetua assume, then your community will have a lot of newly unemployed people in it. While we have shown that the fiscal contributions to the local tax base are relatively small, totaling \$300,000 per year while the mine is operating, if Valley County comes to depend on this revenue, then a closed mine would be an added cost that the County would have to shoulder. If we assume that the multipliers are correct, as discussed in section 2 of this report, then there will be six tenths of a job created for every direct job at the mine. If Perpetua will hire 200 people to work in their mine, this would then be 120 local people who would be indirectly working for the mine in the local area. If the mine were to idle, for example because the price of gold drops dramatically, then the local area would have 320 workers that are now unemployed. As we have pointed out repeatedly, we believe that most of the workers will be living in the greater Boise area or the U.S. in general, but if you believe Perpetua, then many of these people will live in Valley County. It is worth at least considering the idea that hundreds of people would be laid off as the mine is idled due to low commodity prices.

However, perhaps the larger issue, and one that incorporates the ups and downs of the international metal market, is the economic wellbeing of mining dependent communities in the U.S. over a longer period.

#### 4.5 Taking a Larger View of Things: Mining Dependence and Economic Well Being

Mining has long been described as having a boom followed by a bust. The figure on gold prices above clearly shows at least 3 large boom bust periods and a host of smaller perturbations in the price over the last 50 years. When we think of the impact of those commodity prices on a mine, those booms and busts are generally, but not always, directly related to production. The mine produces as much as possible when the price is high and slows down production as much as possible when the price is low. With some mines, for example, the production of natural gas in the unconventional wells across the U.S. in the last 20 years, this has sometimes meant producing at a loss. In those cases, it may be quite hard to idle a well once it is tapped and there may be a shortened timeline associated with the wells as they are interconnected with other wells. In those cases, the extraction companies may be forced to produce at a loss to recover as much of their costs as they can. However, gold mines generally do not operate in this fashion. In some cases, it is that the resource in question has played out, but often it is because the value of the commodity drops or rises significantly. Often, mines can come back online when the commodity prices rebound, but there may be a cost associated with this price volatility to those communities that have mines in them.

While mining dependent communities, when they are mining, often have higher than average wages and salaries associated with that mining, they also live in fear of the next drop in commodity prices. One could imagine being a County Commissioner and being reticent to

invest in schools for the children of miners that may not be around in the next five to ten years. The same can be said about most shared public infrastructure. Things like sewers, hospitals, roads, the size of the police and fire departments etc. All those public services are paid for through taxes that are largely collected by local governments, and they are directly proportional to the number of taxpayers that they are collecting from. They are sized and staffed based on the expected load or population that will be using them. While there might be an immediate need to expand some of those services while a mine is in operation, and there are miners to help shoulder the additional burden that they put on a municipality, when those miners go, the local governments may be stuck paying for those upgrades or increases in services that they no longer have the same demand for. There is also the very real possibility that when the mine leaves, the community and the natural environment are in worse shape than before they came, and there is a real and sustained negative impact on the local community indefinitely. This is exactly what has happened to many different mining communities and whole mining regions across the U.S. The other option that a local municipality has, is to not pay for the upgrades or increases and deal with an increased demand for the same local service, while the mine is operating. Local communities must decide if there is enough time to pay for the investment that is necessary to accommodate for the increased use of the community infrastructure. This can be the tradeoff or quandary associated with the mining industry in a small community. There is a real possibility to have local people receive higher than average pay, but that pay will be dependent on international metal markets and the resources that are available locally to be mined.

There are clear examples of historic mining districts that have not fared very well, even though they created immense wealth in the time that they operated, and all we need to do is look at other mining dependent areas in the United States for examples of what has happened in the past. Before we present a few of the larger studies that have looked at these topics, if you have traveled to some of the classic examples of mining dependence in the U.S. cities like Butte, MT., then you will understand what the outcome looks like. Butte was once described as the “Richest Hill on Earth” and is now a struggling hard scrabble town that has, as its chief point of reference, the monstrous Berkeley Pit which is the remains of an open pit copper mine that dominates historic Butte. There is the Copper Triangle in Arizona, the Appalachian Coal fields of the east coast of the U.S., the Bakken oil shale boom of North Dakota and Montana, and on and on. In fact, there are whole states that have had their economic hopes pinned on resource extraction and have recently felt the pinch of that dependence. The state of Alaska, long famous for giving every resident a “dividend” from the production of oil on the North Slope of Alaska, now finds itself in a financial crisis. Alaska, now infamous for its dependence on different commodities, has chased furs, gold, military infrastructure from World War II, and now oil to pay little to no property or income taxes. Recently however, Alaska, in the face of flagging oil production and a drop in the price of oil, has found itself nearly bankrupt having pinned almost its entire fiscal health on the taxes associated with the production of oil.

“The national economic expansion from 2009 to 2020 was the longest recorded in the history of the United States. The unemployment rate fell dramatically, and real gross domestic product (GDP) steadily increased. However, many petroleum-producing states experienced local recessions during this period because of declining oil prices. One of these states was Alaska, which was in a recession from March 2015 to April

2018.... Falling oil prices also hurt the state government, which relied on petroleum (oil and gas) for 92 percent of its total revenue in 2011.”<sup>120</sup>

Clearly Valley County has not pinned 92 percent of the total revenue that it collects on the proposed Stibnite mine, but the comparison is instructive. Depending on a commodity, whose value is linked to the international commodity market, is necessarily betting that the market will remain strong over the time that the governments or communities are most dependent on it. In the case of Alaska, this worked well when Alaska was producing large volumes of oil and the price of oil was relatively strong. Recently, it has not worked well for them, as their oil fields have been depleted, their production went down dramatically, and the price of oil began to fluctuate more widely. There is a large and growing body of literature that looks at the impact of mining on the socioeconomics of different communities. Freudenburg, in 2003, did a meta-analysis of all the available literature related to mining and local economic well-being: “In this article, we assemble literally all of the relevant quantitative findings on mining that we have been able to identify in published and/or technical literature from the United States.”

“...in the case of poverty or unemployment rates—as well as for the overall body of findings—the results are consistently and significantly negative, whether the neutral/indeterminate findings are combined with negative ones or omitted from the equations altogether. Until or unless future studies produce dramatically different findings, there appears to be no scientific basis for accepting the widespread, “obvious” assumption that mining will lead to economic improvement.”<sup>121</sup>

Although 2003 was now almost two decades ago, the results certainly still appear to hold true. Given the evidence from Freudenburg, it would appear prudent to have as diversified an economy as possible, and not look to mining for the “obvious” assumption that mining will lead to economic improvement, since their analysis showed quite the opposite. In the context of the Valley County economy, which is relatively diversified and is no longer dependent on the extractive industries, it would be wise to make sure that Valley County stays diversified. In the context of the necessary upgrades that may be necessary to accommodate for the increased presence of miners associated with the proposed mine, it would be prudent to think long and hard about what investments will be made to accommodate the demands to extend government services for them, since there is no obvious economic improvement that will come with the mine, at least empirically. When looking at a very large geographic area, that of Appalachia, that has been dominated by the coal industry for much of the last 100 years, it appears that mining dependent counties show slowed economic growth and less educational attainment.

“...the coal industry provides incentives for less educational attainment, and that lower educational attainment levels in coal-producing counties explain part of their lower growth rates.”

And

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<sup>120</sup> U.S. Bureau of Labor Statistics. Oil, budgets, migration, and retirees: Alaska’s 2015-18 recession. <https://www.bls.gov/opub/mlr/2022/article/oil-budgets-migration-and-retirees-alaskas-2015-18-recession.htm>

<sup>121</sup> Freudenburg, W. et al. Mining the Data: Analyzing the Economic Implications of Mining for Nonmetropolitan Regions. Sociological Inquiry. 2003.

“No doubt, coal mining provides opportunities for relatively high-wage employment in the region, but its effect on prosperity appears to be negative in the longer run. Our results suggest that a significant portion of that negative effect may be attributed to coal-industry disincentives to the accumulation and regional retention of human capital.”<sup>122</sup>

According to the quote above, from Douglas et al., coal mining is associated with lower educational attainment for the people of Appalachia as well as a slowed growth rate. The “natural bounty” of the earth cannot be assumed to be a gift that all communities should receive with open arms. One could argue that gold mining in Valley County, ID. is a far cry from Appalachia, however the fact remains that communities that are faced with a decision on whether to allow mining on their local lands would do well to collect as much evidence as they can of the experiences of others. The potential benefits are well known, and Perpetua will tell you exactly what they are. All one need do is look at their website or look at the socioeconomic section of the DEIS, which was based on work that Midas Gold and Perpetua paid to have done. Here we will not seek to affirm or deny the validity of that work. What we are seeking to do is to say that we agree that the jobs that the miners will get will pay them well above average wages, but there will also be *costs* associated with having the mine in Valley County, and those costs have not been explored. Here we are attempting to present some of the economic evidence of the impact of mining on the communities that live with those mines. We have already gone over some of the potential “maladies” that mining related communities can face. In that literature, much of the impact of a mine on a local community is described through the lens of the miners that move into the local area. Those miners are predominantly male, young, well paid, don’t necessarily have ties to the local community or family with them, and work odd hours, for example two weeks on and two weeks off. All these things may contribute to them not fitting in with a local community as well as more traditional in-migrants might. Social scientists have looked at things like drug related mortality rates across all the U.S. to try and figure out what factors may play important roles in those deaths. A recent study tried to control for all the possible different factors that could contribute to drug related death in the U.S. and found that the single largest contributing factor was whether the community was dependent on mining.

“The average county-level age-adjusted drug-related mortality rate was 16.6 deaths per 100,000 population (2006–2015), but there were substantial geographic disparities in rates. Controlling for county demographic characteristics, average mortality rates were significantly higher in counties with greater economic and family distress and in counties economically dependent on mining.”<sup>123</sup>

This rather remarkable finding, found that mining was associated with a greater than 13 percent increase in “age adjusted mortality rate.” This was by far the largest increase of the labor markets that were analyzed and was about a half a percentage point behind the largest age adjusted mortality rate increase which was associated with “family distress.” We are not social workers or sociologists who are trying to tell you that if the proposed Stibnite mine goes in there will then be massive increases in drug overdoses. What we are trying to point out is that there is

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<sup>122</sup> Douglas, S. and Walker, A. Coal Mining and the Resource Curse in the Eastern United States. Journal of Regional Science. 2016.

<sup>123</sup> Monnat, S. Factors Associated with County-Level Differences in U.S. Drug-Related Mortality Rates. American Journal of Preventive Medicine. 2018.

a very clear link between mining and the communities associated with the mines. Mines are generally in smaller towns in rural portions of the U.S. and those places may have a harder time dealing with some of the negative impacts that come with the mine. As Perpetua has correctly shown, those people who reside in Valley County *and* have mining jobs will have significantly higher than average pay when compared to other Valley County residents. This is known. What is unknown, and what we are trying to lay out, is what some of the costs associated with having the Stibnite mine in Valley County will be. From the economic and social science literature, there will be costs in the form of retarded economic growth, increased pressure on services that Valley County provides, reduced educational attainment, and increased negative social interactions as a transient workforce tries to integrate into the local community. What we have also shown is that Valley County's economy is currently thriving and the reason that the economy is so robust, in large part, is because of the natural amenities that Valley County has. The possibility of short-term gain associated with the proposed mine should be weighed against the potential for long term harm to an otherwise thriving economy.

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**Attachment B:**  
**EPA Comments RE: USFS SGP**  
**SDEIS**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10**

1200 Sixth Avenue, Suite 155, 14-D12  
Seattle, WA 98101-3144

REGIONAL  
ADMINISTRATOR'S  
DIVISION

January 10, 2023

Linda Jackson  
Payette Forest Supervisor  
Stibnite Gold Project  
500 N. Mission Street, Building 2  
McCall, Idaho 83638

Dear Linda Jackson:

The U.S. Environmental Protection Agency has reviewed the U.S. Forest Service's October 2022 Draft Supplemental Environmental Impact Statement (DSEIS) for the Stibnite Gold Project (CEQ Number 20220154, EPA R10 Project Number 17-0013-AFS). EPA has conducted its review pursuant to the National Environmental Policy Act and our review authority under Section 309 of the Clean Air Act. The CAA Section 309 role is unique to EPA and requires EPA to review and comment publicly on any proposed federal action subject to NEPA's environmental impact statement requirement.

As a Cooperating Agency, EPA is supporting the Forest Service in the EIS development including review and comment on administrative drafts of EIS documents. EPA provided Draft EIS comments to the Forest Service in November 2020. Most recently EPA has supported the preparation of the DSEIS for the revised proposal submitted by the project proponent, Perpetua Resources Ltd (formerly Midas Gold Idaho, Inc), which includes the Forest Service eliminating two of the previous DEIS action alternatives from further consideration.

The DSEIS evaluates the potential environmental impacts associated with mining operations located on the Payette and Boise National Forests in central Idaho. The proposed project will produce gold and silver doré, and antimony concentrate for commercial sale. The project includes three open pits, an ore processing facility, a lime plant and associated limestone mining, development rock storage facilities, a tailings storage facility, a water treatment facility, access and haul roads, electrical transmission lines, and other support infrastructure and facilities. The mine life will be 20 years, not including post reclamation monitoring, with active mining and ore processing occurring over approximately 15 years. The DSEIS identifies and evaluates a No Action Alternative and two Action Alternatives: 1) 2021 Modified Mine Plan (2021 MMP) Alternative, representing the Proposed Action and identified as the Agency Preferred Alternative, and 2) Johnson Creek Route Alternative.

EPA appreciates that the DSEIS addresses many concerns and recommendations raised in our earlier review of the project documents. Additionally, EPA identified environmental concerns and deficiencies in the analysis that should be addressed in the Final EIS. Our attached Detailed Comments include recommendations for protecting air quality, surface water and groundwater quality, stream temperatures, wetland and riparian resources, fish habitat, and communities with environmental justice concerns; addressing impacts from soil contaminants and reclamation cover materials, geological hazards, and greenhouse gas emissions; and additional analysis to strengthen the assessment of impacts between the different mine access routes/road alternatives and modeling for different parameters.

Key recommendations for the FEIS include:

- Clearly and sharply defining impacts from the mine access routes/road alternatives.
- Monitoring for fugitive dust and particulate matter air emissions, assessing airborne arsenic impacts, confirming consistency across proposed state and federal air quality measures, and addressing possible underestimations of mercury deposition.
- Addressing suitability of soils for reclamation and effects of soil contaminants on surface water quality.
- Implementing effective monitoring, corrective actions, and addressing uncertainty for effects to stream temperature.
- Ensuring impacts from groundwater and surface water contaminants (e.g., mercury, methylmercury, arsenic, and antimony) are not underestimated when demonstrating compliance with the Clean Water Act and determining if additional mitigation measures for potential impacts are needed.
- Including an estimated financial assurance amount and mechanism, the disclosure of which is particularly important in this project given the long-term water management needs at the site (including post-closure).
- Establishing an Independent Tailings Review Board (ITRB) for the tailings storage facility including the buttress dam and conducting regular independent reviews as a mitigation measure to ensure geotechnical stability and protection of surface resources.
- Including continuous monitoring and inspections to address uncertainty and potential underestimation of indirect impacts and functional loss to wetlands and riparian resources.
- Supplementing the environmental justice analysis with EJScreen and considering mitigation measures for impacts including but not limited to loss of access and effects to subsistence.
- For climate change:
  - Including science-based greenhouse gas emissions reduction targets.
  - Assessing the social cost of carbon.
  - Incorporating adaptation in project features, such as stream crossings, reconstruction, and riparian cover.

Thank you for the opportunity to review the DSEIS for this project. We appreciate the constructive ongoing engagement with the Forest Service during the NEPA process and look forward to working with you as you prepare the FEIS. If you have questions about this review, please contact Susan Sturges of my staff at 206-553-2117 and [sturges.susan@epa.gov](mailto:sturges.susan@epa.gov), or me, at (206) 553-1774 or at [chu.rebecca@epa.gov](mailto:chu.rebecca@epa.gov).

Sincerely,

Rebecca Chu, Chief  
Policy and Environmental Review Branch

Enclosure

**U.S. EPA Detailed Comments on the  
Stibnite Gold Project DSEIS  
Valley County, Idaho  
January 2023**

**Alternatives Analysis – Burntlog Route and the Johnson Creek Alternative**

The material summarized in the Executive Summary and in Table 2.8.1 Alternative Comparison and Impact Summary<sup>1</sup> indicate that the Burntlog Route may result in greater impacts on several environmental and economic indicators, than as generally presented for the 2021 MMP Alternative (which includes the Burntlog Route). Examples include more greenhouse gas (GHG) emissions, soil impacts, stream crossings, forest disturbance, wetland loss, wildlife habitat disturbances, new roads, ground disturbance, impact on historical properties, higher inconsistency with designated Recreation Opportunity Spectrum, and lower contributions to employment trends. Further, the 2021 MMP Alternative will likely: impact roadless characteristics in three inventories roadless areas; increase non-native plant species spread; and create construction noise into the Frank Church River of No Return Wilderness. As the proposed mine access routes (Burntlog Route and the Johnson Creek Route Alternative) are the primary difference between the two Action Alternatives, EPA recommends the FEIS clearly and sharply define issues related to each access route and ensure the assessments are accurately reflected across the different sections.

**Potential Impacts to Air Quality**

***Idaho Department of Environmental Quality (IDEQ) Air Quality Permit to Construct (PTC)***

The DSEIS indicates on June 17, 2022, IDEQ issued a final PTC and Statement of Basis (SOB) stating that the Stibnite Gold Project (SGP) will not require a Title V permit.<sup>2</sup> Further that “[a] determination was made by the State of Idaho that the SGP satisfies the requirements of the PTC program, based on demonstration of the SGP’s potential emissions and controls. This was based on the complete air emissions inventory of stationary sources that was submitted by Perpetua as part of its application to the IDEQ for an air quality permit.”<sup>3</sup>

EPA formally commented during the public review process for IDEQ’s draft air quality PTC that the draft PTC did not appear to sufficiently limit annual emissions to allow the SGP to avoid being subject to the Title V and Prevention of Significant Deterioration (PSD) programs and assure compliance with the National Ambient Air Quality Standards.<sup>4</sup> EPA continues to review the final PTC for compliance with the CAA. As a Cooperating Agency for this project’s EIS, EPA shared our March 2022 draft PTC comments with the Forest Service. EPA recommends the FEIS include a summary of EPA’s public comments. EPA is available to meet with the Forest Service and IDEQ, who is also a NEPA cooperating agency, to discuss our concerns and answer any questions.

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<sup>1</sup> (DSEIS, p. 2-136).

<sup>2</sup> (DSEIS, p. 3-35).

<sup>3</sup> (DSEIS, p. 3-37).

<sup>4</sup> McFadden, Kelly. (March 16, 2022). [Letter from Kelly McFadden, US EPA Region 10 to Kelli Wetzel, Idaho Department of Environmental Quality, 2022].

### ***Enclosure of Main Ore Processing Facility and Coarse Ore Stockpile***

The DSEIS indicates the main ore processing facility building and coarse ore stockpile will be enclosed.<sup>5</sup> EPA notes that IDEQ's PTC does not include stipulations that the main ore processing facility building and coarse ore stockpile will be enclosed. Given the inconsistency, EPA recommends the FEIS clarify whether the main ore processing facility building and coarse ore stockpile will be enclosed, which EPA supports to reduce dust. If the main ore processing facility building and coarse ore stock will not be enclosed, correct its description throughout the FEIS. EPA also recommends adjusting the assessment analysis to account for the change.

### ***Bag House Dust Collectors***

The DSEIS indicates water sprays and/or bag house dust collectors will be installed at the ore-crushing system and at ore reclaim feeders that deliver ore to the grinding circuit.<sup>6</sup> EPA notes that IDEQ's PTC does not include baghouse dust collectors within the ore-crushing system and at ore reclaim feeders. EPA recommends that the FEIS clarify the measures that will be taken for the SGP, and adjust any inconsistencies in the FEIS, including the assessment analysis to account for the change.

### ***Title V Permit***

Regarding the DSEIS statement "[t]he regulation establishes mercury emissions limitations and work practice standards to control mercury emissions from gold production processes."<sup>7</sup> EPA recommends evaluating if this regulation would require a Title V permit for the SGP. If so, EPA recommends adding the following sentence in the same paragraph "This regulation also requires that the SGP obtain a Title V permit. See 40 CFR 63.11640(d). This requirement is separate and independent from whether a Title V permit is needed based on the project's potential air emissions."

### ***Fugitive Dust and Particulate Matter (PM) Monitoring***

Table 2.4-12 in the DSEIS indicates "[t]he Proponent will prepare a dust mitigation plan with appropriate schedule or triggers for control deemed adequate by IDEQ to achieve the level of control of 93 percent of dust (as submitted in the proponent's draft application for Permit to Construct from IDEQ). Alternatively, the proponent could employ particulate matter or opacity monitors deemed adequate by IDEQ and the Forest Service and immediately apply water or chemical dust control when PM or opacity monitors reach levels within 10 percent of the threshold determined by IDEQ."<sup>8</sup>

Since the final PTC has been issued by IDEQ, EPA recommends changing the reference to the draft application to a reference to the PTC for the FEIS. PTC permit condition 2.6 requires the proponent to develop and maintain a Fugitive Dust Control Plan (FDCP) and permit conditions 1.2 and 3.2 specifies 93% dust control must be met for the haul roads. The FDCP was not provided in the PTC before it was issued and has not been available for public review. EPA recommends the FEIS include a draft of the FDCP as an appendix or publicly available reference document.

The IDEQ PTC does not contain any requirements for PM monitoring as is stated above in the first paragraph. The EPA has recommended PM10 monitoring in previous cooperating agency NEPA comments and in comments to IDEQ during the draft air permit comment period.

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<sup>5</sup> (DSEIS, p. 4-36).

<sup>6</sup> (DSEIS, p.4-36).

<sup>7</sup> (DSEIS, p. 3-36).

<sup>8</sup> (DSEIS, p. 2-94).

For the FEIS, EPA continues to recommend continuous PM10 monitoring at the facility fenceline, as a mitigation measure and integral part of the FDCP, to ensure the project will not cause a violation of the primary and secondary National Ambient Air Quality Standards. Monitoring is justified based on the high range of uncertainty in the estimates of fugitive dust emissions and high potential of potential impacts to resources in the project area.

Though the DSEIS modeling indicates that PM10 impacts will be below the NAAQS, the modeling was based on numerous assumptions, including achieving a 93% control efficiency on fugitive dust emitted from haul roads. Small errors and uncertainties in the emission inventory assumptions could lead to significantly more fugitive dust emissions than estimated. In its prior comments to IDEQ, EPA raised concerns about the feasibility and enforceability of achieving the 93% control efficiency.<sup>9</sup> PM10 monitoring would help to verify the estimated emissions in the assessments were correct or provide a measurement tool to gauge the effectiveness of post-project mitigation to address excessive emissions.

### ***Access Road***

The DSEIS states “[t]he EPA Region X has indicated that the access road could possibly be excluded from ambient air if sufficient measures are taken to comply with the 2019 revised policy (EPA 2019a).”<sup>10</sup> EPA recommends disclosing that formal EPA policy review of the proposed ambient air boundary was not requested by the state and was not conducted. The EPA does not typically engage in formal review of the ambient air boundary during NEPA review and usually only conducts such a review upon request of the state during air permitting.

For the FEIS, EPA suggests the following to add to the paragraph: “Exclusion of the public access road from ambient air protections is a unique case that relies on measures assumed to meet the standards inferred in the 2019 revised ambient air policy. However, a formal EPA policy review of the ambient air boundary for the project has not been conducted nor requested. A formal review is not necessarily required. The EPA did provide formal comment on IDEQ’s air quality PTC recommending a review be requested by the state and that initial measures in the PTC were too ambiguous to determine compliance with the revised ambient air policy.”

### ***Arsenic Screening Analysis***

The EPA continues to have concern that the arsenic screening analysis underestimates cumulative impacts of airborne arsenic to the environment in the vicinity of the project. The results presented on page 4-46 of the DSEIS, and Table 4.3-13 are compared to an annual acceptable ambient concentration for a carcinogen (AACC), the Idaho toxics screening threshold. However, this screening threshold is not necessarily intended to be compared against a 70-year lifetime scenario where 57 years of the period assumes zero exposure. The threshold is an annual average used for screening, prescribed as a de-minimus value based on lifetime risk. Under IDEQ’s hazardous air pollutant program, in practice, project impacts from the maximum year of emissions would typically be compared to the annual average AACC for arsenic.

If the impacts were determined using annual average emissions during the period of the project only, the resulting arsenic concentrations would exceed the AACC. There is significant uncertainty in the

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<sup>9</sup> McFadden, Kelly. (March 16, 2022). [Letter from Kelly McFadden, US EPA Region 10 to Kelli Wetzel, Idaho Department of Environmental Quality, 2022].

<sup>10</sup> (DSEIS, p. 3-30).



emission rates of fugitive dust associated with the project such that arsenic emissions could be underpredicted.

Based on these concerns, the EPA continues to recommend the FEIS include an expanded cumulative analysis to disclose project airborne arsenic impacts to the environment.

### ***Retort Emissions***

The DSEIS states “[t]he retort emissions are based on an average of two refinery reports in 2015/2016 (NDEP 2015, 2016). The corresponding calculations are 20 percent of the retort standard of 0.8 lb/ton.”<sup>11</sup>

The process by which these emissions are derived is unclear. The two referenced documents (NDEP 2015, 2016) contain emission values for over 25 mining operations in Nevada. Depending on the mine, the emissions can be less than 1 lb/year to greater than 500 lbs/year. For the FEIS, EPA recommends providing information on which two refinery reports were averaged and why those two were selected to best represent conditions at Stibnite.

### ***Gaseous Elemental Mercury (Hg<sup>0</sup>) Emissions***

The DSEIS indicates that gaseous elemental Hg<sup>0</sup> emission sources at the SGP will be controlled by activated carbon absorbers.<sup>12</sup> If Hg<sup>0</sup> emissions are controlled by the activated carbon absorbers, EPA recommends the FEIS clarify if this means that the 13.6 lb/year of Hg released from the SGP project will consist of particulate bound and oxidized Hg. EPA further recommends clarifying for the AERMOD assessment, if all 13.6 lbs of Hg are included in this modeling.

### ***Underestimations of Total Hg Deposition***

The DSEIS states “[t]his analysis indicates a maximum estimated increase in Hg deposition rate of 0.4 percent or less of the existing background rate. However, it should be recognized that this rate underestimates the total Hg deposition, as the mechanism of Hg<sup>0</sup> flux is not included in the screening model.”<sup>13</sup>

While we appreciate the inclusion of the sentence indicating a reason why this percent increase is underestimated; the reason listed is only part of the reason for the underestimation. As mentioned in a previous section, the background Hg deposition values based on data from more than 10 years ago is also biased high due to subsequent emission controls. Therefore, the 0.4% increase underestimates Hg deposition because 1) it does not include Hg<sup>0</sup> deposition; and 2) the background deposition rates are overestimated for current conditions.

Generally, when developing an EIS on the impacts of a proposed mine, the preference is to develop conservative estimates of potential impacts and provide caveats as to why these impacts may be overpredicted. For this SEIS there are several instances where impacts are underpredicted and then caveats are added indicating that there is a low bias in the analysis. The problem with this approach is that impacts may not be identified and properly mitigated. EPA suggests adjusting the Hg deposition assessment for the FEIS to conservatively estimate the potential impacts and then provide caveats as to why these impacts are likely overpredicted.

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<sup>11</sup> (DSEIS, p. 4-40).

<sup>12</sup> (DSEIS, p. 4-50).

<sup>13</sup> (DSEIS, p. 4-50).

### ***Contribution Above Estimated Hg Background***

Table 4.3-18 SGP Contribution Above Estimated Hg Background indicates that SGP will result in Hg deposition of 0.056 g/km<sup>2</sup>/year. However, an earlier Table (4.3-6) indicates that the mine will release 13.6 lbs per year of Hg. The previous statement that Hg<sub>0</sub> emissions will be controlled suggests that 13.6 lbs represents releases of oxidized and particulate bound fractions which will be deposited relatively locally.

Of the 6,200 grams of Hg released (which is mostly or entirely Hg<sup>2+</sup> and Hg<sup>P</sup> according to the previous statement in the SEIS), AERMOD predicts only 0.056 g/year is deposited with a square km. There seems to be a disconnect between the species of Hg emitted, the amount of Hg emitted, and the amount being deposited locally within this analysis. EPA recommends reevaluating these analyses, making appropriate corrections for the FEIS, and if potential significant deposition is identified, mitigating to reduce impacts.

### **Soils and Reclamation Cover Materials**

#### ***Reclamation Cover Material***

Table 2.4.-12 in the DSEIS indicates that reclamation cover material (e.g., growth media) used in places including but not limited to the TSF and tailings storage facility buttress (TSFB) would be evaluated for contaminants prior to use during reclamation. Acceptable metal/contaminant concentrations and sampling and testing would be documented in a sampling and analysis plan developed prior to reclamation.<sup>14</sup>

EPA recommends that the FEIS disclose the concentration limits that would be required by the Forest Service since these are directly relevant to the evaluation of environmental impacts for the project, including the analysis of the availability of and suitability of cover material (metals) and the analysis of potential reclamation and closure/post-closure impacts to wetlands, waters, wildlife, aquatic resources, and public health in subsequent EIS sections.

We have provided this same comment on previous versions of this section and the NEPA specialist report and reiterate the recommendation to disclose this information to support conclusions regarding impacts and mitigation effectiveness.

#### ***Suitable Soil Types for Reclamation***

Under Suitable Soil Types for Reclamation, the DSEIS states “[t]he soils in this SMU [soil map unit typic halosparists (cTH)] also have elevated antimony, arsenic, and mercury concentrations (Tetra Tech 2021a).”<sup>15</sup> EPA recommends the FEIS discuss how soils with elevated concentrations of antimony, arsenic and mercury will impact predicted water quality concentrations of these contaminants. EPA also recommends specifying whether these values are elevated when compared to other background soils or in relation to soil criteria.

#### ***Soil Contamination/Chemistry***

The DSEIS states “[t]he mean concentrations of antimony (14.88 ppm within a range of 0.04 to 2,580 ppm) and mercury (0.972 ppm within a range of 0.005 to 283 ppm) from the samples are high but are still within the highest screening-level phytotoxicity criteria concentrations from various literature

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<sup>14</sup> (DSEIS, p.2-97).

<sup>15</sup> (DSEIS, p. 3-81).

references and federal agencies in U.S. and Canada cited in the Reclamation and Closure Plan (Tetra Tech 2021a).”<sup>16</sup>

While these concentrations may be below phytotoxicity criteria, EPA recommends the FEIS evaluate how elevated soil concentrations will impact surface water quality in the Environmental Consequences section of the FEIS.

## **Surface Water and Groundwater Quality**

### ***Riparian Vegetation Zones***

The DSEIS includes a measure to establish 18-foot-wide vegetation zones consisting of willow, spruce, and other riparian species that effectively shade stream flows in the restored and native stream channels in the mine area.<sup>17</sup> Studies over the years have shown that riparian vegetation located outside of an 18-foot buffer is a critical component of riparian vegetation stream shade production.<sup>18,19</sup> That is, restored riparian buffer widths would need to be much wider than 18 feet to produce levels of stream shade that would result in the predicted post-closure stream temperature conditions illustrated in Figure 4.9-27. The DSEIS references to the Environmental Monitoring and Management Plan (EMMP) framework, however, specific actions were not provided that described how full potential stream shading from riparian vegetation within the Riparian Conservation Area<sup>20</sup> will be achieved for riparian areas located outside of 18 feet from the stream.

EPA recommends the FEIS include specific management and protection that will be implemented to ensure (shade producing) riparian vegetation is promoted outside of 18 feet from the stream. Describe the specific planned efforts to eliminate anthropogenic disturbance, and promotion of riparian restoration, within the entire riparian zone, including the “outer” riparian zone associated with stream shade production (i.e., outside of 18 feet from the stream).

### ***Stream Temperature***

The DSEIS states that predicted long-term post-closure cool stream temperature conditions depend on the successful implementation of “the lined Stibnite Lake lacustrine feature above the cover of the Yellow Pine pit backfill to moderate maximum stream temperatures.”<sup>21</sup>

“Cooling” temperature properties of this lake is dependent on lake water residence time and depth,<sup>22</sup> both of which are impacted by upstream sediment delivery.<sup>23</sup> That is, sediment transport into the lake can result in sediment deposition on the lake bottom, reducing the water depth, and subsequently decreasing the lake residence time. Specifically, it was reported that “about 90 percent of coarse-grained sediment derived from upgradient is deposited in the Yellow Pine pit” along with approximately 20 percent of the fine-grained sediment (<0.0625 millimeter in diameter), and “[t]hus, the Yellow Pine pit

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<sup>16</sup> (DSEIS, p. 3-85).

<sup>17</sup> (DSEIS, p. 4-269).

<sup>18</sup> Groom, J. D., Madsen, L. J., Jones, J. E., & Giovanini, J. N. (2018). Informing changes to riparian forestry rules with a Bayesian hierarchical model. *Forest Ecology and Management*, 419, 17-30.

<sup>19</sup> Barnowe-Meyer, S., Bilby, R., Groom, J., Lunde, C., Richardson, J., & Stednick, J. (2021). Review of current and proposed riparian management zone prescriptions in meeting westside Washington State anti-degradation temperature criterion FINAL REPORT.

<sup>20</sup> (DSEIS, p. 3-250).

<sup>21</sup> (DSEIS, p. 4-269).

<sup>22</sup> (DSEIS, p.4-274).

<sup>23</sup> (DSEIS, p.3-191)

is an effective sediment trap for coarse-grained particles but does not have a long enough residence time to deposit the majority of the fine-grained sediment load.” In addition, “most of the sediment load discharged from the Meadow Creek reach is deposited in the Yellow Pine pit lake”.<sup>24</sup>

Unless otherwise determined through modeling analysis, it can be expected that these same sediment transport/deposition dynamics will occur with the created East Fork South Fork Salmon River (EFSFSR)/Stibnite Lake complex. In addition, this material also highlights the likely need to understand sediment loading and transport in the EFSFSR watershed to maintain the future Stibnite Lake attributes that lead to “cooling” water temperatures.

Several potential sediment reduction and management measures are introduced on DSEIS page 4-274, and it is stated that the effectiveness of these measures will be evaluated through the EMMP. However, the EMMP does not provide specific examples on how current and future sediment loading is evaluated (i.e., status monitoring), as well as evaluate the effectiveness of the proposed actions to address any future sediment “issue” (i.e., effectiveness monitoring).

EPA recommends the FEIS include implementation of detailed monitoring strategies that will: 1) monitor and quantify the sources and amount of sediment loading (including both chronic and episodic) entering the EFSFSR river system upstream of the Stibnite Lake; 2) evaluate the transport of both suspended and bedload transport in the stream network upstream of the Stibnite Lake; and 3) monitor sediment deposition and bathymetry conditions in Stibnite Lake.

Information collected as part of this monitoring effort is necessary to: 1) determine if a problem exists associated with excessive sediment loading and/or deposition in Stibnite Lake, and 2) provide the necessary information to produce plans intended to adequately address any future corrective action to address excessive sediment loading and/or deposition in Stibnite Lake.

EPA also recommends the FEIS include detailed corrective action strategies that outline actions to: 1) correct/eliminate any future “elevated” sediment sources (similar to what is proposed to excessive sediment from Blowout Creek<sup>25</sup>); 2) correct/eliminate the transport of the bed load and “coarse” sediment load that has entered the river network; and 3) potential mitigation measures to address potential future “shallowing” of Stibnite Lake resulting from sediment deposition.

### ***Significant Temperature Mitigation Feature***

Figure 4.9-27 illustrates that the most significant temperature mitigation feature in the EFSFSR river watershed is located between the TSFB and the East Fork Meadow Creek (EFMC). Specifically, modeled stream temperatures post mine closure (i.e., end of year 27) decrease up to 7° C within this short reach, which results in lower temperature to continue downstream in the EFSFSR.<sup>26</sup> The DSEIS later reports that without this upstream temperature reduction “stream temperatures downstream of the Yellow Pine pit area could also be greater than existing conditions.”<sup>27</sup> The DSEIS lists several possible reasons for this “significant” stream cooling reach: 1) resumption of “baseline” cool groundwater discharge; 2) increase stream shade; and 3) underdrain flow from the TSF.<sup>28</sup>

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<sup>24</sup> (DSEIS, p. 3-191).

<sup>25</sup> (DSEIS, p. 2-62).

<sup>26</sup> (DSEIS, p. 4-272).

<sup>27</sup> (DSEIS, 4-281).

<sup>28</sup> (DSEIS, p. 4-271).

It is unlikely that the first two factors outlined on page 4-271 are meaningful factors in the creation of the “significant” stream cooling zone between the TSFB and the EFMC. The dashed line in Figure 4.9-27 indicates that stream temperatures currently increase within this reach, indicating that “baseline” groundwater influences within this reach are likely a relatively minor factor towards the creation of the “significant” temperature reduction zone. Additionally, it is unlikely that increase shade within this reach will result in the “significant” stream cooling zone because stream shade does not “cool” a river/stream. Stream shade reduces the amount of solar heat load (i.e., sun light) from reaching the stream water, and this lower heat load can result in a gradual loss of heat energy (i.e., temperature reduction) through the relatively slow evaporation/convection processes.

It is possible that cool underdrain flow from the TSF added into this stream reach could physically “dilute” the warm stream water advecting from upstream. The amount of cooling would be dependent on the volume and temperature of these underdrain inputs.

EPA recommends the FEIS: 1) provide additional analysis describing the potential uncertainty that the “cooling” feature will function as predicted, 2) ensure proposed monitoring assesses if the “cooling” feature functions as predicted, and 3) include a description of potential mitigation/corrective actions if the “cooling” feature does not occur as expected.

An acknowledgment of potential uncertainty of predicted ground water discharge volumes and “restored” shade conditions is on page 4-281. However, as described above, these two factors are unlikely a significant source of the cool water within the TSFB and the EFMC reach of Meadow Creek. The potential uncertainty associated with the predictions of the magnitude and duration of the cool underdrain flows were not provided in the DSEIS. Material presented on Page 2-56 indicates that these underdrain flows may be unavailable for stream cooling within this reach due to 1) the potential need for it to be treated prior to discharge into the stream; and/or 2) the potential need for it to be used as makeup water for the mill process. Thus, EPA recommends the FEIS include evaluations in this assessment that describe the potential uncertainty associated with the magnitude and duration of the predicted underdrain flows.

The DSEIS does not discuss potential mitigation measures associated with a lower production and/or elevated temperatures of the expected underdrain flows discharging into the “significant” stream cooling zone between the TSFB and the EFMC. EPA recommends the FEIS include evaluations in this assessment that describe potential mitigation/corrective actions needed to address any loss or reduced effectiveness from the underdrain flows expected within this reach.

### ***Groundwater Analyte Concentrations***

The DSEIS indicates groundwater analyte concentrations beneath the mine site, particularly in the vicinity of the TSF, TSFB, Hangar Flats pit backfill, and Yellow Pine pit backfill are expected to increase in response to constituent leaching from development rock. Existing groundwater in those areas typically does not meet regulatory criteria for use as drinking water due primarily to arsenic and antimony concentrations.<sup>29</sup>

To adequately describe the nature and extent of additional groundwater contamination contributed by SGP, EPA recommends the FEIS include a summary that describes the magnitude of groundwater concentrations above current baseline conditions and the geographic extent (in feet) over which baseline

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<sup>29</sup> (DSEIS, p. ES-15).

concentrations are exceeded. Figures which depict the extent and magnitude of groundwater concentration changes in relation to mine facilities would be particularly helpful to disclose groundwater impacts.

### ***Surface Water Methylmercury (MeHg) Concentrations***

The DSEIS states “MeHg concentrations in SGP site streams are not appreciably different from those reported by the USGS nationwide study, and that historical mining activity in the analysis area has not increased MeHg concentrations above those observed at similar reference locations throughout the U.S.”<sup>30</sup>

It is accurate that the USGS nationwide study did not identify an increase in MeHg in basins containing mines; however, the FEIS will need to include a caveat that this study only included one sample location from Idaho, and that location was outside of the Stibnite study area. As such, the statement that mining activity has not increased MeHg above “similar reference locations” is inaccurate. Instead, EPA recommends the FEIS state that MeHg concentrations in the Stibnite area were similar to those observed in non-mining impacted watersheds throughout the US.

It is important when comparing MeHg concentrations to other areas that these be interpreted in the context of the dissolved organic carbon (DOC) and sulfate levels present. The national USGS study referred to includes measures of these parameters. Because the amount of MeHg generated by an ecosystem is influenced by both DOC and sulfate, EPA recommends the FEIS include a comparison of not just the MeHg values, but the MeHg values in relation to existing DOC and sulfate concentrations in the Stibnite area and how those compare to other streams in the national assessment.

### ***Major Ions, pH, and Total Dissolved Solids (TDS)***

In the Surface Water - Major Ions, pH, and TDS section of the DSEIS,<sup>31</sup> EPA recommends the FEIS include in this discussion the levels of sulfate under existing conditions. This information is included in Table 3.9.9, but the significance and trends of this data are not described. Because the levels of sulfate may increase because of mining activity and there are important links between sulfate levels and MeHg production, EPA recommends the FEIS include a description of current sulfate levels. From the table, it appears that most sulfate levels are quite low (<10 mg/L), especially when compared to the national average from the USGS study at 45.9 mg/L.

### ***Chemical Release Rates Temperature Correction***

The DSEIS states “[t]he source terms were then scaled to field conditions to account for differences in reaction rates, temperatures, and liquid-to-solid ratios between laboratory tests and field conditions.”<sup>32</sup>

EPA notes that the temperature correction will likely underestimate leaching rates encountered at the mine site. The Arrhenius equation is based on pyrite oxidation and is not specific to other metal/element release rates. Several metals have been shown to have higher release rates at lower temperatures.<sup>33</sup>

In addition to the inherent uncertainties in applying the temperature correction factor, an annual air temperature of 2.6°C should not be used for scaling. The annual average incorporates many months of sub-zero temperatures into this average when water is frozen and aqueous geochemical reactions are not occurring. A more conservative annual average would be based only on time periods when the

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<sup>30</sup> (DSEIS, p. 3-188).

<sup>31</sup> (DSEIS, p. 3-176).

<sup>32</sup> (DSEIS, p. 4-182).

<sup>33</sup> SRK Consulting. 2006. Cold Temperature Effects of Geochemical Weathering.

temperature was greater than 0°C. A slightly less conservative approach would be based on an average that substituted 0's for time periods when the temperature was negative. In addition, temperatures below the surface are often higher than air temperatures, especially when they are insulated with snow cover. Furthermore, chemical reactions are exothermic and can also contribute to increases in subsurface temperatures in geochemically active areas. In addition, under future climatic conditions, the temperature is predicted to increase.

Overall, for the FEIS, EPA recommends the chemical release rates not be corrected for temperature during the water quality modeling.

### ***Effects of Deposited Mercury to Watershed***

The DSEIS indicates actual local mercury deposition rates from project emissions depend on the fractions of particulate versus gaseous mercury emissions. Particulate emissions generally deposit on the ground surface nearer to their source while gaseous emissions tend to deposit farther from the source or potentially become part of global atmospheric mercury burden.<sup>34</sup>

We appreciate this information being mentioned in the water quality section of the DSEIS. In the air section of the DSEIS, it suggests that most Hg<sup>0</sup> will be captured, which suggests that most of the 13.6 lbs/year (6,200 g/year) that is released will be Hg<sup>2+</sup> and HgP which would deposit locally. However, the results of the AERMOD predictions indicate that a much smaller amount of mercury (0.056 g/year) will be deposited within a square km around the mine site. There seems to be a disconnect between the amount and species of mercury emitted and the amount being deposited to the local watershed. EPA recommends the FEIS assess the potential for enhanced local deposition of Hg<sup>2+</sup> and HgP of mercury to the local watershed and how this will impact water concentrations.

### ***Ratios of Stream Mercury Loads to Atmospheric Mercury Deposition Rates***

The DSEIS states “[r]atios of stream mercury loads to atmospheric mercury deposition rates have been reported in watersheds affected by gold and silver mining (Domagalski et al. 2016)... Therefore, aerial deposition would have a minor to moderate, long-term effect on particulate mercury loads in streams within the project area watershed.”<sup>35</sup>

It is unclear what ratios are being used in the analysis that led to the conclusion of minor to moderate impacts. An earlier version of the DSEIS document stated that “[r]eported ratios of stream mercury loads to atmospheric mercury deposition rates have been reported to be approximately 50-to-1 in watersheds affected by gold and silver mining with a drainage areas less than 500 square kilometers (Domagalski et al. 2016). Application of that ratio to the total mass of mercury emission would suggest that aerial deposition could contribute up to approximately 0.3 pounds per year to streams within the watershed during the operations period, primarily in the form of particulate mercury.”

At that time, the EPA commented the ratio of 50 to 1 is not applicable to this situation. Domagalski et al, 2016 is suggesting that the stream Hg loads are 50 times higher than the atmospheric deposition load due to the contribution of non-atmospheric sources in the watershed.

Applying the Domagalski ratio of 50 to 1, would indicate that deposition from the mine releases would be 0.006 pounds/ year and then multiplying value by 50 to come up with 0.3 pounds/year. But this large

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<sup>34</sup> (DSEIS, p. 4-252).

<sup>35</sup> (DSEIS, p. 4-259).

multiplier is a function of untreated mine waste in the watersheds that is overwhelming the atmospheric deposition. This is not applicable to conditions presented in the DSEIS.

Our concern is that the DSEIS flips the intention of the 50 to 1 ratio to suggest that only 2% of atmospherically deposited mercury makes its way into streams. This is inaccurate and opposite of what is presented in Domagalski for gold-silver mine impacted watersheds.

While the DSEIS does not make specific reference to the ratio used in the analysis, EPA remains concerned about the basis of the analysis that used the Domagalski ratio of 50 to 1 for these conclusions. EPA recommends the FEIS reassess the ratio used and make corrections accordingly.

### ***Ratio to Predict Future MeHg Concentrations***

The DSEIS states “a ratio method to estimate methylmercury concentrations from predicted total mercury concentrations was applied per the approach and data collection by Holloway et al. (2017) that showed methylmercury concentrations were up to two percent of total mercury concentrations in samples from Sugar Creek and the East Fork SFSR.”<sup>36</sup>

EPA recommends the FEIS clarify if the ratio from Holloway is based on dissolved or whole water mercury concentrations and recommends utilizing dissolved concentrations since this is the form that is predicted to be released from the mine operations (i.e., “Predictive modeling indicates that mine facilities and water treatment would contribute dissolved mercury to surface waters primarily during the operating and early post-closure periods”)

Also, the Holloway ratio is based on existing conditions between mercury and MeHg and will underpredict ratios that may exist if carbon and/or sulfate levels are increased.

Overall, using this ratio to predict future MeHg concentrations likely results in an underprediction of the impacts. For the FEIS, EPA recommends reassessing the use of this ratio and adjusting the assessment accordingly to avoid underpredicting impacts.

### ***Model Sensitivity and Uncertainty***

#### **Air Temperature Correction Factors**

The DSEIS states “[a]ir temperature correction factors used to scale laboratory reaction rates to field conditions by the model could underestimate actual reaction rates and chemical releases from mined materials, and hence, surface water quality impacts.”<sup>37</sup>

We appreciate that the potential for underestimating reactions rates due to the temperature correction factor is mentioned in the DSEIS. However, for the FEIS, EPA suggests that the model be run without the temperature correction factor applied to the chemical source terms in order to provide an upper bound of leaching potential. In general, EPA suggests a preference to overpredict environmental impacts with a caveat that the predictions may be conservative rather than the other way around.

Later the DSEIS mentions “[t]he model is most sensitive to ...increasing the reaction temperature” and “increasing the reaction temperature in mined materials and pit walls was shown to produce higher post-closure arsenic concentrations in the pit lakes and downstream assessment nodes.”

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<sup>36</sup> (DSEIS, p. 4-259).

<sup>37</sup> (DSEIS, p. 4-279).



Presumably, “increasing the reaction temperature” refers to using the humidity cell test (HCT) results that were obtained from the lab (at 25°C) without decreasing the reaction temperature to reflect the annual average measured at the mine site (2.6 °C). EPA recommends the FEIS provide details clarifying if they were still decreased from the lab, but less than had been done originally. It should also be taken into consideration that under future climate conditions, the annual average air temperature at the mine may increase, which would result in an underpredictions of chemical releases rates if the current rates are based on the average of historical temperature.

Presumably these results represent uncorrected laboratory-based source terms, as opposed to a dataset where the reaction temperature has been increased beyond what was measured in the lab. Given that the temperature correction factor was a significant variable impacting the water quality predictions (i.e. correcting the chemical release rates measured at 25 °C down to 2.6 °C), this underscores our comments for the FEIS to include the uncorrected rates in the model predictions unless specific evidence can be provided to support the use of the temperature corrections.

#### Atmospheric Mercury Deposition

The DSEIS states “[t]he surface water quality model predictions do not include mass loading inputs from permitted IPDES outfalls that would be required for the SGP. Additionally, mercury inputs from atmospheric deposition caused by the SGP have not been considered in the model. These additional loads were discussed qualitatively or semi-quantitatively in the analysis above but could modify future analyte concentrations compared to predicted values.”<sup>38</sup>

As mentioned above, we appreciate disclosing this information in the DSEIS; however, for the FEIS, EPA recommends accounting for atmospheric deposition in the water quality predictions to provide a wholistic assessment of water quality impacts.

#### Site-wide Water Chemistry (SWWC) Model-predicted Concentrations

The DSEIS states “[m]odel-predicted concentrations generated by the SWWC Model are for the dissolved fraction only and may underpredict concentration levels for constituents such as mercury that have been shown to occur in particulate form.”<sup>39</sup>

As mentioned previously, we appreciate disclosing this information in the DSEIS; however, for the FEIS, EPA recommends a preference to account for whole water concentrations (which is reflective of the 12 ng/L chronic criteria value for mercury).

There are multiple aspects of the analysis in the DSEIS where the estimated impacts represent underpredictions. While each individual aspect may represent a relatively minor underpredictions, collectively they could add up to the impacts to air and water being significantly higher than what is anticipated in the DSEIS. As noted in the comments above, we recommend that underpredictions be remedied to develop conservative predictions of water quality impacts. This is important in order to disclose impacts more accurately and also to ensure that water management, control, and treatment plans will be effective at protecting water quality.

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<sup>38</sup> (DSEIS, p. 4-279).

<sup>39</sup> (DSEIS, p. 4-279).

### ***Mitigation Measures for Mercury***

Mercury concentrations in West End Creek will increase from the baseline of approximately 4 ng/l to approximately 53 ng/l during mining operations (for 10 years).<sup>40</sup> This represents an increase in mercury loading and likely impairment to West End Creek, which is fully supporting its beneficial uses and is a high-quality water under Idaho's antidegradation policy. Additionally, it will also increase loading downstream to Sugar Creek, which is already listed as impaired under Clean Water Act Section 303(d) for mercury. The increase is due to the diversion of West End Creek, which is a result of the proposed SGP. Even though West End Creek is elevated in mercury above the proposed West End pit, by diverting the Creek and mining the pit, the SGP is resulting in an increase in the amount of mercury into lower West End Creek and Sugar Creek from current conditions. For the FEIS, EPA recommends that a mitigation measure be developed to avoid the predicted mercury water quality standard exceedances during operations or offset the additional amount of mercury being added to the system (e.g., by removing other mercury sources) to avoid further water quality degradation. Because mercury is bioaccumulative, effects to the system will likely extend beyond the lifespan of the SGP.

### **Financial Assurance**

According to the DSEIS, calculation of the initial bond amount would be completed following the Record of Decision (ROD) when enough information is available to adequately and accurately perform the calculation.<sup>41</sup> EPA continues to recommend that the FEIS provide a more specific discussion of the estimated financial assurance amount and mechanism, particularly given the water management needs at the site (including post-closure). This would provide a basis for evaluating whether the planned reclamation and closure activities would be effective (funded) in the event of a bankruptcy or compliance issues. Other mining EISs have included financial assurance estimates that comport with the draft reclamation and closure plans and acknowledge that the final financial assurance would be determined after the ROD. For example, see the Donlin Gold Project EIS, the Haile Gold Project EIS, and the Northmet Project EIS. This level of disclosure is also important for the SGP. Failure to obtain sufficient financial assurance at the Stibnite Mine Site in the past has resulted in significant, unaddressed contamination at the Site. If not for the NEPA process, there would be no public disclosure of financial assurance estimates. We understand that draft estimates are currently available.

### **Geologic Resources and Geotechnical Hazards**

#### ***Mitigation Measures for Geotechnical Stability***

The SDEIS analysis does not recommend any additional geotechnical stability mitigation measures beyond those identified in Section 2.4.9. Although the TSF dam is designed to meet and exceed regulatory stability criteria, recent studies of dam failures have established that the dominant cause of failures arises from deficiencies in engineering practice associated with the spectrum of activities embraced by design, construction, quality control, and quality assurance.<sup>42</sup> Therefore, there is credible information highlighting that, even assuming that the dam and buttress are adequately designed, dam incidents could still happen due to human-caused errors during construction and operations. A best practice to mitigate this, is the establishment of an Independent Tailings Review Board (ITRB) and regular independent reviews during design, construction, operations, and closure. An ITRB and regular

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<sup>40</sup> (DSEIS, p.4-251).

<sup>41</sup> (DSEIS, p. 2-91).

<sup>42</sup> Morgenstern, N.R. 2018. Geotechnical Risk, Regulation, and Public Policy. Soils and Rocks, São Paulo, 41(2): 107-129.

independent review is a best practice for new tailings dam facilities (with high or greater consequence classifications) in the Global Industry Standard on Tailings Management.<sup>43</sup>

The State of Idaho's dam safety regulations do not appear to require independent review. Therefore, we recommend that the FEIS include a requirement that an ITRB be established and regularly conduct independent reviews as a mitigation measure to ensure geotechnical stability, including during seismic events, and protection of surface resources. We note that the Forest Service is requiring establishment of an ITRB in RODs for the Pinto Valley Mine (AZ) and Kensington Mine (AK), based on the global standard and FEMA Federal Guidelines for Dam Safety Risk Management.

### ***Geotechnical Stability of Mine Access Roads***

When comparing geotechnical stability related to mass wasting events (i.e., landslides, rockfalls, and avalanche paths) of the 2021 MMP Alternative's Burntlog Route and the Johnson Creek Route Alternative, EPA recommends the FEIS consider the implementation of proposed environmental design features (EDFs) for the two Action Alternatives in the alternatives analysis. For example, for existing areas of landslides and rockfalls, geotechnical design considerations and improvements to existing roads with EDFs could address the issues raised as concerns for the Johnson Creek Route Alternative with geotechnical stability potentially improving as a result of the alternative. EPA also recommends that the FEIS clearly state in Section 4.2.2.3 Johnson Creek Route Alternative that the EDFs proposed for the 2021 MMP Alternative's Burntlog Route also apply to the Johnson Creek Route Alternative.

### **Existing Versus New Stream Crossings from Mine Access Roads**

Throughout the DSEIS, the number of estimated stream crossings for mine access roads are compared between the alternatives, but the context of these stream crossings (i.e., existing versus new) is not generally included in these analyses. For example, new stream crossings where a road did not previously exist has a different impact than reconstruction of current road stream crossings to higher environmental protection standards which may result in an improvement of aquatic conditions/upstream access. Where appropriate to meaningfully distinguish impacts between alternatives, in addition to estimated number of stream crossings, EPA recommends the FEIS evaluates the potential impacts from stream crossings that considers potential different responses associated with existing stream crossings and new stream crossings.

### **Impact Assessment of Public Access of Burntlog Route**

According to the DSEIS, Burntlog Route will be open to public use<sup>44</sup> and it is not apparent that the 2021 MMP Alternative will necessarily promote the separation of the general public and heavy mining equipment during operations along Burntlog Route when compared to Johnson Creek Route Alternative. Accordingly, during operations the public will potentially have access and use the same roads as large mining equipment for both Action Alternatives. Therefore, EPA recommends that potential public safety risks and potential accidents resulting from public use of these road networks are assessed similarly for both Action Alternatives. EPA also recommends that this assessment accounts for the effects of proposed improvements to the road network that are described for the Johnson Creek Route Alternative (i.e., "wider roads, more cut/fill sections, and more switchbacks") when comparing these two alternatives.

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<sup>43</sup> International Council on Mining & Metals, UN Environment Programme, Principles for Responsible Investment, August 2020.

<sup>44</sup> For example, (DSEIS, pgs. 2-18, 2-20, and 4-34).

## **Fish Resources and Fish Habitat**

### ***Fish Exposure to Interim Conditions***

The DSEIS includes a summary of measures to avoid and minimize impacts to fish habitat and describes the fishway (with trap and haul capability) and direct and indirect impacts to individual fish.<sup>45</sup> Measures such as removal or blockage of access will be taken to ensure fish are not exposed to mining activities that are known to be potentially harmful or lethal such as noise and vibration. The DSEIS is unclear about whether reaches that are in sub-optimal/poor condition are accessible to fish (with consideration to both anadromous and non-anadromous salmonids). Fish will have access to the active area, if the fishway provides upstream and downstream passage as planned. The DSEIS indicates fish will have access to stream reaches recently impacted and have marginal/poor condition in terms of habitat quality, stability, temperature, etc.<sup>46</sup> EPA recommends the FEIS clarify whether there will be fish access to recently reclaimed reaches in marginal/poor condition and discuss related control measures to ensure fish protection.

### ***Stream Construction and Enhancements***

Successful stream reclamations and enhancements are constructed to function in relative equilibrium with inputs/transport of wood, water, and sediment/bedload that vary in time and space. Therefore, design and construction are dependent on adequate modeling of these three inputs. Even with careful effort, risk of improper function can result leading to negative outcomes, such as erosion, incision, bed aggradation, channel widening, etc. This risk has been acknowledged in the DSEIS stream design report.<sup>47</sup> Once completed, these stream constructions/restorations require ongoing evaluation and monitoring to ensure proper function until they are established and stable.

EPA encourages that the FEIS include the best available data and modeling methods for the stream reclamation/enhancement effort. EPA further recommends following a rigorous monitoring effort, particularly following large precipitation events (e.g., rain-on-snow) to ensure that this restoration can be realized in the long-term. We recommend that these measures be identified and committed to in the FEIS.

### ***Mitigation for Tissue-based Mercury Criteria Exceedances***

The DSEIS states “[f]or mercury, while the predicted concentrations do not exceed the aquatic life criterion based on water column, it is uncertain whether incremental change in water column concentrations beyond baseline would cause fish tissue concentrations to exceed the tissue-based criterion.”<sup>48</sup>

This uncertainty directly relates to whether the SGP would result in exceedances of Idaho’s EPA-approved fish tissue-based human health criterion for mercury. The 2014 NMFS Biological Opinion for Idaho’s water quality standards for toxics concluded that the aquatic life criterion is not protective of aquatic life and that it is unlikely to be protective of the human health fish tissue criterion. Therefore, EPA recommends that this uncertainty be addressed by including a mitigation measure to section 4.12.3 that would require mercury monitoring and analysis to determine whether the incremental changes could result in exceedances of the tissue-based mercury human health criterion over time and that adaptive

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<sup>45</sup> (DSEIS, pg. 2-107, 2-119 -120, and 4-334).

<sup>46</sup> (DSEIS, p. 4-334).

<sup>47</sup> Perpetua Resources. Sept. 2021. Stibnite Gold Project– Stream Design Report. Prepared by Rio Applied Science and Engineering, Boise, Idaho.

<sup>48</sup> (DSEIS, p. 4-438).

management occur if exceedances are predicted. EPA also recommends the FEIS include this mitigation along with a list of potential adaptive management measures or mercury offsets.

## **Access and Transportation**

### ***Context for Disturbance by Past Mining Activities***

The DSEIS states “[t]here would be a long-term loss of access to land for exercising treaty rights within the Operations Area Boundary while the lands are occupied for mining; however, lands within the Operations Area Boundary have been highly disturbed by past mining activities.”<sup>49</sup> EPA notes that the statement “lands within the Operations Area Boundary have been highly disturbed by past mining activities” does not serve a purpose in the context of public access and how it affects impacted Tribes without additional context. The first half of the sentence speaks to the loss of access to the land, and the underlined portion shifts to land disturbance and not access.

As written, it seems to suggest that additional land disturbance will not be as impactful to Tribes because the land has already been disturbed in the past. For the FEIS, EPA suggests either removing the identified portion of the text, or providing additional context after it, to clarify that past impacts to the land do not justify or reduce the concerns associated with future land disturbances.

## **Wetlands and Riparian Resources**

### ***Uncertainty and Underestimation of Indirect Effects***

Regarding “[f]unctional loss due to other indirect effects, including changes in hydrology, water quality, and increase dust and/or mercury deposition has been examined through inspection of dewatering drawdown and distance to roadways, but is difficult to quantify precisely. As a result, functional units that would be lost if these indirect effects occur, may be underestimated.”<sup>50</sup>

To address these uncertainties and underestimation of impacts, EPA recommends the FEIS include a mitigation measure to Section 4.12.2 that would require continuous monitoring and inspections to determine whether there are incremental changes that are contributing additional impacts to hydrology, water quality, increased dust/mercury deposition, etc. that are indicative of additional functional loss to wetlands or riparian resources. EPA further recommends that the monitoring and inspections be used to identify if additional best management practices, adaptive management, and/or compensatory mitigation are needed during project operations.

### ***Conceptual Stream and Wetland Mitigation Plan***

The DSEIS provides little information about the overall objectives and elements of the proposed Conceptual Stream and Wetland Mitigation Plan compared to descriptions of the other proposed mitigation plans developed for other resources. EPA recommends the FEIS provide more details about the actions proposed in this mitigation plan that demonstrates that this plan will provide adequate and appropriate compensatory mitigation. Language like what is found on page 4-322 (Section 4.11.3 - Mitigation Measures) – “Perpetua proposes to accomplish compensatory mitigation for impacts to wetlands through a combination of mitigation bank credits in the North Fork Payette subbasin and permittee-responsible on-site mitigation within the SFSR subbasin (Tetra Tech 2021b)”, would be helpful to summarize earlier in the FEIS, such as in the Stibnite Gold Mitigation Plan section of the Alternatives chapter.

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<sup>49</sup> (DSEIS, p. 4-492).

<sup>50</sup> (DSEIS, p. 4-308).

## **Environmental Justice**

### ***EJScreen***

The Forest Service employs a clear methodology for identifying people of color and low-income populations in the SEIS analysis and considers the need for a state-specific threshold to identify these communities. In addition to the methodology outlined by the Forest Service, EPA continues to recommend the FEIS supplement the analysis by including an EJScreen analysis and considering its datasets with the most recent version of EJScreen, EJScreen 2.1.<sup>51</sup> EPA considers a project to be in an area of potential environmental justice (EJ) concern when an EJScreen for the impacted area shows one or more of the EJ Indexes at or above the 80th percentile in the nation and/or state.

### ***Traditional Ecological Knowledge***

EPA appreciates that the DSEIS includes ethnographies of the analysis area prepared by the Nez Perce Tribe, the Shoshone-Paiute Tribes, and the Shoshone-Bannock Tribes. EPA recommends the FEIS include the identification, inclusion, and integration of Traditional Ecological Knowledge (TEK) into the NEPA analysis. In addition to anticipated impacts from the project, as well as traditional hunting and land use patterns in the area, this can include the collection of local and traditional knowledge concerning the affected environment and could be used to support the understanding of how climate change has impacted local environmental resources and subsistence resources. In addition to reviewing any pertinent traditional environmental knowledge currently available, additional studies and outreach may be conducted as necessary to clearly identify potential impacts, including cumulative impacts, from the proposed project and project alternatives, and help inform avoidance, minimization, and compensation strategies across affected environmental resources. As an example, this could include potential impacts from increased noise and air emissions that may affect fish and wildlife that are of cultural and subsistence importance to communities with EJ concerns.

### ***Mitigation***

EPA notes that the DSEIS indicates that at this time, no mitigation measures have been identified for Environmental Justice and for several of the resource sections that are relevant to Environmental Justice. For the FEIS, EPA recommends including mitigation measures developed upon contribution and feedback from the communities with EJ concerns if the information can be publicly disclosed, or alternatively, note that mitigation measures have been developed or are contingent upon contribution and feedback from the communities with EJ concerns.

### **Access Mitigation**

The ~14,221 acres of public lands within the Operations Area Boundary will become inaccessible to communities with EJ concerns. This restricted access has potential to result in additional adverse and disproportionate impacts by limiting subsistence or traditional use by communities with EJ concerns, including tribal members and indigenous peoples.<sup>52</sup> The DSEIS indicates that the action alternatives will remove access to a culturally important area for approximately 20 years.<sup>53</sup> The DSEIS indicates that a mitigation measure for access impact would be incorporated into any decision on the SGP due to long-term loss of access to land while the lands are occupied for mining.<sup>54</sup>

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<sup>51</sup> <https://www.epa.gov/ejscreen>, accessed 1/10/2023.

<sup>52</sup> (DSEIS, p. 4-620).

<sup>53</sup> (DSEIS, p. 4-623).

<sup>54</sup> (DSEIS, p. 4-669 and 4-672).

To the extent information can be publicly disclosed, EPA recommends including in the FEIS additional information on proposed access mitigation. EPA continues to recommend working with communities with EJ concerns to identify priority areas that will be affected by SGP, and using input from these communities to identify access opportunities, develop mitigation plans, and developing plan to restore access at the conclusion of the project. If there is interest from communities with EJ concerns in maintaining partial access to specific high-priority areas within the Operations Area Boundary, then EPA encourages Forest Service to work with these communities and the project proponent to determine specific times that may be reserved for safe access, if possible.

#### Replacement Cost Method for Subsistence Foods

EPA recommends that the Forest Service consider the potential use of the replacement cost method (RCM) to quantify the monetary cost of replacing subsistence foods that may be lost because of SGP activities. RCM is a standard technique for evaluating the dollar value of an ecosystem service.<sup>55</sup> Subsistence harvest patterns could be disrupted by harvesters' self-imposed restrictions on resources considered to be tainted, or as a result of space-use conflicts (e.g., increased number of users resulting from changes to access), or due to the temporarily avoidance of subsistence use areas due to noise impacts and habitat loss expected from construction and operation. When subsistence foods are not available, nutritionally comparable substitutes must be purchased, placing a direct financial burden on subsistence users in the form of lost harvest, as well as an indirect burden from stranded assets that users purchase for harvest activities (e.g., fishing or hunting equipment, 4x4 vehicles). EPA recommends that Forest Service work with communities with EJ concerns to consider potentially developing and adopting mitigation measures that will compensate for potential losses in harvest using the RCM.

#### **Climate Change**

##### ***NEPA Guidance on Consideration of Greenhouse Gas Emissions and Climate Change***

On January 9, 2023, Council on Environmental Quality (CEQ) published interim guidance to assist federal agencies in assessing and disclosing climate change impacts during environmental reviews.<sup>56</sup> CEQ developed this guidance in response to EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*. The interim guidance is effective immediately. CEQ indicated that agencies should use this interim guidance to inform the NEPA review for all new proposed actions and may use it for evaluations in process, as agencies deem appropriate, such as informing the consideration of alternatives or help address comments raised through the public comment process. EPA recommends the FEIS apply the interim guidance as appropriate, to ensure robust consideration of potential climate impacts, mitigation, and adaptation issues.

##### ***Science-based GHG Reductions Targets***

The analysis in the DSEIS compares project emissions to Idaho state-level emissions as a percentage. EPA recommends the FEIS compare project emissions to science based GHG reductions targets. The United States has established a Paris-agreement target to reduce net GHG emissions economy-wide by 50-52% below 2005 levels, consistent with a pathway to net-zero by 2050. EO 14057 establishes a policy for the federal government to lead by example in order to achieve a carbon-pollution free electricity sector by 2035 and net-zero emissions economy-wide by no later than 2050. These and other policies reflect science based GHG reduction goals to avoid the worst impacts of climate change.

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<sup>55</sup> (Brown & Burch, 1992; Hougner, Colding, & Soderqvist, 2006).

<sup>56</sup> <https://www.federalregister.gov/documents/2023/01/09/2023-00158/national-environmental-policy-act-guidance-on-consideration-of-greenhouse-gas-emissions-and-climate>, accessed 1/10/2023.

EPA recommends the FEIS discussion include whether and to what extent the estimated GHG emissions from the proposed alternatives are consistent with achieving these science based national GHG reduction targets and any relevant state or local goals.

### ***Social Cost of Carbon***

The DSEIS notes “[f]or purposes of this analysis, qualitative analysis is appropriate because quantifying the relative costs and benefits of the alternatives is not practically feasible and would be subject to high uncertainty as described below.”<sup>57</sup> However, the DSEIS calculates estimates of direct and indirect emissions, and these estimates can be used to monetize those emissions using the Social Cost of Greenhouse Gases (SG-GHG). EPA encourages lead agencies to monetize impacts of GHG emissions using SG-GHG estimates in NEPA analyses. For transparency, EPA recommends the FEIS assess the climate impacts and disclose climate damages of the proposed project using the SC-GHG, which reflect the best available science and methodologies to monetize the value of net changes in direct and indirect GHG emissions resulting from a proposed action to society.

### ***Estimated Emissions Speciated by Gas***

The SDEIS presents estimates in CO<sub>2</sub>e and not speciated by gas (CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O). To ensure transparency of the analysis, EPA recommends presenting emissions estimates individually by GHG, as well as aggregated in terms of total CO<sub>2</sub>e in the FEIS.

Additionally, the DSEIS indicates that approximately 99.9 percent of all processing GHG emissions are CO<sub>2</sub>. Similarly, construction, mining and commuting CO<sub>2</sub> emissions comprise approximately 99 percent of the total GHG emissions from those activities.<sup>58</sup> EPA recommends the FEIS include data to support this statement. Specifically, EPA recommends providing data showing the amount of each GHG emitted from each emission source (i.e., the activities included in Tables 4.4-2a and 4.4-2b).

### ***Direct and Indirect GHG Emissions***

EPA recommends including a data table in the FEIS to support the DSEIS statement that the direct and indirect GHG emissions are only a small increase over the current regional GHG emissions.<sup>59</sup> Much of the information to develop this table is already in the SEIS, but it is found in various sections and with differing units (e.g., MMT CO<sub>2</sub> (e) vs. tons CO<sub>2</sub> (e)). As an example, to produce a table to support this statement, Tables 4.4-2a and 4.4-2b could be augmented to include the estimated indirect emissions and the current Idaho GHG emissions inventory.

### ***Access Road Alternatives***

The DSEIS indicates that the magnitude of the GHG emissions difference between the access road alternatives will be small compared to total SGP construction emissions during the construction phase.<sup>60</sup> EPA recommends the FEIS support this statement with data demonstrating that the Johnson Creek Alternative has similar GHG emissions to the 2021 MMP Alternative. Preferably, the emissions data for this alternative would be presented the same as it is in Tables 4.4-2a and 4.4-2b so that the alternatives can be meaningfully compared.

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<sup>57</sup> (DSEIS, p. 4-60).

<sup>58</sup> (DSEIS, p. 4-65).

<sup>59</sup> (DSEIS, p. 4-67).

<sup>60</sup> (DSEIS, p. 4-73).



### ***Integration of Climate Science***

Flow (quantity and timing), summer air temperatures, and snowpack are likely to be substantially different over the span of this project (i.e., the next 15 to 20 years or longer) due to climate change. Further, conditions from that point in time into the future will be even further from estimates that are based on past conditions. It does not appear that climate change related concepts/forecasting/modeling are incorporated in the relevant sections of the DSEIS beyond the acknowledgement that climate change presents uncertainty.<sup>61</sup> For example, the DSEIS indicates the 100-year flood recurrence interval has been the standard approach in culvert sizing,<sup>62</sup> but it is now important to state future projections of high flow magnitude to conservatively account for climate change; and that modeled flow future conditions are based on historic condition.<sup>63</sup>

For the FEIS, EPA recommends incorporating state-of-the-climate science forecasting/modeling to estimate local climate conditions for proposed work that uses estimates of flow, air temperature, and snowpack. Examples of activities that would benefit from sophisticated forecasting would be road crossings design, stream reconstruction, and growth of riparian vegetation for stream temperature attainment. If site specific models and data are not available, consider incorporating climate science literature/information to inform and adjust existing models to conservatively adjust for climate change. Consider climate science projections (knowledge from the literature, forecasting/modeling) in aspects for both ongoing and postmining operations.

### **Proposed Action and Alternatives**

#### ***Agency Preferred Alternative***

##### Rationale of 2021 MMP Identification

The Executive Summary highlights three reasons the Forest Service identified the 2021 MMP Alternative as the Agency Preferred Alternative, but the first two bullets (i.e., incorporates water management and closure activities to reduce the duration of long-term water treatment requirements and incorporate measures to manage stream temperatures) are also true for the Johnson Creek Alternative since the mining portion of the Action Alternatives are the same. Similarly, Section 2.7 highlights eight reasons the Forest Service identified the 2021 MMP as the Agency Preferred Alternative, but the first two are also true for Johnson Creek Alternative. For the FEIS, since the Action Alternatives differ by proposed mine access routes, EPA recommends replacing these first two reasons with other primary reasons that are exclusive for the 2021 MMP.

The Agency Preferred Alternative sections in the Executive Summary and Chapter 2, as presented, appear to imply that the Agency Preferred Alternative is environmentally superior to the Johnson Creek Alternative. For transparency, EPA recommends the FEIS provide additional context for the selection, such as if the reasons highlighted were given preference or prioritized over other potential negative impacts.

##### Least Environmentally Damaging Alternative (LEDPA)

Because the U.S. Army Corps of Engineers is planning to use this EIS to support its CWA Section 404 analysis, EPA recommends that the FEIS discuss whether the Agency Preferred Alternative is also the LEDPA.

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<sup>61</sup> (DSEIS, p.4-280).

<sup>62</sup> (DSEIS, p.4-264).

<sup>63</sup> (DSEIS, p.4-326).

### ***Environmentally Preferable Alternative***

EPA recommends the FEIS describe the criteria which will be used to ultimately determine the environmentally preferable alternative under NEPA.

### **Specific Comments – DSEIS**

#### ***Ore Processing***

- The DSEIS indicates grinding will occur within an enclosed building to reduce noise levels and facilitate maintenance of the milling equipment.<sup>64</sup> EPA recommends the FEIS confirm if the ore processing building will be enclosed, and if not, correct its description throughout the FEIS. EPA notes a similar statement regarding an enclosed ore processing facility building is included in the Environmental Design Features on page 2-112.
- The DSEIS indicates the limestone crusher, screens, conveyors, and feed bins would not be enclosed. Dust would be controlled in a similar manner to the ore crushing and conveying process using water sprays and/or bag house dust collectors.<sup>65</sup> EPA recommends FEIS confirm if the limestone processing would be controlled like the ore processing operation, and if so, correct its description throughout the FEIS.

#### ***Tailings Storage Facility***

- Regarding “[t]he TSF would be designed and operated as a closed-circuit, zero-discharge facility meaning no tailings water would be discharged to the surface water or groundwater except in compliance with applicable permits and regulations”<sup>66</sup> and “[w]ater from the TSF and TSF Buttress underdrains may be discharged from two outfalls shown on Figure 2.4-15,…”<sup>67</sup>

The first sentence implies that there will be no discharge from the TSF. Based on the other two sentences, this appears to be accurate for operational conditions, but not for closure. Therefore, for the FEIS, EPA recommends revising the first sentence as follows: “... no tailings water would be discharged during mining operations,…”

#### ***Dry Stack Tailings***

- The DSEIS indicates the use of the dry stack method of tailings disposal was evaluated and determined to be technically and economically infeasible.<sup>68</sup> An additional consideration in the determination to not fully evaluate a dry stack option is that stability of the proposed TSF is enhanced by the waste rock buttress so the stability advantage of a dry stack over a tailings impoundment is not as prominent for the SGP as it might be for other projects. We recommend that this consideration be included in the FEIS.

### ***Agency Preferred Alternative***

- The rationale for Agency Preferred Alternative in Section 2.7 raises two travelway distances (i.e., 0.5 miles and 100ft) in comparison for potential spill contamination, sedimentation, and

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<sup>64</sup> (DSEIS, p. 2-48).

<sup>65</sup> (DSEIS, p. 3-48).

<sup>66</sup> (DSEIS, p. 2-57).

<sup>67</sup> (DSEIS, p. 2-67).

<sup>68</sup> (DSEIS, p. 2-130).

turbidity to streams during operations.<sup>69</sup> As there is very likely covariance (i.e., connection) between the two travelway distance zones and that these two zones could be repeating the same information, EPA suggests the FEIS use only one distance zone in this comparison.

***Table 2.8-1 Alternative Comparison and Impact Summary (for 2021 MMP)***

- The DSEIS indicates low flow will be reduced at some locations during some periods of the SGP operations.<sup>70</sup> EPA recommends the FEIS add a sentence to the table describing how far downstream (in feet or miles) from the SGP low flow conditions would occur so that the geographic extent of low flow impacts to the EFSFSR are clearly disclosed. Note that this comment also applies to the same sentence on page ES-14.
- In the summary table 2.8-1 2021 MMP, the TSF area groundwater summary provides the estimated changes in groundwater concentrations.<sup>71</sup> EPA recommends the FEIS describe how far from each facility the groundwater concentrations would remain elevated above the baseline so that the geographic extent of groundwater contamination caused by the SGP is disclosed.
- The DSEIS states, “[f]or mercury, while the predicted concentrations do not exceed the aquatic life criterion based on water column, it is uncertain whether incremental change in water column concentrations beyond baseline would cause fish tissue concentrations to exceed the tissue-based criterion.”<sup>72</sup> EPA recommends the FEIS add this sentence to the summary table 2.8-1 2021 MMP, for surface water quality since it relates to uncertainties associated with achieving Idaho’s fish tissue-based mercury water quality criterion for human health.
- According to pg. 4-308, “[f]unctional loss due to other indirect effects, including changes in hydrology, water quality, and increase dust and/or mercury deposition has been examined through inspection of dewatering drawdown and distance to roadways, but is difficult to quantify precisely. As a result, functional units that would be lost if these indirect effects occur, may be underestimated.” EPA recommends adding this statement or something similar to the summary table 2.8-1 2021 MMP, Wetlands for the FEIS. Otherwise, the exact acres of wetlands lost or changed provided in the table imply a level of certainty that does not exist since indirect (secondary) impacts are underestimated and not quantified. In addition, we recommend that a similar uncertainty statement be added to the Executive Summary on page ES-17.

***Air Quality***

- The SDEIS indicates deposition of mercury, and nitrogen and sulfur species were predicted to be less than Significant Impact Levels (SILs).<sup>73</sup> EPA notes that SILs are air quality screening thresholds not applicable to deposition of pollutants, so this statement is incorrect. For the FEIS, EPA recommends replacing this term with “applicable screening thresholds,” or another appropriate term.
- The DSEIS states “SILs are defined concentrations of criteria pollutants in the ambient air that are considered inconsequential in comparison to the NAAQS. A project impact shown to be

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<sup>69</sup> (DSEIS, p. 2-133).

<sup>70</sup> (DSEIS, p. 2-141).

<sup>71</sup> (DSEIS, p. 2-143).

<sup>72</sup> (DSEIS, p. 4-438).

<sup>73</sup> (DSEIS, p. ES-9).

below a SIL can be presumed to not cause or contribute to the violation of a NAAQS.”<sup>74</sup> The first sentence in this paragraph is misleading. For the FEIS, EPA suggests the following language replace the first sentence: “SILs are screening thresholds of criteria air pollutant concentrations considered by the EPA as a level of de minimis impact to air quality. SILs are primarily used in air quality modeling assessments, where a project impact shown to be below a SIL can be presumed to not cause or contribute to the violation of a NAAQS.”

- EPA recommends the FEIS clarify or note in Section 3.3.2 why the much larger “far-field” region’s scope is of importance to the Tribes,<sup>75</sup> given the potential impacts of poor ambient air quality to wilderness areas of Tribal and cultural significance.
- The DSEIS states “[t]he New Source Review process requires facilities to undergo an EPA pre-construction review if they propose building new facilities or modifying existing facilities that would result in a “significant increase” of criteria pollutants per 40 CFR § 52.2376.”<sup>76</sup> For the FEIS, EPA recommends changing the regulatory cite from “52.2376” to “52.21” and “criteria pollutants” to “regulated NSR pollutants.”
- The DSEIS states “[a]pplicability of the PSD program to the SGP depends on the magnitude of annual emissions for criteria pollutants.”<sup>77</sup> We recommend the FEIS revise this sentence to be more precise: “Applicability of the PSD program to the SGP depends on the project’s potential to emit regulated NSR pollutants. Applicability is determined using maximum potential annual potential emissions of the project for each NSR pollutant.”
- The DSEIS states “... the 2021 MMP analysis did include an assessment of the significance of SGP air quality impacts by comparison to the Class II PSD increments.”<sup>78</sup> EPA suggests the FEIS add an additional sentence to disclose why the PSD increment is selected as a threshold to assess the significance of air quality impacts. For example, additional language could state: “The PSD increments may provide a reasonable significance threshold for NEPA assessment because, under the Clean Air Act, significant air quality deterioration is recognized to occur when the amount of new air pollution from a new or modified source would exceed the applicable PSD increment.”
- The DSEIS includes a statement “...consistent with best available control technology for new surface mining and processing operations”<sup>79</sup> which is incorrect. The project did not go through BACT review under the IDEQ PTC process because it did not go through major-source PSD permitting. EPA recommends removing the reference to BACT in the FEIS. A similar statement is included at the top of page 4-59 which EPA recommends revising to remove the reference to BACT.

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<sup>74</sup> (DSEIS, p. 4-27).

<sup>75</sup> (DSEIS, p. 3-30).

<sup>76</sup> (DSEIS, p. 3-34).

<sup>77</sup> (DSEIS, p.3-35).

<sup>78</sup> (DSEIS, p. 4-28).

<sup>79</sup> (DSEIS, p. 4-35).

- EPA suggests the FEIS revise the second sentence on page 4-38 to read “As shown in Table 4.3-4, *IDEQ determined that* these emissions are less than the annual threshold of 100 tpy that would trigger Title V or 250 tpy for PSD permitting status.”
- Regarding DSEIS statement on page 4-43 “...it also is unlikely the SGP would cause or contribute to a violation of a PSD increment” and Table 4.3-9 column heading “PSD Increment Compliance”, it is important to disclose that comparison to the PSD increment threshold in the EIS is not to determine compliance to the standard (this is not a full regulatory assessment of increment consumption) but as a measure of the significance of project impacts to air quality for purposes of NEPA review. Therefore, we recommend the FEIS add a sentence to state the results instead indicate the project does not cause a significant deterioration of air quality. Also, EPA suggests changing the column header for Table 4.3-9 from “PSD increment compliance” to more appropriate wording such as “Results below threshold” or something similar to show the comparison is used to judge significance of project impacts rather than compliance with a regulatory threshold.
- For the DSEIS statement “[t]he most recent measurements were between 2007 and 2010 and are provided in Table 3.3-10 to serve as an estimate of historical Hg deposition in the region surrounding the SGP area,”<sup>80</sup> EPA recommends the FEIS add the word “wet” before deposition to specify that these data do not include dry deposition.
- For Table 3.3-10 Historical Annual Average Concentration and Mercury Deposition Rates – Three Idaho MDN Sites,<sup>81</sup> EPA recommends the FEIS add “in precipitation” to this Table title.
- The DSEIS indicates the nearest geographic site to the SGP area is no longer active but was active from December 2008 to August 14, 2017.<sup>82</sup> For the FEIS, EPA recommends specifying that the nearest site is over 500 km away.
- EPA notes that the Table (3.3-11) Annual Average Mercury Concentration – Salt Lake City AMNet Site<sup>83</sup> contains an important error. The Table reports that the overall mean gaseous elemental mercury (GEM) concentrations is 12.91 ng/m<sup>3</sup>. This value is not accurate. All yearly averages shown above in the Table are less than 2.5 ng/m<sup>3</sup>; and if taking an overall mean of the annual means the value would be 1.88 ng/m<sup>3</sup> which is much lower than the 12.91 ng/m<sup>3</sup> value currently included in the Table. It appears that the values for particle bound mercury (PBM)<sub>2.5</sub> and GEM were switched, because the PBM<sub>2.5</sub> value listed is lower than all of the annual reported concentrations. EPA recommends the FEIS correct the error accordingly.
- Regarding the DSEIS statement “[e]stimates of these emissions were based on regulatory compliance emission test results available for several gold mines in Nevada that use the same type of extraction process (Nevada Division of Environmental Protection 2006, 2015, 2016),”<sup>84</sup> for the FEIS, EPA recommends the FEIS add whether the mercury content of the ore was significantly different in the comparison between Stibnite and the Nevada mines.

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<sup>80</sup> (DSEIS, p. 3-47).

<sup>81</sup> (DSEIS, p. 3-56).

<sup>82</sup> (DSEIS, p. 3-56).

<sup>83</sup> (DSEIS, p. 3-57).

<sup>84</sup> (DSEIS, p. 4-25).

- The DSEIS states “[f]urther speciation of the particulate forms of Hg is possible such as fine [particle-borne Hg (HgP)], which is analogous to filterable and condensable PM10. Essentially, the PM10 associated with HgP is the mercury bound within the particles of the particulate smaller than 10 microns. Appropriate particle distribution of mercury can be established using proper test methods and techniques, but the overall percentage of HgP compared to total Hg is small, with HgP PM10 being even less (~14.1 percent vs 2.4 percent from a coal boiler as an example) (Peng 2021). However, as discussed below, and in further detail in Section 4.3.4.2, the approach applied for this analysis did not speciate HgP.”<sup>85</sup> EPA notes that this statement appears superfluous, given that particulate bound Hg was not further speciated in the analysis. EPA suggests the FEIS include some context for why this information is included or consider removing it.

### ***Surface Water and Groundwater Water Quality***

- The SDEIS states that for copper and mercury, impacts may be minimal but uncertainties in predicting future conditions exist.<sup>86</sup> EPA recommends the FEIS describe the mitigation and monitoring that will occur to reduce the uncertainties and actions that would be taken if impacts are more than minimal and result in exceedances of Idaho’s CWA aquatic life criteria for copper and mercury.
- For the FEIS, EPA recommends noting in a footnote of the Table 3.9-6a Average MWMP Results – Development Rock and Ore and in the text that refers to the Table<sup>87</sup> that the detection limit used for this test for mercury (100-200 ng/L) is significantly above the CWA aquatic life criterion of 12 ng/L. Therefore, while some concentrations were above 200 ng/L, when values were less than this it does not indicate that the leachate would meet criteria. The same comment also applies to cadmium, copper, selenium, silver, thallium and lead. If similar issues also exist in other Tables in the text, EPA recommends adding a similar note indicating where the detection limit of the analysis is above the regulatory criteria level.
- The DSEIS indicates, under existing conditions, streams in the SGP area (except for West End Creek) are listed as impaired in accordance with CWA Section 303(d). The causes for listing of these waters are associated with arsenic (plus antimony and mercury at some locations) for exceedances of Idaho's water quality standards (WQS). Operational and post-closure concentrations of these elements in the East Fork SFSR are predicted to be comparable to or less than the existing conditions.<sup>88</sup> EPA recommends the FEIS add a sentence to this statement in the Executive Summary that identifies that under the proposed action West End Creek is predicted to exceed Idaho’s CWA mercury aquatic life criterion for approximately 10 years during operation. The predicted mercury Idaho CWA WQS exceedances are described in the main text of the SDEIS, but we recommend that they also be identified in the Executive Summary.
- For Table 3.9-10b,<sup>89</sup> EPA recommends the FEIS add Idaho’s CWA mercury criteria to the table header row as is done for the other constituents.

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<sup>85</sup> (DSEIS, p. 4-30).

<sup>86</sup> (DSEIS, p. ES-16).

<sup>87</sup> (DSEIS, p. 3-160).

<sup>88</sup> (DSEIS, p. ES-15).

<sup>89</sup> (DSEIS, p. 3-183).

- Since cyanide is predicted to be elevated in the tailings pond,<sup>90</sup> EPA recommends the FEIS include cyanide in Table 4.9.6. Predicted TSF Surface Water Chemistry so that predicted cyanide concentrations are disclosed.
- EPA recommends the FEIS add cyanide to Table 4.9-8 Predicted Groundwater Chemistry Underlying the TSF for the same reason as above.

***Fish Resources and Fish Habitat***

- The DSEIS states “[t]he SGP area could experience natural climate change impacts to fish resources...”<sup>91</sup> EPA recommends the FEIS clarify and/or rephrase this sentence to either remove “natural” from the sentence or clearly identify what is meant by “natural climate change.”

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<sup>90</sup> (DSEIS, p. 4-207).

<sup>91</sup> (DSEIS, p. 4-70).