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CONSERVATION
LEAGUE



April 25,

2022

Linda L. Jackson
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Re: Stibnite Gold Project Air Quality Issues

Dear Ms. Jackson:

Idaho Conservation League, Save the South Fork Salmon, Earthworks, and Idaho Rivers United submit this letter to the Payette National Forest highlighting serious air quality issues with Perpetua Resources’ proposed Stibnite Gold Project that continue to come to light through the Idaho Department of Environmental Quality’s air Permit to Construct process.

These comments represent the work of the coalition of groups described above, which have notable expertise in air quality issues, including those issues that stem from mining projects, as well as numerous professional scientific consultants. This letter is in addition to any separate letters that the groups mentioned above may submit. For all the reasons detailed in our letter, we urge the Payette National Forest to include a comprehensive, bolstered air quality analysis in the upcoming Supplemental DEIS for public review.

Idaho Conservation League (ICL) is a non-profit organization dedicated to preserving Idaho’s clean water, wilderness, and quality of life through citizen action, public education, and advocacy. Save the South Fork Salmon (SSFS) is a grassroots, community-based organization in Valley County dedicated to protecting the South Fork of the Salmon River watershed, its outstanding and remarkable natural values, and the economies that depend on those values. Its members and supporters have a strong interest in protecting natural resources, maintaining recreational opportunities and access, and ensuring future generations can enjoy and benefit from these resources and opportunities in the South Fork of the Salmon River watershed. Earthworks is a national non-profit organization dedicated to protecting communities and the environment

1

against the adverse effects of mineral and energy development, while seeking sustainable solutions. Idaho Rivers United (IRU), a nonprofit organization, is Idaho’s leading river-focused conservation organization working to protect and restore Idaho’s rivers and streams. Our mission is to protect wild rivers, restore damaged rivers, and conserve clean water for people and nature.

Background

In parallel with the US Forest Service (USFS) permitting process, Perpetua Resources has also

been pursuing its required air quality permit through the Idaho Department of Environmental Quality (IDEQ) for the proposed Stibnite Gold Project (SGP). IDEQ first received an application for a permit to construct (PTC) from Perpetua (then Midas Gold) in August 2019. Four separate times IDEQ determined that the application was incomplete due to missing important emissions information and modeling analyses. Finally, the application was deemed complete and a draft PTC was noticed for public comment in September 2020. IDEQ received a number of substantive public comments, including from some of the organizations signed on to this letter, prompting IDEQ to request supplemental information from the applicant. A revised PTC was noticed for public comment in February 2021, and IDEQ once again received a number of critical comments, including from EPA Region 10. Based on that round of comments, IDEQ once again made substantive changes to the permit and re-noticed it for public comment in January 2022. Yet again, IDEQ received a number of substantive critical comments from NGOs (including from ICL and SSFS), EPA Region 10, and the Nez Perce Tribe that will need to be addressed by the agency.

Through this permitting process, we had the opportunity to take a deeper dive into the latest emissions inventory and modeling analysis associated with the air quality components of the SGP. While IDEQ remains the permitting authority for Perpetua's permit to construct, the USFS has a responsibility to consider and evaluate the broader air quality impacts of the project under the purview of the National Environmental Policy Act (NEPA) process. Accordingly, we would like to highlight for the USFS the latest takeaways from our technical analysis of potential air quality impacts from the SGP.

We have included the most recent technical comments submitted by ICL/SSFS, the Nez Perce Tribe, TerraGraphics International Foundation, and EPA Region 10 as attachments to this letter. We refer the USFS to these attachments for the specific, technical details related to air quality issues, and will summarize the salient points in this letter.

1. Procedural Issues

Thus far, there have been four rounds of public comments on three revisions of the proposed PTC and Draft Operating Permit for the SGP. Some progress has been achieved in securing

2
health and environmental protectiveness through this lengthy review process. However, despite IDEQ's persistent attempts to obtain objective and transparent submittals from Perpetua, this patchwork approach to upgrade an inherently deficient application is eroding public trust in the process to provide for health and environmental safeguards. This third and latest PTC submittal continues the same unsettling pattern of minimal, insufficient, and vague calculations; attempts by Perpetua to prevent this project from being considered a major source; ineffective monitoring; and lack of provisions for enforcement and corrective actions.

It is also worth noting that it is unusual for a PTC application for this type of project on federal lands to be considered and potentially approved prior to receiving approval from the USFS through the NEPA process. The Applicant is attempting to secure both State and Federal approvals simultaneously. Generally, the Federal approval dictates the type of facility that is acceptable, followed by state implementation of the required controls. Perpetua is submitting confusing and inconsistent air pollution emission claims to the different regulators, hampering the

transparency required for the public to understand and comment in both forums. Additionally, the project has already, and will likely continue to, change substantially through the NEPA process - necessarily forcing changes to any prior PTC approval as well.

The Forest Service should continue to monitor developments on this air permitting process as they continue through the NEPA process for the SGP.

2. Ambient Air Boundary Determination

The PTC application raises serious public health concerns due to IDEQ's exclusion of the public access road between Stibnite Road at Sugar Creek and Thunder Mountain Road at Meadow Creek from the regulatory definition of ambient air. We believe that this exclusion is inconsistent with Clean Air Act's definition of ambient air, EPA's long-standing policy that allows excluding ¹ certain areas of a source's property from ambient air, and EPA's most recent revised policy for ² ambient air. Allowing the public to access this road, even under the conditions of the Stibnite ³ Road Access Management Plan, may result in acute exposure of the public to hazardous air conditions.

¹ 40 C.F.R. 50.1(e).

² Letter from EPA Administrator Douglas Costle to Hon. Jennings Randolph (Dec. 19, 1980), available at: https://19january2021snapshot.epa.gov/sites/static/files/2019-11/documents/1980_costle_letter_ambient_air.pdf.

³ EPA, *Revised Policy on Exclusions from "Ambient Air"* (Dec. 2, 2019) ("Revised Policy"), available at: http://www.epa.gov/sites/default/files/2019-12/documents/revised_policy_on_exclusions_from_ambient_air.pdf.

3

IDEQ precedent, reaffirmed as recently as 2021, makes it clear that a public right-of-way access through a project area is considered – not excluded from – ambient air, and regulatory analyses of the potential impacts along that road, and must show compliance with all ambient impact limits for averaging periods under one year. This determination has been applied by IDEQ for public roads, non-navigable rivers, and railroad tracks. Here, the general public would be allowed access through the mine site on a public road that Perpetua does not have the right to completely deny access. There is no indication that this public road should be treated any differently from past projects. Nothing in the ambient air impact assessments supporting this permit includes any analysis of the air impacts, and thus impacts to the public traveling on the road through the project area.

Regardless of how IDEQ proceeds with their ambient air determination, the Forest Service should assess the air quality impacts of the SGP to recreationalists traveling through the site to Thunder Mountain if the Forest Service is planning to authorize that as a public access route.

3. Need for Human Health Risk Assessment

As it currently stands, neither IDEQ nor the USFS have analyzed or modeled the anticipated ambient concentration of toxic and hazardous air pollutants that people will breathe at, and beyond, the project boundary of the SGP if the project were to move forward as proposed. In

particular, this assessment should consider the high concentrations of both particulate matter (PM/PM10) and arsenic in fugitive dusts, the latter of which exceeds carcinogenic and non-carcinogenic critical toxicity criteria by orders of magnitude. Arsenic-laden particulates are potentially an unacceptable risk for both inhalation and incidental ingestion through direct contact with recently deposited dusts. Human health risk assessments should be performed to address this critical pathway.

Numerous issues could be resolved if the USFS, in coordination with IDEQ and EPA, were to complete such an assessment with the following considerations:

- Include all project emissions regardless of the regulatory interpretation of who has authority to regulate what sources;
- Reflect the range of uncertainties in PM, PM10, and arsenic emission rates; and - Calculate cancer and non-carcinogenic risk associated with hazardous and/or toxic air pollutants (HAPs/TAPs).

The results of this assessment would be invaluable to understanding the true human health risks of the SGP from the air quality standpoint and fall under the purview of what the USFS should analyze and disclose in their environmental analysis of the project.

4

Next Steps

It is the agency's duty under NEPA to "ensure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements," and to "independently evaluate the information submitted . . . for its accuracy, scope, and contents." 40 C.F.R. §§ 1502.23, 1506.25(b)(2). **Based on the information presented, we urge the Forest Service to include a robust air quality analysis in the upcoming Supplemental DEIS.** Doing so would clearly be in the public's interest and would conform to the letter and intent of the NEPA.

We look forward to your response and continuing the conversation on these important issues and their implications for human health and the environment. We would appreciate the opportunity to meet with the relevant staff from the Payette National Forest in the near future to discuss this important issue.

Sincerely,



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5

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Attachments

- Attachment #1 - ICL/SSFS Comments on Stibnite PTC, dated 3/16/22
- Attachment #2 - EPA Comments on Stibnite PTC, dated 3/16/22
- Attachment #3 - Nez Perce Tribe Comments on Stibnite PTC, dated 3/14/22 ●
- Attachment #4 - TerraGraphics Foundation Comments on Stibnite PTC, dated 3/16/22

Attachment 1

ICL/SSFS Comments on Stibnite PTC, dated 3/16/22



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Kelli Wetzel March 16, 2022 Idaho Department of Environmental Quality
1410 N. Hilton St.
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Submitted via email to: Kelli.Wetzel@deq.idaho.gov

RE: Proposed permit to construct for Perpetua Resources (PTC No. P-2019.0047)

Dear Ms. Wetzel:

Thank you for considering our latest comments regarding the proposed permit to construct for the Perpetua Resources (“the Applicant”) Stibnite Gold Project (PTC No. P-2019.0047). We also thank IDEQ for extending the public comment period by an additional 30 days upon request. The Idaho Conservation League and Save the South Fork Salmon have previously (individually) submitted three rounds of comments on this proposed permit that we incorporate by reference in these comments. For this round of comments, our organizations have decided to submit joint comments to IDEQ. Representatives from both groups also attended IDEQ’s informational meeting on March 2, 2022, and had subsequent conversations with IDEQ staff regarding this permit. These comments also incorporate points from technical comments submitted separately by Ian von Lindern, P.E. PhD, from the TerraGraphics International Foundation.

Since 1973, the Idaho Conservation League (“ICL”) has been Idaho’s leading voice for clean water, clean air, and wilderness – values that are the foundation for Idaho’s extraordinary quality of life. As a 501(c)(3) nonprofit organization, ICL works to protect these values through public education, outreach, advocacy, and policy development. ICL is Idaho’s largest state-based conservation organization and represents over 35,000 supporters, many of whom have a deep personal interest in protecting Idaho’s human health and environment. The Stibnite Gold Project is of significant concern to our members and supporters, leading ICL to be engaged on nearly every aspect of this project’s regulatory permitting.

Save the South Salmon (“SSFS”) is a community-based citizens’ organization, headquartered in Valley County, Idaho, dedicated to protecting the South Fork of the Salmon River watershed, its outstanding and remarkable natural values, and the economies that depend on those values. SSFS’s members and supporters have a strong interest in protecting natural resources, maintaining recreational opportunities and access, and ensuring future generations can enjoy and benefit from these resources and opportunities in the South Fork of the Salmon River watershed. SSFS’s members and supporters have participated in the Stibnite Gold Project environmental review process under the National Environmental Policy Act since the Payette National Forest opened the scoping comment period in 2017, and have made significant investments in time and resources to better understand the Stibnite Gold Project and the impacts it might have on the quality of the air, water, and land of the South Fork of the Salmon River watershed.

We continue to have significant concerns about whether this permit would be protective of human health and if the permit is in accordance with state and federal regulations given the significant uncertainty in the emissions inventory and calculations. Accordingly, we once again urge IDEQ to deny Perpetua’s current application for a permit to construct and require a new application that objectively presents the emissions and controls required to comply with State and Federal requirements. We are forwarding these comments to the U.S. Forest Service and Environmental Protection Agency as well. We appreciate your consideration of our comments and look forward to continued dialogue with IDEQ on this matter.

Sincerely,



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ICL/SSFS Comments on the Permit to Construct for Perpetua Resources

General Comments

ICL and SSFS appreciate the significant amount of work that IDEQ staff have put into this permit thus far. We recognize that this is an exceedingly complex and difficult application to review from both a technical and regulatory perspective. Nevertheless, there remain a number of substantial deficiencies in this application that require critical review. Despite the substantial modifications that have been made to the draft permit thus far, we remain very concerned that this permit will not adequately protect air quality and public health.

The following analyses are the fourth round of public comments offered on three revisions of the proposed Permit to Construct (PTC) and Draft Operating Permit for the Stibnite Gold Project. Some progress has been achieved in securing health and environmental protectiveness through this lengthy review process. However, despite IDEQ's persistent attempts to obtain objective and transparent submittals from the Applicant, this patchwork approach to upgrade an inherently deficient application is eroding public trust in the process to provide for health and environmental safeguards. This third and latest PTC submittal continues the same unsettling pattern of minimal, insufficient, and vague calculations; ineffective monitoring; and lack of provisions for enforcement and corrective actions.

It is also worth noting that it is unusual for a PTC application for this type of project on federal lands to be considered and potentially approved prior to receiving approval from the Forest Service through the National Environmental Policy Act (NEPA) process. The Applicant is attempting to secure both State and Federal approvals simultaneously. Generally, the Federal approval dictates the type of facility that is acceptable, followed by state implementation of the required controls. The Applicant is submitting confusing and inconsistent air pollution emission claims to the different regulators, hampering the transparency required for the public to understand and comment in both forums. Additionally, the project has already, and will likely continue to, change substantially through the NEPA process - necessarily forcing changes to any

prior PTC approval as well.

Conservatism

We have continued concern with IDEQ's position on conservative analyses and uncertainty in emissions calculations. IDEQ's response to previous critiques of emission calculations states:

“... (the) approach of estimating potential emissions (PTE) at design capacity and maximum activity rates was considered a sufficiently conservative approach. Maximum hourly and daily activity rates were used to estimate the maximum 24-hour and annual

1
emission rates, and emissions were modeled based on these maximum short-term activity rates occurring continuously every day.”

IDEQ is conflating the “conservative” strategy long inherent in the PTC process with the conservative analyses required in estimating the potential to emit (PTE). Even if IDEQ uses a “conservative” strategy, the agency is still using non-conservative model input parameters for the emissions calculations. PTCs have been based on design PTE calculated using “maximum 24-hour and annual emission rates, and emissions modeled based on these maximum short-term activity rates occurring continuously every day” since the inception of the Clean Air Act (CAA). Comparing these required conservative rates to the Applicant's “good intentions” to operate below design capacity is not a conservative approach. The CAA has long recognized that any facility may change management, exploit additional resources, accept feedstock from adjacent properties, or numerous other production scenarios that could utilize design capacity.

IDEQ's *Guidelines for Performing Ambient Impact Analyses* states:

“To demonstrate compliance, potential emissions must be used in the modeling analyses rather than future projected actual emissions. The maximum emission rate for each averaging period must be identified. For example, PM_{2.5} has both a 24 hour and annual standard. If a source will only operate 7000 hours per year, but can operate for 24 hours in a single 24 hour period, then different emission rates would be modeled for the 24 hour and annual standard” (Section 6.4.1).

The analyses for impacts for pollutants with averaging periods less than annual are not using maximum potential emissions over those short-term averaging periods. Annual emission impact analyses were also based upon an estimate of the five-year average of projected actual emissions. In assuring the appropriate level of health protectiveness, the permit process is, and has always been, designed to assure compliance at design capacity.

With respect to the use of AP-42 Emission Factors in calculating the PTE, IDEQ regulations require that “screening engineering analyses use unrefined conservative data.” (6-30-95). Moreover, IDEQ guidance ranks the use of AP-42 as a last choice, with the least reliable data, and the greatest potential to underestimate emissions. Accordingly, it is incumbent on IDEQ to ¹ require use of conservative emission factors. Accepting promises that intended operations will not exploit the full design capacity of the facility is not a substitute for utilizing conservative emissions factors in calculating PTE emissions.

¹“Emissions Data Hierarchy.” <https://www2.deq.idaho.gov/admin/LEIA/api/document/download/5521>

ICL/SSFS Comments on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 2

Facility Classification

In the Statement of Basis (SOB), IDEQ classified this facility as a synthetic minor source (SM) for PM, PM10, and PM2.5 and Class B for Hazardous Air Pollutants (HAPs). A number of comments by ICL, SSFS, and other reviewers address instances where we believe that HAP emissions continue to be underestimated. Once IDEQ completes the appropriate analyses and calculations to verify the PM and HAP emissions, the agency should assess whether the source still meets the requirements of a synthetic minor.

The Applicant and IDEQ calculations show that this facility will also emit >30,000 tons per year (TPY) of uncontrolled PM (removing the 90% control on hauling fugitive emissions + the emissions total for uncontrolled point sources) and 3,655 TPY of permitted PM point source + fugitive emissions (Table 3, SOB). However, IDEQ contends the Major Source classification of 100 TPY is not met despite the apparent 36-fold exceedance. IDEQ continues to ignore 3,569 TPY of permitted PTE PM fugitive emissions from mining operations (97.6% of total controlled PM by the Applicant’s calculation) and 986 TPY of associated PM10 fugitive emissions. This clear exclusion of significant emissions from regulatory constraints is a major concern for us. Furthermore, this determination avoids the federal oversight that this permit would be afforded if classified properly as a Major Source.

To avoid including the fugitive emissions sources, IDEQ apparently relies on IDAPA 58.01.01.220.01:

For purposes of Sections 220 through 223, fugitive emissions shall not be considered in determining whether a source meets the applicable exemption criteria unless required by federal law.

Accepting the Applicant’s and IDEQ assertions, the current classification determination for this facility as a synthetic minor source is based on merely 2.4% of the total PM emissions. If only 13.6 TPY (0.4%) of the excluded PM fugitive emissions were included in the source classification determination, the facility would be a Class A Major Source, subject to federal review.

In the interest of health and environmental responsibility, it is imperative that the IDEQ consider all emissions including mining fugitive impacts and classify this a Major Category A Source. The only comparable facilities operating in the U.S. at this time, in Nevada, are Class 1 Major Sources according to the same criteria as Idaho’s designation, even though most of the Nevada facilities do not include onsite gold ore processing. Idahoans should be afforded the same level of air quality protection as Nevadans.

Even by IDEQ exclusion criteria, some of the ignored sources asserted to be “mining fugitives” should be considered as mineral processing activity emissions controlled with and attendant to specific point sources included in the source classification determination. Significant percentages of mine ores are trucked to stockpiles and placed in storage to be processed months or years later. Alleged mine fugitive emissions also include significant on-site hauling associated with the Portable Crusher and Screening Plant. Some of this hauling is related to the lime plant and gold ore refinery operations, which are specifically listed by federal rules as requiring inclusion of fugitive emission in determining source classification.

Subchapter C Part 70.3(d). Fugitive emissions from a part 70 source shall be included in the permit application and the part 70 permit in the same manner as stack emissions, regardless of whether the source category in question is included in the list of sources contained in the definition of major source.

This rule should be interpreted that if any portion of the emissions is due to a listed source, then all emissions from that source should be included in the source classification determination.

These alleged “excluded mine fugitive” sources alone (not including On-site Hauling) exceed 270 TPY PM. If only 5% of these activities were considered attendant to listed sources or mineral processing and stockpile point source operations (as opposed to mining) then the Major A Source Category threshold would be met. Unfortunately, it is not possible for us or other reviewers to quantify these sources from the available emission inventories. Fugitive emissions were reportedly estimated for a dozen different operational scenarios. However, Table 7 of the SOB and the example calculations provided use scenario W-3, because it is the maximum total PM emissions. This scenario is heavily weighted toward exploitation of the West End Pits, and provides little information to assess the potential emissions associated with those sources that might not be exempt on closer examination.

Examination of the W3 scenario also shows that the 2,901 TPY of PM estimated for On-Site Hauling is 100% attributed to hauling emissions from the West End Pit to the Hangar Flat DRSF. This is the main process stream for limestone feeding the lime plant, gold oxidation circuit, neutralization of waste streams, etc. This scenario also attributes zero hauling emissions from stockpiles to crushers. It is not possible to ascertain from these data how much of the fugitive emissions are attendant to these listed sources or are attendant to mineral processing point sources. However, the W3 scenario does not encompass other haul routes that will be used as part of the mining operation; therefore, the total PM emissions attributed to hauling would be expected to be greater than 2,901 TPY.

These observations suggest that IDEQ’s reliance on operational scenarios designed to support modeling analyses to assess fugitive exclusion from Source Classification has allowed listed and

point source attendant emissions to be misclassified as excluded mining fugitives. Misclassification of only a tiny percentage of the massive excluded emissions prevents Major Source determination and federal review of key portions of this PTC. The ambient impact analysis must consider the potential impacts of any operational scenario allowable under the federal approval process and the IDEQ permit.

Lastly, the classification of the facility as a synthetic minor source for criteria pollutants and HAPs is hugely dependent upon the facility consistently attaining the target 93.3% fugitive dust control effectiveness. A facility that does not have legally enforceable conditions to ensure those fugitive dust controls, which IDEQ states will be challenging to show continual compliance with, should be considered a major source. Enforceability is extremely important because without enforceable limits, the source otherwise has the potential to emit criteria pollutants in amounts that are at or above the threshold for a major source.

IDEQ should:

- Carefully review these fugitive emission claims with regard to the exclusion criteria, and publicly disclose the review.
- Update the source classification determination for this facility based on these comments.
- Ensure total consistency between project processes and activities approved in the air permit with those that would be approved in the federal approval process.

Dust Control Efficiency

IDEQ states in this permit that the Applicant will have to achieve a dust control efficiency of at least 93.3% on the haul roads in order to achieve air quality compliance, yet the agency has not provided sufficient evidence that such a high target is attainable or practically enforceable. In Appendix G of the Statement of Basis, IDEQ discusses the T-RACT Analysis, including dust control efficiency. We have reviewed the references listed in Appendix G, Table 10 of other facilities with determinations of 90% or greater control efficiency for unpaved roads. Upon investigation of these references through the EPA's Clean Air Technology Center database, we² found that only 1 of the 10 facilities referenced actually has *verified* compliance of achieving at least 90% control efficiency. The other nine facilities listed in Table 10 had either unverified or unknown compliance with that permit condition. In addition, only one of these facilities is actually a gold mining operation and therefore most of these references should not be used as a point of comparison to the Stibnite project.

² <https://cfpub.epa.gov/rblc/index.cfm?action=Search.BasicSearch&lang=en>

*ICL/SSFS Comments on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 5
Listed Facilities in Appendix G, Table 10*

[AK Donlin Gold Project AK-0084 water/chem 90% \(unverified/unknown compliance\)](#) [AR Turk Power Plant AR-0094 water/chem 90% \(unverified/unknown compliance\)](#) [CO Rio Grande Portland Cement Corp. CO-0043 water/chem 90% \(unverified/unknown compliance\)](#) [IN Nucor Steel IN-0034 chem 90% \(unverified/unknown compliance\)](#)
[LA Nucor Steel Louisiana LA-0239 water/chem 90% \(unverified/unknown compliance\)](#)
[MO Lafarge Corp. MO-0048 chem 90% \(unverified/unknown compliance\)](#)
[NV Sloan Quarry NV-0045 chem 98% \(compliance verified\)](#)
[NV Nellis Air Force Base NV-0047 water/chem 90% \(unverified/unknown compliance\)](#)

According to the T-RACT analysis, the Applicant has eliminated paving as a control mechanism due to it being deemed too costly, instead selecting the application of a chemical dust suppressant supplemented by frequent watering. However, there is no assurance that other facilities of this size and nature have been able to achieve this high bar for dust control efficiency. IDEQ itself states on page 22 of the Statement of Basis that “it may prove challenging to consistently and continuously achieve the targeted level of fugitive dust control for emissions from traffic on unpaved roadways, with over 55 miles of haul truck routes within the mining operations boundary, a fleet of 32 haul trucks weighing between 37 and 357 tons, and a targeted dust control efficiency of 93.3% accomplished by application of both dust suppressant and water controls.” Because the fugitive dust control efficiency is not practically attainable or enforceable, this facility should not be classified as a non-major source.

IDEQ should:

- Rigorously evaluate if the 93.3% dust control efficiency target is realistically attainable by the Applicant. If not, reclassify the facility as a major source.
- Include enforceable provisions in the permit to hold the Applicant to continuous achievement of that dust control efficiency level.
- Adjust emission calculations for ore handling and processing activities when temperatures are below freezing and proposed water controls would not be practical.

Fugitive Dust Control Plan

The Fugitive Dust Control Plan (FDCP) continues to be an area of significant concern for us. IDEQ has required the applicant to complete this plan as a condition of this permit. However, despite the FDCP clearly being a crux of the applicant’s air quality compliance, the public will not have the opportunity to review and comment on this plan. We once again formally request the opportunity to do so. Furthermore, the permit specifies that the FDCP shall be submitted within 60 days of permit issuance. In this case, the permit would be approved without IDEQ or the public knowing specifically how the applicant will attain this aggressive standard of dust

ICL/SSFS Comments on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 6

control. For instance, we have no indication of how the applicant will suppress fugitive emissions sources other than roads.

Given that the specifics of the FDCP are crucial to ascertaining exactly how the applicant will achieve the lofty 93.3% dust control efficiency required to achieve compliance, and how enforceable the limits are, this permit should not be approved until a FDCP is submitted to IDEQ, reviewed by both IDEQ, EPA, and the public, and approved or denied pending modifications. A review of the FDCP prior to permit issuance is necessary to ensure compliance with air quality standards. If approved, the salient points of FDCP should be incorporated in the permit as clearly enforceable limits. This permit cannot be issued without enforceable provisions and limits to ensure that the high bar of fugitive dust control will actually be attained at the Stibnite Gold Project.

IDEQ should:

- Allow for public review and comment on the Fugitive Dust Control Plan *before* it is finalized.
- Incorporate clear, enforceable limits for fugitive dust control into this permit *before* any potential approval.

T-RACT

In this latest iteration of the permit, the T-RACT control measures were applied to meet human health criteria for airborne toxics. A T-RACT application is an admission that compliance with environmental health criteria is not feasible with reasonably available control technology (RACT). This is in contrast to prior IDEQ assertions that all standards would be met with available technology. The previous submittals also assured the public there were no environmental or health concerns associated with Toxic Air Pollutants (TAPs) compliance. This proposal requests exemptions from those standards. It is both confusing and concerning that IDEQ has modified its position from no significant impact to requiring T-RACT without disclosing the analyses that support these conclusions.

Before granting T-RACT, IDEQ should require the Applicant to address the feasibility of achieving compliance through more aggressive application of the current RACT proposed for particulate control, and require the necessary supporting calculations regarding environmental, cost, and energy impacts. These analyses should be based on appropriate RACT emissions and should identify the levels of control necessary for compliance with the AACC.

For detailed technical comments on T-RACT, we refer IDEQ to Section 8.0 of the comments submitted by Ian von Lindern, P.E. PhD, from the TerraGraphics International Foundation. To

ICL/SSFS Comments on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 7

summarize his technical comments, IDEQ should disapprove this T-RACT submittal in accordance with IDAPA 58.01.01.14 based on the following considerations:

- The emissions used to support modeling are based on inappropriate multi-year averages and do not reflect the PTE or T-RACT.
- The proposed operational limits on mine production will have no practical constraint on facility operations, emissions, or ambient impacts.
- The lifetime averaging of exposure is inappropriate. Just because this facility proposes to have “only” a 16-year life of mine, the Applicant is not therefore entitled to expend a receptor’s equivalent 70 years of allowable exposure with regards to cancer risk.
- If the direct comparison of predicted maximum annual average ambient arsenic concentrations to the AACC is correctly applied, it shows a 30-factor exceedance, or 3 times the T-RACT AACC.
- Considerably higher levels of operational constraints will be required to support T-RACT. These limits are likely to require reductions in the proposed MODPRO2 levels of operations.
- The T-RACT controls are largely unenforceable, do not require any effective monitoring, or provisions for corrective actions, should the Applicant’s assurances prove unachievable.
- The T-RACT analysis does not address the requirements in IDAPA 58.01.01.210.14.c.ii to access “the environmental impacts caused by the control technology that can not be

mitigated, including, but not limited to, water pollution” despite the massive amounts of magnesium chloride and associated products that would be required to achieve the unprecedented dust control effectiveness proposed.

This relaxation of health protections deserves intensive review, public involvement, and consideration by other regulators. We are concerned that the repetitive nature of this PTC review undermines public awareness regarding the significance of this major change in strategy regarding emissions control from this facility as well as the health implications of relaxing health standards.

PM/PM10 Monitoring

In order to make this air permit practically enforceable, IDEQ must require that the Applicant install a PM/PM10 monitoring system on site at the ambient air boundary to ensure that PM/PM10 NAAQS are not violated. This step is warranted because of the uncertainty surrounding dust control efficiency and emissions factors associated with this project. To our knowledge, it is neither technologically or financially infeasible for the Applicant to install this monitoring. Additionally, IDEQ should include penalties and corrective actions in the permit that would be triggered if this monitoring system shows NAAQS violations occurring at the ambient

ICL/SSFS Comments on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 8

air boundary. These penalties should entail a mandatory reduction in mining and processing throughput.

IDEQ should:

- Add a permit condition that requires the Applicant to install a comprehensive continuous PM/PM10 monitoring system on site.
- Add enforceably penalties and corrective actions to the permit that are triggered if this monitoring system ever indicates that NAAQS are being exceeded.

Ambient Air Boundary Determination

We are concerned that the exclusion of the public access road between Stibnite Road at Sugar Creek and Thunder Mountain Road at Meadow Creek from the regulatory definition of ambient air is inconsistent with Clean Air Act’s definition of ambient air, EPA’s long-standing policy that ³ allows excluding certain areas of a source’s property from ambient air, and EPA’s most recent ⁴ revised policy for ambient air. Allowing the public to access this road, even under the conditions ⁵ of the Stibnite Road Access Management Plan, may result in acute exposure of the public to hazardous air conditions.

EPA’s long-standing policy has been to exempt “the atmosphere over land owned or controlled by the source and to which public access is precluded by a fence or other physical barriers” from ambient air requirements. In 2019, recognizing advances in surveillance and monitoring ⁶ capabilities, EPA revised the “fence or other physical barriers element of this ambient air policy while maintaining public health protection” to allow stationary sources to use “other types of measures “to support exclusion of an area from ambient air.” Key to this policy revision was the ⁷ fact that “legal” access – whether the public has the right or permission to enter a specific property – did not change the definition of ambient air. In other words, “if ‘ambient air’ is defined

as that to which the general public has access, then that to which the general public does not have access is not ambient air.”⁸

³ 40 C.F.R. 50.1(e).

⁴ Letter from EPA Administrator Douglas Costle to Hon. Jennings Randolph (Dec. 19, 1980), available at: https://19january2021snapshot.epa.gov/sites/static/files/2019-11/documents/1980_costle_letter_ambient_air.pdf.

⁵ EPA, *Revised Policy on Exclusions from “Ambient Air”* (Dec. 2, 2019) (“Revised Policy”), available at: http://www.epa.gov/sites/default/files/2019-12/documents/revised_policy_on_exclusions_from_ambient_air.pdf.

⁶ Memorandum to Revised Policy.

⁷ Memorandum to Revised Policy; Revised Policy at 2.

⁸ Revised Policy at 6.

ICL/SSFS Comments on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 9

Under this permit, the general public would have access to the road through the project area and not be entirely precluded from using it throughout the life of the mine. Based on EPA’s policy, since the general public would have access, albeit restricted, the road is ambient air. The Response to Comments justifies this exclusion because “[t]he roadway is completely within the boundary of the mine,” “[u]se of the roadway by [the public] is completely at the discretion of PRI and will be tightly controlled,” and the public “will be considered [business invitees] of PRI.” This rationale cannot be reconciled with EPA’s policy.

9

The EPA Revised Policy explains:

“The EPA’s view is that the general public has legal access to areas that are owned and controlled by parties other than the owner or operator of a stationary source. The EPA continues to view the “general public” to include any person(s) other than those who are permitted access to the property as employees or business invitees of a specific stationary source (including trespassers).”¹⁰

In other words, people that are traveling on the road through the mine site to access public (Forest Service) property are members of the general public. The Applicant’s attempt to label the public as “guests of PRI” is disingenuous and “would expand the exclusion beyond reason and ¹¹ deny the protection of the NAAQS to large numbers of people.” The fact that these “guests” ¹² would “abide by access and safety procedures established by PRI” is meaningless in terms of protecting the public from exposure to hazardous air conditions. There are no air quality monitors on the road because it has been excluded from ambient air. Thus, it will not be known ¹³ to those traveling on the road what type of acute exposure to air pollutants will result.

Moreover, IDEQ’s own definition of “ambient air” is “[t]hat portion of the atmosphere, external to buildings, to which the general public has access.” The public access road through the ¹⁴ project area fits that definition exactly. In addition, IDEQ’s Modeling Guidelines for ¹⁵ determining the ambient air boundary demonstrate that this public road should not be excluded from the ambient air boundary:

- “It shall be assumed that the air within the facility boundaries is ambient air unless the

facility can demonstrate that public access is precluded.” Here, although public access

⁹IDEQ, *Air Quality Permitting 2nd Response to Public Comments* (June 4, 2021) at 7 (“Response to Comments”).

¹⁰Revised Policy at 6.

¹¹Response to Comments at 7.

¹²Revised Policy at 6.

¹³Statement of Basis, pg. 269

¹⁴IDAPA 58.01.01.006.10.

¹⁵IDEQ, *Guideline for Performing Air Quality Impact Analyses* (July 2021) at 37-38. *ICL/SSFS Comments*

on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 10

might be controlled, it will not be precluded. Filing for required federal permits acknowledges that the Applicant does not have the right to preclude public access across the project site. Thus the road should not be excluded from an ambient air analysis.

- “For the purpose of defining ambient air, the ‘general public’ is considered anyone not directly associated with the facility. In general, if someone present at the site would not be subject to OSHA or other worker exposure regulations, then they are considered as the general public.” People passing through the facility to access public land on the other side of the project area are not “directly associated with the facility” and would not be “subject to OSHA or other worker exposure regulations” and therefore are the general public
- “If the facility is not controlled by a physical barrier AND/OR general public access is not discouraged by the type of area, size of the facility, or the remoteness of the facility location, then the ambient air boundary is determined to be inside the property boundary.” The Applicant does not propose a physical barrier. General public access is not discouraged by the items listed above. Access to these public lands is long-standing, an important part of Valley County’s recreational experience, and acknowledged in fillings for federal permits.
- “Is the general public allowed on site as a part of a right-of-way easement or a common service road? If “yes,” then the right-of-way is determined to be ambient air.” The public is allowed access through the site because it is a public road. The Applicant cannot completely preclude public access.

IDEQ precedent, reaffirmed as recently as 2021, makes it clear that a public right-of-way access through a project area is considered – not excluded from – ambient air, and regulatory analyses of the potential impacts along that road must show compliance with all ambient impact limits for averaging periods under one year. This determination has been applied by IDEQ for public roads, non-navigable rivers, and railroad tracks. Here, the general public would be allowed access through the mine site on a public road that the Applicant does not have the right to completely deny access. There is no indication that this public road should be treated any differently from past projects. Nothing in the ambient air impact assessments supporting this permit includes any analysis of the impacts on the road through the project area.

IDEQ should:

- Reassess the ambient air boundary determination and model ambient air concentrations along public access routes.

TAPs Mass Balance

We recommend that IDEQ develop a material balance for TAPs to inform and assist the agency in assessing the quality and uncertainty inherent in the data underlying the Applicant's assertions. Many other states specifically require a material balance for criteria pollutants, HAPs, and TAPs. IDEQ's response reiterates the same "conservative" claim:

"While a material balance is a useful approach to developing emission estimates, it is not a requirement, and the use of maximum activity rates and representative performance test data to estimate and model emissions is commonly accepted by DEQ. While the use of an average or maximum value is a more conservative approach, the use of site-specific median values combined with estimating and modeling PTE at design capacity and maximum activity rates was considered a sufficiently conservative approach."

IDEQ's own TAPs guidance, however, specifies the use of AP-42 and mass balance techniques:

"Determine if a new (constructed after June 30, 1995) emission unit has the potential to emit a TAP listed in IDAPA 58.01.01.585 (Rules Section 585) or IDAPA 58.0101.586 (Rules Section 586). Potential toxic air pollutants can be determined by reviewing commonly available emission factors, such as EPA's AP-42, or calculating emissions using a mass balance."

Mass balance analyses would be invaluable in enhancing regulators' and the public's ability to follow and review emission calculations, and designing appropriate operational limitations and controls for this PTC.

IDEQ should:

- Require a facility-wide mass balance for TAPs in subsequent submittals for this PTC.

Arsenic Emissions

The proposed Stibnite Gold Project clearly presents hazardous concerns associated with toxic metal releases. Arsenic and mercury are of particular concern due to their high toxicity and importance in the metallurgical processes. This facility will potentially emit 170 to 360 TPY of arsenic. About 85-90% of the uncontrolled arsenic emissions are proposed to be contained or captured by proposed controls and approximately 13 to 38 TPY will be released to the atmosphere as fine particulate (controlled PTE). The PTC Application underestimates these emissions by a factor of 5.6 to 12 times by our calculations (see previous public comments on version 2 of this PTC), and asserts arsenic emissions of about 30 TPY PTE uncontrolled and 2.4 TPY controlled PTE. Most of this mischaracterization is associated with road dust suspended from the massive volume of heavy trucks moving thousands of loads of arsenical contaminated materials across the site. The Applicant apparently achieves this low estimate by using minimal

control 93.3% of the road dust through chemical suppressants and watering.

An in-depth review of the Emissions Inventory reveals there are several factors that have not been given appropriate treatment in developing the arsenic emissions totals. We incorporate our detailed prior comments on this matter by reference into this latest round of comments and continue to have significant concerns that the arsenic emissions from this facility are being grossly underestimated.

The underestimation of fugitive dust emissions from haul roads resulting from the use of non-conservative modeling parameters is exacerbated when one considers that there appear to be three largely unaccounted for processes that will increase the arsenic content of haul road related fugitive dust emissions over time: 1) haul truck spillage of ore or waste rock containing higher arsenic content than the surface aggregate, 2) an increase in silt-sized particles in the haul road surface layer due to traffic wear, and 3) the application of dust abatement water sourced from the East Fork South Fork of the Salmon River containing elevated levels of arsenic.

Silt Content

As IDEQ has acknowledged in their response to comments, there are three key data-based variables used in estimating controlled, unpaved road arsenic emissions: silt content, arsenic content of the silt, and control efficiency. We remain concerned that using a 4% silt content for surface aggregate material for haul roads is too low according to scientific literature. Using a lower than reasonable silt content results in an underestimation of fugitive dust emissions. In its response to comments, IDEQ failed to provide a rationale for why the Applicant's assumption that a 4% silt content was appropriate in this case when EPA's publication AP-42 (that IDEQ relies on for other purposes) provides a mean silt content range for industrial unpaved haul roads of 5.8 to 24%.

Table 13.2.2-1. TYPICAL SILT CONTENT VALUES OF SURFACE MATERIAL ON INDUSTRIAL UNPAVED ROADS

AP-42	MATERIAL ON INDUSTRIAL UNPAVED ROADS	
	All Gravel Road	Haul Roads
Industry Types	18	4
No. Sites	53	10
No. Samples	272	58
Minimum	4.3%	5.8%
Maximum	24.0%	24.0%
Average	10.1%	11.6%
Median	8.4%	8.4%
Geomean	8.8%	9.9%

The mean silt content range reported in AP-42 is consistent with other scientific literature. Tannant and Regensberg’s *Guidelines for Haul Road Design* (2001), for example, provides guidelines for haul road surface material properties (Section 5.1.1, pg. 58) and recommend a range of 5-10% fines (material passing a #200 sieve). They cite two separate studies stating 5-15% and 5-10% respectively to support this guideline. We have not been able to find any evidence for *functional* haul road surface material having less than 5% silt content. The following table summarizes plausible values for three variables at this site. These values are rated as minimal, typical, and conservative emissions factors.

Comparison of Characteristic Values for Key Variables Used in Calculating Particulate and Arsenic Emissions from Gravel Haul Roads				
Characteristic	Silt Content	Silt Content	As Content	Control
Values	All Gravel Roads	Haul Roads	ppm	%- Emitted
AP-42 Minimal	4.3%	5.8%	909	10%
AP-42 Typical	8.8%	9.9%	1231	15%
AP-42 Conservative	10.1%	11.6%	1812	20%
Midas PRI	4%	4%	667	6.7%

In each case, the Applicant has used less than minimal values. Our concern is that reliance on an unrealistically low silt content value combined with the need for extremely aggressive fugitive dust control efficiencies raises the significant likelihood that this permit may exceed National Ambient Air Quality Standards for particulate matter. IDEQ’s response to comments simply states that the assumption for a 4% silt content was “confirmed by PRI and accepted by DEQ.”¹⁶

¹⁶ Response to Comments at 62.

ICL/SSFS Comments on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 14

But there is no discussion on what basis DEQ accepted this value for silt content and there is no stated rationale for why a higher silt content that is recommended in scientific literature does not apply to this particular haul road.

IDEQ should:

- Reassess emissions calculations and fugitive dust control efficiencies using a more realistic silt content for haul roads.

Mining/Processing Throughput Limits

The draft permit contains several throughput limits as defined in Permit Conditions 3.5 and 3.6. These conditions are artificial production limits on the facility, and will not have a bearing on the actual emissions being produced once the mine is simultaneously mining and also processing from stockpiled material. We have concerns that these artificial production limits are not actually enforceable in any way by IDEQ. Furthermore, we do not have any assurances that these artificial production limits will remain the same throughout the entire life of mine. For example, Figure 3.9 of the proposed mine plan initiates and concludes with low rates over the 16 years of¹⁷ the mine with higher rates in the middle, making a five-year rolling average (like what is proposed in Permit Condition 3.5) meaningless in terms of limiting production.

Permit conditions should also be developed that establish throughput limits on the refining facilities and haul roads themselves, not just hauling and excavation tonnages. This is because the design capacity of the refining facilities exceeds the mine production capacity, and new ore could theoretically come in from other sources and be refined/processed at Stibnite. Without specific throughput limits on the refining process, those added emissions would not be considered.

Lastly, because IDEQ treats TAPs emissions on an incremental rather than cumulative basis, we can envision problems arising in a scenario where this facility gets permitted at the current throughput limits but then asks for an expansion five years down the road. If they are then permitted for an expansion, any increases in TAPs emissions will be permitted on a standalone basis rather than cumulatively on top of what was initially permitted. Ultimately, we are concerned that this is an approach the Applicant could use to circumvent being permitted as a TAPs Major Source in this initial PTC.

¹⁷ STIBNITE GOLD PROJECT: REFINED PROPOSED ACTION – MODPRO2, Perpetua Resources Idaho Inc. October 15, 2021.

ICL/SSFS Comments on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 15

IDEQ should:

- Indicate how they plan to enforce these throughput limits and include additional measures in the permit to this effect.
- Add throughput limits for the refining and processing facilities.

In summary, we once again urge IDEQ to deny Perpetua’s current application for a permit to construct and require a new application that objectively presents the emissions and controls required to comply with State and Federal requirements.

ICL/SSFS Comments on Permit to Construct for Perpetua Resources (Mar. 16, 2022) 16

Attachment 2

EPA Comments on Stibnite PTC, dated 3/16/22

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10

1200 Sixth Avenue, Suite 155

Seattle, WA 98101 AIR & RADIATION
DIVISION

March 16, 2022

Ms. Kelli Wetzel
Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706-1255

Re: Perpetua Resources, Inc., Stibnite, Idaho, Docket No. AQ-1700



Dear Ms. Wetzel:

The U.S. Environmental Protection Agency (EPA), Region 10 has reviewed the proposed permit to construct and operate an open-pit gold mine located in Stibnite, Idaho, for Perpetua Resources Idaho, Inc. Docket No. AQ-1700. In addition to the proposed permit, the EPA has reviewed the proposed Statement of Basis, Response to Comments, and application materials, including the Stibnite Permit to Construct Application dated June 23, 2020, and the Stibnite Permit to Construct Application – TAP Addendum dated October 5, 2021, and submits the enclosed comments.

We would like to acknowledge the challenges presented when developing a mining air permit and Idaho's efforts to address the EPA's and other interested parties' substantive comments that were received during the previous public comment periods. The EPA remains concerned that the proposed permit does not include accurate permit conditions that are enforceable as a practical matter and that would achieve the objective of limiting the project's potential to emit such that it would be a synthetic minor source for the PSD construction permit program and Title V operating permit program as well as assure compliance with the applicable National Ambient Air Quality Standards (NAAQS).

The EPA appreciates the opportunity to review the proposed permit and is available to assist in the development of accurate, practically enforceable permit conditions sufficient to assure continuous compliance with the synthetic minor emission limits necessary to avoid major source permitting under PSD and Title V and also assure compliance with the applicable NAAQS. Please contact Bryan Holtrop at holtrop.bryan@epa.gov or (206) 553-4473 if you have any questions or would like to arrange a discussion of our comments.

Sincerely

Kelly McFadden, Branch Chief
Air Permit and Toxics Branch

cc: Mr. Mike Simon
Idaho Department of Environmental Quality

Attachment 3

Nez Perce Tribe Comments on Stibnite PTC, dated 3/14/22



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Attachment 4

TerraGraphics Foundation Comments on Stibnite PTC, dated 3/16/22 Comments on Revised Midas Gold/Perpetua Resources PTC Ian

von Lindern, P.E. PhD, TerraGraphics International Foundation

Moscow, Idaho March 14, 2022

1.0 REVIEWER QUALIFICATIONS

My name is Ian von Lindern. I reside in Moscow, Idaho. I am a licensed Professional Engineer in Chemical Engineering in Idaho and have practiced in the disciplines of Environmental Engineering and Risk Assessment in Idaho for the last 48 years. I hold a BS degree in Chemical Engineering, and MS and PhD degrees in Environmental Science and Engineering specializing in air pollution and public health. I was the Regional Environmental Engineer for the IDEQ's predecessor agencies in both the Coeur d'Alene and Twin Falls offices and processed Air Quality permits for the Agency for several years at the major mining and smelting operations in the State, including the last US operational antimony smelter at Big Creek, Idaho. I was President and Principal Scientist for TerraGraphics Environmental Engineering for 30 years and was Project Manager and lead risk assessor for the Bunker Hill Superfund Site as IDEQ's prime consultant. During that tenure, I directed more than 30 major environmental health investigations at mining and smelting sites, both nationally and internationally. I have served on the USEPA Science Advisory Board (SAB) and Clean Air Science Advisory Committee (CASAC) on several occasions from 1975 to 2018 on topics relating to exposure and risk assessment in childhood lead poisoning. Since retiring from the consulting business, I co founded TerraGraphics International Foundation (TIFO) and continued to work in mining-related health and safety issues in low-income countries. Most notably, I am currently working with the international humanitarian organization Médecins Sans Frontières (Doctors Without Borders) assisting the Kyrgyz Republic Ministry of Health in developing health protective strategies to reopen both mercury and antimony smelters in Batken, Kyrgyzstan. These facilities were among the largest Hg and Sb producers in the former Soviet Union and are essential to the regional economy. As such, I have considerable insight and experience with the issues associated with the proposed antimony-gold operation at Stibnite. I have reviewed the revised Draft Permit to Construct revisions and associated documents on behalf of TIFO.

TIFO's mission is to assist mining and mineral processing communities to operate as safely as practicable while maintaining essential economic activities. In that regard we support scientifically-sound and transparent analyses of the environmental and human health issues faced by mining communities; and the development of local solutions implemented within local socio-economic and cultural capabilities. The Stibnite proposal is of interest because both the industry and the US regulatory authorities have the capacity to implement the best practices that are not available to poor communities throughout the world. As a lifelong resident of Idaho, I am interested in assuring that our regulatory agencies protect human health and the environment as required by State, federal, local and tribal law. Unfortunately, this proposed PTC and draft Operating Permit continue to be insufficient in meeting applicable health and environmental standards.

2.0 SUMMARY, CONCLUSIONS, RECOMMENDATIONS

TIFO extends thanks to IDEQ for the response to previous comments and questions, access to staff for clarifications, requiring additional information from the Applicant, and improvements in health protectiveness incorporated in the draft PTC. The diligence that IDEQ has shown in the long and difficult history with which Agency has pursued a responsible submittal from the Applicant is appreciated. We recognize that IDEQ has determined the Application to be

incomplete or insufficient six times over the past 2-1/2 years and securing transparency in this process is challenging. There is no doubt as to the IDEQ Staff's commitment to public health and environmental protection.

Nevertheless, the substantial deficiencies in this application require critical review. The major conclusions of this fourth comment submittal are:

- Each of the Permit to Construct (PTC) applications and Operating Permits proposed to date have lacked an objective treatment of potential emissions and ambient impacts.
- The initial proposals largely ignored massive emissions of toxic and hazardous air pollutants.
- Revisions of the PTC analyses have shown that approval of the previously proposed permits would have allowed significant exceedances of health standards; with no provision for monitoring, measurement, corrective action, or opportunity to seek federal relief.
- Significant emission sources excluded from Source Classification calculations as mining fugitive emissions could be mis-classified and considered as attendant to included mineral processing point or federally listed sources. IDEQ should carefully review these sources for inclusion in total emissions compared to Major Source thresholds.
- Significant under-estimation of haul road fugitive PTE emissions continues in this PTC. The estimates are not conservative as required by Idaho Code. IDEQs claim the Applicant's intentions to operate below design capacity is not a conservative emission estimate. Calculating PTE at design capacity has been standard practice since the inception of the Clean Air Act. IDEQ conflates this long-held principle with the requirement to use conservative data in estimating AP-42 unpaved road emission estimates.
 - The current proposed PTC continues to underestimate potential emissions, but acknowledges when using these minimal estimates, that compliance with health standards is not achievable with reasonably available control technologies (RACT).
- This application requests T-RACT relief from compliance with the cancer-related health standards, in contrast to the previous PTC version assertions of meeting all standards and being protective of public health, using the same controls.
- The additional operational controls (T-RACT) offered to guarantee meeting the relaxed standard require reducing the facility's allowable emission by 57%. Both the calculations supporting the required emission reduction and efficacy of the underlying operational controls are insufficient, rely on inappropriate averaging and dilution techniques, and impose no enforceable reduction in emissions or ambient air quality improvements. Greater reductions in emissions and substantial production curtailments will be required to achieve compliance.
- Alleging compliance with carcinogenic health risk standard in this PTC required multiple dilution techniques including i) using non-conservative emission factors, ii) requesting T-RACT relief from the health standard, iii) inappropriate averaging of T RACT arsenic emissions, and iv) two levels of inappropriate post-modeling averaging of ambient air concentrations; resulting in order-of-magnitude under-predictions of arsenic exposures.
- The refined air quality modeling underlying the T-RACT analysis suggests that the massive disturbance of toxic arsenic contemplated, in this proposed multiple open-pit mining and co-located mineral processing operation, cannot meet air quality criteria

in the complex terrain and challenging environmental setting of Stibnite.

- This is the third draft attempt to bring this insufficient PTC application into compliance. In the public interest IDEQ should dis-approve the PTC and require a new Application that objectively presents the emissions and controls required to comply with State and federal requirements.

3.0 IDEQ RESPONSE TO PREVIOUS COMMENTS

TIFO has reviewed all three revisions of the Draft Permit to Construct and associated documents and submitted comments on three previous occasions. The current version of IDEQs draft Response to Comments indicates that several of alternative data and calculations provided in earlier reviews were not demonstrated to be more accurate or appropriate than data provided by the Applicant, and accepted by IDEQ.

TIFO requests that the past comments be incorporated as supporting the additional critiques offered in this review, and be reconsidered by IDEQ with supplemental data and analyses presented below. Specifically, there is continued concern with IDEQs position on conservative analyses and uncertainty in emissions calculations.

IDEQ response to previous critiques of emission calculations states:

... (the) approach of estimating potential emissions (PTE) at design capacity and maximum activity rates was considered a sufficiently conservative approach. Maximum hourly and daily activity rates were used to estimate the maximum 24-hour and annual emission rates, and emissions were modeled based on these maximum short-term activity rates occurring continuously every day.

IDEQ is conflating the “conservative” strategy long inherent in the PTC and Operating Permit process, with the conservative analyses required in the estimating PTE. Since the inception of the Clean Air Act (CAA), PTCs and Operational Permits have been based on design PTE calculated using “maximum 24-hour and annual emission rates, and emissions modeled based on these maximum short-term activity rates occurring continuously every day”.. Comparing these required conservative rates to *good intentions to operate below design capacity alleged by the Applicant* is not a conservative approach. The CAA has long recognized that any facility may change management, exploit additional resources, accept feedstock from adjacent properties, or create numerous other production scenarios that could subsequently utilize design capacity. In assuring the appropriate level of health protectiveness, the Permit process is, and has always been, designed to assure compliance at design capacity.

With respect, specifically, to the use of AP-42 Emission Factors in calculating the PTE, IDEQ regulations, specifically, requires:

“Screening engineering analyses use unrefined conservative data. (6-30-95).

With respect to uncertainty and reliability, IDEQ guidance ranks the use of AP-42 as a last choice, with the least reliable data, and the greatest potential to underestimate emissions. (<https://www2.deq.idaho.gov/admin/LEIA/api/document/download/5521>)

As a result, it is incumbent on IDEQ to require use of conservative Emission Factors. Accepting promises that intended operations will not exploit the full design capacity of the facility is not a substitute for utilizing conservative EFs in calculating PTE emissions.

On a similar note, TIFO has advised IDEQ that development of a material balance for toxic air pollutants is good engineering practice and could inform and assist the Agency in assessing the quality and uncertainty inherent in the data underlying the Applicant’s assertions; and that many State’s specifically require a material balance for criteria pollutants, HAPs, and TAPs. IDEQ’s response reiterates the same “conservative” claim:

While a material balance is a useful approach to developing emission estimates, it is not a requirement, and the use of maximum activity rates and representative performance test data

to estimate and model emissions is commonly accepted by DEQ. While the use of an average or maximum value is a more conservative approach, the use of site-specific median values combined with estimating and modeling PTE at design capacity and maximum activity rates was considered a sufficiently conservative approach.

IDEQs own TAPS guidance, however, specifies the use of AP-42 and mass balance techniques:

Determine if a new (constructed after June 30, 1995) emission unit has the potential to emit a TAP listed in IDAPA 58.01.01.585 (Rules Section 585) or IDAPA 58.0101.586 (Rules Section 586). Potential toxic air pollutants can be determined by reviewing commonly available emission factors, such as EPA's AP-42, or calculating emissions using a mass balance.

Mass balance analyses would be invaluable in designing appropriate operational limitations and controls in a T-RACT application. IDEQ should require a facility-wide mass balance for TAPs in revised or new submittals for this PTC.

4.0 GENERAL COMMENTS AND DISCUSSION

The following analyses are the fourth round of public comments offered on three revisions of the proposed PTC and Draft Permit for the SGP. Some progress has been achieved in securing health and environmental protectiveness through this repetitive review process. However, despite the Agency's persistent attempts to obtain objective and transparent submittals from the Applicant, this patchwork approach to upgrade an inherently deficient application is eroding public trust in the process to provide for health and environmental protectiveness.

The proposed Midas Gold / Perpetua Resources Idaho (PRI) mining operations clearly offer hazardous concerns associated with toxic metal releases. Arsenic and mercury are of particular concern due to the high toxicity and importance in the metallurgical processes. The principal refractory gold ores proposed for exploitation are auro-arsenical deposits yielding an estimated 230 to >1000 pounds of waste arsenic for each ounce of gold captured. Approximately 493,000 (mean) to 2,190,000 tons (95th %-tile) of arsenic will be excavated according to prospective mining reports issued by the Applicant. Nearly all of the arsenic will be disposed of on-site, or released by air and water to adjacent public lands and water. Much of this arsenic is handled repeatedly during operations and is present as, converted to, and released to the environment as, the more toxic chemical species.

With regard to arsenic air pollution, this facility will potentially emit 170 to 360 tons per year (TPY) (or about 1%) of the total arsenic waste. About 85-90% of the uncontrolled emission will be contained or captured by proposed controls and approximately 13 to 38 TPY will be released to the atmosphere as fine particulate (controlled Potential Total Emissions PTE). The PTC Application underestimates these emissions by a factor of 5.6 to 12 times, (See previous public comments – Draft 2 PTC), and asserts about 30 TPY PTE uncontrolled and 2.4 TPY controlled PTE. Most of this mischaracterization is associated with road dust suspended from the massive volume of heavy trucks moving thousands of loads of arsenical contaminated materials across the site. The Applicant achieves this low estimate by using minimal emission factors (EFs) and particulate arsenic content, and claiming an unprecedented capability to control 93.3% of the road dust through chemical suppressants and watering. A detailed critique of these emissions was provided in the comments to Draft 2 PTC, and are amplified below in these comments.

The public should be aware that IDEQ is extending unusual latitude to the Applicant in reviewing the PTC, accepting minimal technical parameters, and accepting unrealistic control assumptions. These overly optimistic particulate and arsenic emission claims are necessary to obtain the PTC. The proposed facility would not be able to comply with health standards if conservative EFs, arsenic content and more realistic control levels were used in the calculations, as required by the regulations.

The public should also be aware that $(3569/(3569+86,6))$ 97.6 % of controlled particulate emissions admitted to in the PTC are classified as "mining fugitive" emissions. Mining fugitive emissions are exempt from consideration in Major Source Classification in Idaho. As a result, this source, which will be one of the largest in the State, is classified as Synthetic Minor and is

precluded from federal review. Many of these alleged mining fugitive sources are arguably not exempt and could be classified as attendant to listed or point sources. If only 0.4 % of these “mining fugitive” emissions (13.4 TPY) were reclassified, the facility would be a Major A Source and the Idaho public could apply to the federal government for relief.

The public should also be aware that application for a PTC, prior to receiving approval from the federal government on a project requiring an Environmental Impact Statement (EIS), is also unusual. The Applicant is attempting to secure both State and federal Agencies approvals simultaneously. Generally, the federal approval dictates the type of facility that is acceptable, followed by State implementation of the required controls. The Applicant is submitting confusing, and apparently inconsistent, air pollution emission estimates to the different regulators, hampering the transparency required for the public to understand and comment in both forums. Both the proposed PTC and Draft EIS largely ignored potential airborne toxic arsenic impacts in the initial submittals. These comments are being forwarded to the US Forest Service and Environmental Protection Agency for their consideration.

5.0 PTC PUBLIC REVIEW

The initial PTC submittal and IDEQ’s position were particularly disappointing. The draft PTC excluded 99.3% of carcinogenic arsenic from regulation and 97.6% of PM emissions from Source Classification. Aside from the disregard for public health and the environment, issuing the initial proposed permit would have had the likely effect of:

- exceedance of criteria pollutant standards,
- arsenic concentrations in the 10^{-3} cancer risk range,
- providing for no monitoring or measurement of critical emissions or ambient impact,
- requiring no corrective actions during operations, and
- precluding federal oversight.

Questioning of IDEQ Staff during public information meetings revealed that these mining friendly determinations depended on:

- unreasonable interpretations of 7E NESHAPS definitions,
- non-conservative estimates of PM emissions and potential control efficiencies,
- minimal estimates of toxic concentrations in PM, and
- exclusions of major sources from permit classification determinations.

The original PTC was an irresponsible proposal and a cause for concern that the Applicant and the environmental/ health agency put it forward. It should not be the responsibility of public reviewers to identify these threats and suggest remedies for these situations. Public entities do not have the resources to repeatedly rebut insufficient industry submittals. The Public depends on IDEQ to ensure health and environmental protection.

Review of the T-RACT (Toxic - Reasonable Available Control Technology) analysis in this third submittal continues the same uncomfortable pattern of minimal, insufficient, and vague calculations; ineffective monitoring; and lack of provisions for enforcement and corrective actions. In the broadest overview, the refined air quality modeling underlying the T-RACT analysis suggests that massive disturbance of toxic arsenic contemplated in the proposed multiple open-pit operation cannot meet air quality criteria in the complex terrain and environmental setting of Stibnite.

The T-RACT Review below also reveals enhanced concerns with respect to insufficiencies pointed out in the previous drafts of the PTC Application. Considerable concern remains with respect to IDEQ’s acceptance of the Applicant’s assertion regarding three areas of the PTC:

- Estimated Unpaved Road Emissions.
- Facility Source Classification
- T-RACT Review

As a result, these specific concerns are re-iterated and additional comments are found in the

following Sections.

6.0 ESTIMATED UNPAVED ROAD EMISSIONS

As pointed out by numerous public comments and critiques, calculations of unpaved roads are not based on conservative data as required by State regulations and USEPA guidance. This remains a major concern as use of conservative values could show that this facility would not comply with particulate and toxic air pollutant health standards. The Applicant has now admitted that these same particulate emissions, as calculated, cannot comply with carcinogenic risk ambient air standards; has requested a ten-fold relaxation in health-risk protectiveness; and alleges a 57% reduction in PTE is required reach compliance. The consequences of IDEQ's reliance on these uncertain Applicant assertions are immense, as it could determine whether the facility can be permitted under the current configuration, and whether public health and the environment can be protected. IDEQ continues to resist requiring meaningful and effective monitoring that could detect these exceedances should the Applicant's assertions prove untrue. Nor are there any provision for corrective actions should the health criteria be exceeded.

These potential dangers are exacerbated by the T-RACT proposal and additional critique is offered for the Agency's consideration in the following Section 8.0 T-RACT REVIEW.

7.0 FACILITY SOURCE CLASSIFICATION

IDEQ's initially classified this facility as a synthetic minor source (SM) for PM, PM10 and PM25 and Class B for HAP. The initial PTC application erroneously characterized this facility as a minor source with negligible environmental, and no health, significance. Unraveling the complex and confusing calculations that supported these conclusions required public information hearings, access to IDEQ Staff, weeks of reverse engineering, and in-depth review by public commenters.

The PM classification determination is apparently based on "mineral processing" point source PM emissions totaling 560 TPY uncontrolled and 86.6 TPY permitted controlled PTE emissions, indicating an overall 85% control of these sources. In Table 2 of the current Statement of Basis (SOB), IDEQ compares the 86.6 TPY PTE to the 100 TPY threshold for major source classification, indicating SM80 classification (>80 but <100 TPY). It is unclear why IDEQ classifies the source as SM despite this finding. The HAP classification has been modified from B to SM based on the IDEQ inclusion of previously excluded arsenic emissions.

The Applicant and IDEQ calculations show that this facility will also emit >30,000 TPY of uncontrolled PM and 3655 TPY of permitted PM emissions (Table 3, SOB). However, the Agency contends the Major Source classification of 100 TPY is not met (despite the 36-fold exceedance). This illogical conclusion is a continuing example of IDEQ's exclusions of massive emissions from regulatory constraints, and a major source of concern for the Public. More disconcerting, this determination avoids federal oversight and severely impedes the Public's ability to secure protection from federal authorities.

IDEQ continues to ignore 3569 TPY of permitted PTE PM fugitive emissions from mining operations (97.8% and of total controlled PM by the Applicant's calculation) and 986 TPY of associated PM10 emissions (all of which are likely underestimated by 1.6 to 3.5 times).

In avoiding consideration of these thousands of tons of annual particulate emissions, IDEQ apparently relies on:

220.GENERAL EXEMPTION CRITERIA FOR PERMIT TO CONSTRUCT EXEMPTIONS.

01. General Exemption Criteria.

... For purposes of Sections 220 through 223, fugitive emissions shall not be considered in determining whether a source meets the applicable exemption criteria unless required by federal law.

Accepting the Applicant's and IDEQ assertions, this classification determination is based on 2.4% of the total PM emissions. If only 13.6 TPY (0.4%) of the massive excluded PM emissions were included in the Source Classification determination, the facility would be a Major A Source,

subject to federal review.

In the interest of health and environmental responsibility, it seems logical, if not imperative, that the Agency consider all emissions including mining fugitive impacts and classify this a Major Category A Source. Comparable facilities operating in the US at this time, in the State of Nevada, are Class 1 Major sources according to the same 100 TPY criteria as Idaho's A designation. Idahoans should be accorded the same level of protection as Nevadans. In addition, these facilities are not co-located mining, mineral processing, waste disposal, reclamation, and remediation activities; ongoing simultaneously in mountainous complex terrain, on the headwaters of a wild-scenic river, as is proposed at Stibnite.

The proposed facility is a sophisticated combined integrated mining and mineral processing and refining operation, located in a challenging environmental setting. The current PTC classifies practically all fugitive emissions as "mining fugitives". Even by IDEQ exclusion criteria, some of the ignored sources asserted to be "mining fugitives" should be considered as mineral processing activity emissions controlled with, and attendant to, specific point sources included in the Classification determination. These "fugitive emissions" should be included in the Source Classification totals. Significant percentages of mine ores are trucked to stockpiles and placed in storage to be processed months or years later. Alleged mine fugitive emissions also include significant on-site hauling associated with Portable Crusher and Screening Plants. Some of this hauling is related to the lime plant and gold ore refinery operations, that are specifically listed by federal rules as requiring inclusion of fugitive emission in determining source classification. For example,

Subchapter C Part 70.3d) Fugitive emissions from a part 70 source shall be included in the permit application and the part 70 permit in the same manner as stack emissions, regardless of whether the source category in question is included in the list of sources contained in the definition of major source.

This rule should be interpreted that if the any portion of the emissions is due to a listed source, then all emissions from that source should be included in the Source Classification determination. A portion of the maintenance grading, dozing and load/unload activities and all watering truck, placement of "clean gravel" and dust suppressant emissions are applied continually, independent of the mine production rate, specifically for PM control. These sources should also be assessed as attendant to T-RACT "*environmental impacts caused by the control technology that cannot be mitigated*", in part, for listed sources and considered for inclusion in Source Categorization.

These alleged "excluded mine fugitive" sources alone (not including On-site Hauling) exceed 270 TPY. If only 5% of these activities were considered attendant to listed sources or mineral processing and stockpile point source operations (as opposed to mining) then the Major A Source Category threshold would be met. Unfortunately, it is not possible for public reviewers to assess the magnitude of or quantify these sources from the available emission inventories. Fugitive emissions were reportedly estimated for a dozen different operational scenarios. However, Table 7 of the SOB and the example calculations provided use scenario W-3, because it is the maximum total PM emissions. This scenario is heavily weighted toward exploitation of the West End Pits, and provides little information to assess the potential emissions associated with those sources that might not be exempt on closer examination.

Examination of the W3 scenario also shows that the 2901 TPY of PM estimated for On-site Hauling is 100% attributed to hauling from the West End Pit to the Hangar Flat DRSF. This is the main process stream for limestone feeding the lime plant, gold oxidation circuit, neutralization of waste streams, etc. This scenario also attributes zero hauling from stockpiles to crushers. It is not possible to ascertain from these data how much of the fugitive emissions are attendant to these listed sources or to mineral processing point sources.

These observations suggest that IDEQ's reliance on operational scenarios, designed to support modeling analyses to assess fugitive exclusion from Source Classification, has allowed listed

and point source attendant emissions to be misclassified as excluded mining fugitives. Misclassification of only a tiny percentage of the massive excluded emissions prevents Major source determination and federal review of key portions of this defective PTC.

IDEQ should carefully review these fugitive emission claims with regard to the exclusion criteria and publicly disclose the review.

8.0 T-RACT REVIEW

T-RACT is an unusual exemption to meeting health criteria undertaken because the facility is unable to comply with health criteria using reasonably available control technology, and the Applicant requests a permit that allows a ten-fold increase in cancer risk. This relaxation of health protections deserves intensive review, public involvement, and consideration by other regulators. There is concern that the repetitive nature of this PTC review undermines public awareness regarding the significance of this major change in strategy regarding emissions control from this facility, and the health implications of relaxing health standards. In that regard, the public should be informed if IDEQ has considered the following questions:

Is there precedent in Idaho for this relaxation of health standards for a facility of this size?

Have any similar facilities received comparable relief in other jurisdictions?

Has there been any public notice specifically referencing this unusual request and relaxation of health standards?

Have the cancer risk calculations been reviewed by qualified risk assessment personnel?

Has the Agency requested advice or guidance from other environmental or health agencies in the application of the T-RACT?

With regard to the T-RACT analysis and the request for relief, IDEQ regulations define T-RACT as:

12. Toxic Air Pollutant Reasonably Available Control Technology (T-RACT). An emission standard based on the lowest emission of toxic air pollutants that a particular source is capable of meeting by the application of control technology that is reasonably available, as determined by the Department, considering technological and economic feasibility. If control technology is not feasible, the emission standard may be based on the application of a design, equipment, work practice or operational requirement, or combination thereof. (5-1-94)

Compliance Feasibility: A T-RACT application is an admission that compliance with environmental health criteria is not feasible with reasonably available control technology (RACT). This is in contrast to earlier Agency assertions that all standards would be met with available technology. The previous submittals also assured the public there were no environmental or health concerns associated with (Toxic Air Pollutant) TAPs compliance. This proposal requests exemptions from those standards. It is confusing that IDEQ has modified its position from no significant impact to T-RACT without disclosing the analyses that support these conclusions.

With regard to “...if control technology is not feasible ...”, IDEQ has not demonstrated that it is infeasible to comply with the required ambient air quality standard with the application of RACT. Despite numerous public requests, the Agency has not publicly disclosed the estimated ambient arsenic concentrations associated and with this facility’s design capacity PTE arsenic emissions using RACT, nor has IDEQ compared this ambient concentration to AACC carcinogenic risk criteria. This comparison should be presented to document the lack of feasibility, the magnitude of the exceedance at maximum design operations, and to demonstrate the methodology. In this way the public can understand and meaningfully assess the degree of relief the IDEQ is

proposing to yield to the Applicant. The correct comparison is the maximum 1-year average ambient concentration calculated through refined modelling, using the maximum 1-year annual RACT PTE, compared to the Section 586 AACC annual standard.

The Statement of Basis should be amended to present the derivation of the RACT facility design PTE, model inputs, and the appropriate ambient concentrations comparison to the AACC.

Determining RACT: The first requirement of a T-RACT analysis is calculation of “... *the lowest emission of toxic air pollutants that a particular source is capable of meeting by the application of control technology that is reasonably available...*”. With regard to determining the control technology that is reasonably available for the largest arsenic source, IDEQ accepts the Applicant’s contention that RACT is 90% control of road dust through application of chemical suppressants and water; and now contends this level of control is insufficient to meet the TAPs criteria (with no supporting calculation, as noted above). It is curious that the Applicant asserts 90% control for RACT; while simultaneously claiming that 93.3% control is readily achievable, and has committed to that level as reasonable and available to meet PM10 standards without a RACT determination. The Applicant is simultaneously claiming one level of control is readily achievable for compliance with the PM-10 standard, but that same level is not achievable for the arsenic in the same particulate matter.

In justifying the 93.3% control assumption, the Applicant provides support information that this technology can allegedly achieve higher control levels up to 98%. Review of the pertinent research regarding these controls, indicates achieving these levels requires extensive maintenance and massive continuous application of suppressants. If these levels of control are, indeed, achievable, then IDEQ should deny the T-RACT exemption relaxing the cancer risk criteria.

The T-RACT analyses should explore the efficacy, environmental, energy and cost feasibility of more aggressive application of the current technology. The analyses also indicate higher levels of control could be achieved with paved or hard surfaced roads. The Applicant maintains that paving is cost prohibitive and a typical highway design would not support the heavy traffic. The application provides no supporting information for these claims. Neither the RACT nor TRACT feasibility analyses discuss or present the supporting material required by State regulations regarding “*environmental impacts caused by the control technology that cannot be mitigated, energy requirements of the control technology*”; or “*costs of necessary mitigation measures, capital costs, cost effectiveness, annualized cost of the control technology divided by the amount of emission reduction, difference in costs between the particular source and other similar sources*”. All of these supporting analyses are specifically cited in:

Department of Environmental Quality - Air Quality Division, Toxic Air Pollutant (TAP)
Preconstruction Compliance Application Completeness Checklist

IDEQ has noted that this an aggressive control level not previously demonstrated in Idaho. Several commenters have expressed concerns both that this level of control cannot be maintained, and that even higher levels of control will be required if PM emissions are under estimated. The Section below summarizes concerns related to the insufficiencies in calculating emissions.

There seem to be contradictory IDEQ positions regarding the effectiveness of controls for particulates and arsenic from the same source. Values ranging from 85% to 98% are cited throughout the PTC and support material. The analyses seem to select the most convenient control level depending on the need to demonstrate compliance for the contaminant under review, even for the same physical particle. Does IDEQ have an explicit opinion of the levels of control that are achievable, feasible, and reasonably available for these dust sources? If so, IDEQ should publicly disclose the conservative, average, RACT, minimal, and maximal level of control for these particulate and arsenic sources.

Before granting T-RACT, IDEQ should require the Applicant to address the feasibility of achieving compliance through more aggressive application the current RACT proposed for

particulate control, and require the necessary support calculations regarding environmental, cost and energy impacts of these and hard surfaced road options. These analyses should be based on appropriate RACT emissions and should identify the levels of control necessary for compliance with the AACCC, as noted above.

Determining RACT Emissions: T-RACT requires calculation of "... *the lowest emission of toxic air pollutants that a particular source is capable of meeting by the application of control technology that is reasonably available...*". Assuming the Applicant's current submittal represents RACT, IDEQ identifies this baseline RACT PTE arsenic emission rate as 0.544 lbs/hr in Table 7 of the TAPS Addendum. Review of the calculations reveals that 0.464 lbs/hr is attributable to Haul Roads. As another example of the confusion regarding control levels, IDEQ states in the SOB that this rate is calculated at 93.3% control, while the supporting spreadsheets seems to indicate 90% control. As noted in previous comments, this emission rate is not based on conservative data, and has yet to be appropriately estimated. This failure to appropriately calculate RACT emissions exacerbates the insufficiencies of calculating T-RACT limit.

For this reason, additional critiques of this determination are important to highlight. State regulations require PTE to be calculated as follows:

02. Quantification of Emission Rates.

- a. The applicant may use standard scientific and engineering principles and practices to estimate the emission rate of any toxic air pollutant at the point(s) of emission. (6-30-95)
 - i. Screening engineering analyses use unrefined conservative data. (6-30-95)
 - ii. Refined engineering analyses utilize refined and less conservative data including, but not limited to, emission factors requiring detailed input and actual emissions testing at a comparable emissions unit using EPA or Department approved methods. (6-30-95)

For estimating unpaved road fugitive emissions, no option ii) (refined engineering analyses) techniques exist. Emissions are calculated using option i) Screening analyses and unrefined conservative data. In this case, procedures outlined in Section 13.2 of EPA AP-42 unpaved road techniques were applied. IDEQ has acknowledged that the Agency routinely accepts these AP 42 techniques.

IDEQ's Guidance on Emissions Data Hierarchy: correctly notes that AP-42 calculations are the last choice and "worst data" acceptable for emissions calculations and offer the following warning:

AP-42 emissions factors represent the average emissions for a given group of stationary sources or activities. Being averages, AP-42 emission factors must be used with caution because emissions from half of the group of stationary sources or activities may be higher than the emission factor while emissions from the other half of the group may be lower. AP-42 emissions factors are rated A through E; A is considered the most reliable and E the least reliable. The rating of the AP-42 factor must be considered in determining how accurately the AP-42 emissions factor represents actual emissions from the subject source. If industry derived emissions factors are used, they must be accompanied with documentation describing how the emission factor was derived.
<https://www2.deq.idaho.gov/admin/LEIA/api/document/download/5521>

IDEQ acknowledges that AP-42 parameters are averages and 50% of emissions calculated using this technique likely have higher values than those calculated using average EFs. This PTC application uses minimal EFs, indicating >>50% likelihood that emissions are under estimated. This amplifies the requirement to use conservative data in the interest of health protectiveness, and particularly with respect to carcinogenic air pollutants.

As IDEQ has acknowledged in previous response to comments, there are three key (data based) variables used in estimating controlled, unpaved road arsenic emissions: silt content, arsenic content of the silt, and control efficiency. The silt content values recommended from AP 42 are summarized in the following Table:

Table 13.2.2-1. TYPICAL SILT CONTENT VALUES OF SURFACE AP-42 MATERIAL ON INDUSTRIAL UNPAVED ROADS

	All Gravel Roads	Haul Roads
Industry Types	18	4
No. Sites	53	10
No. Samples	272	58
Minimum	4.3%	5.8%
Maximum	24.0%	24.0%
Average	10.1%	11.6%
Median	8.4%	8.4%
Geomean	8.8%	9.9%

The silt content observations represent 272 gravel road samples from 53 sites at 18 different industries. Ten (10) sites and 58 samples were obtained specifically from Haul Roads. The minimal mean silt content from any one site was 4.3% and for all gravel roads and 5.8% from Haul Roads. Midas – PRI uses 4.0%. The following Table summarizes plausible values for the three key variables at this site as noted in previous comments. These values are rated as minimal, typical, and conservative EFs.

Comparison of Characteristic Values for Key Variables Used in Calculating Particulate and Arsenic Emissions from Gravel Haul Roads

Characteristic Values	All Gravel Roads	Silt Content	Silt Content As Content Control	ppm	%- Emitted
AP-42 Minimal	4.3%	5.8%	909	10%	
AP-42 Typical	8.8%	9.9%	1231	15%	
AP-42 Conservative	10.1%	11.6%	1812	20%	
Midas PRI	4%	4%	667	6.7%	

In each case, the Applicant has used less than minimal values. Moreover, these equations are non-linear and variables are multiplicative, exacerbating the degree of under-estimation. IDEQ has in each case accepted the minimal plausible value, despite the requirement that conservative values be used, and IDEQs own guidance includes warnings regarding the uncertainties. The result is that it is likely that emissions are underestimated by several times. It is important to note that, if even a modest increase in PTE for haul roads is acknowledged, this facility will not be able to meet particulate and carcinogenic arsenic standards. Use of any combination of typical or conservative values would likely result in exceedance of particulate and arsenic health criteria.

The potential health related consequences associated with under-estimation of haul road related emissions continues to haunt the PTC and is amplified in the T-RACT analysis.

Calculating the T-RACT Emission Limit: State regulations require that:

- d. The T-RACT emissions rate of a toxic air pollutant from a source or modification is calculated using the maximum capacity of the source or modification under its physical and operational design with the effect of: (6-30-95)
- i. Any physical or operational limitation other than control equipment that has been specifically described in a written and certified submission to the Department; and (6-30-95)

The T-RACT emission rate should be calculated in the same manner as the original PTE estimates, but allowing for enforceable operational limitations noted in i) above. These

operational limitations have the practical effect of reducing the design capacity, and enforcing an artificial ceiling on the facility's ability to pollute. The T-RACT calculation should then parallel the original PTE analyses, substituting this artificial design capacity. Subsequent Operating Permit conditions should then reflect rigid controls to that ensure the facility will not operate beyond the T-RACT PTE ceiling.

With regard to Haul Road emissions the Applicant offers two operational limitations:

- Limiting long-term mining production to 135,000 T/day (5-year rolling total)
- Capping the haul roads that are outside of the pits and development rock storage facilities (DRSFs) with clean development rock (T-RACT)

The proposed T-RACT emission used by IDEQ is not an operationally constrained equivalent of the PTE determined for the 180,000 TPD design limit used in the original PTC. The current PTC T-RACT analysis uses an inappropriate levels of averaging to modify the calculation. Emissions are calculated based on an apparently arbitrary rolling five-year average mine production rate limit of 135,000 TPD. Although IDEQ accepts this artificial manipulation to support a 25% reduction in modeled emissions and estimated ambient impacts; this limitation has no practical constraint on facility operations, emissions or ambient impacts; and does not reflect PTE under T-RACT. This alleged T-RACT emission limit is not based on a maximum annual rate, or a maximum hourly rate scaled to a maximum annual rate, as required to subsequently compare to an AACC. It is an apparent arbitrary average of 1825 consecutive days of alleged intended operations.

The correct T-RACT emission limit should be the maximum single-year annual PTE rate consistent with enforceable design-equivalent operational constraints, not a rolling average based on good intentions. Because the AACC for carcinogens is an annual incremental standard, there is no specific provision for averaging emissions or ambient concentrations for carcinogenic toxic air pollutants over periods greater than one year. There are provisions for adjusting the AACC for short-term exposures less than the standard basis (<5 year exposures).

15. Short Term Source Factor. For short term sources, the applicant may utilize a short term adjustment factor of ten (10). For a carcinogen, multiply either the applicable acceptable ambient concentration (AACC) or the screening emission rate, but not both, by ten (10), to demonstrate preconstruction compliance. This method may be used for TAPs listed in Section 586 only and may be utilized in conjunction with standard methods for quantification of emission rates (Subsections 210.05 through 210.08).

It should be noted that this calculation specifically excludes simultaneous adjustments to both the emission rates and ambient criteria, as undertaken in the current T-RACT analyses.

Table 7 TAPS Addendum shows the overall decrease in the T-RACT emission limit used by IDEQ in modelling (0.544 vs. 0.232 lbs/hr) reflects a 57% (not a 25%) reduction from the original alleged controlled emission rate. Presumably this reduction reflects both the 25% reduction due to the alleged production limitation, with the remainder due to the low arsenic gravel cover.

These calculations are referenced to an Appendix in the TAPS Addendum, but are not possible to reproduce from the information provided. As such, the efficacy of the additional operational constraints associated with gravel cover is difficult to evaluate. However, it also appears to be based on minimal, rather than conservative, emission factors (i.e., median concentration of contaminants, optimistic control levels, minimal silt content, and no enrichment factor accounting for spillage of high arsenic content ores and development rock fines spilled on the roads).

With respect to the alleged production curtailment, the 135,000TPY mining capacity is not an appropriate operational control for haul road source limits for T-RACT. The MODPRO2 operational scheme uses extensive stockpiling of ores and development rock to effect a near constant rate of mineral processing activities as shown in Figures 1.2, 1.3 and 1.4 in the STIBNITE GOLD PROJECT, FEASIBILITY STUDY TECHNICAL REPORT, M3-PN170045, Effective Date 12/22/2020 and Figures 3-9 and 3-10 of the STIBNITE GOLD PROJECT:

REFINED PROPOSED ACTION – MODPRO2, Perpetua Resources Idaho Inc. October 15, 2021. In contrast, the proposed mine plan initiates and concludes with low rates of ore production and varying rates of material mined production over the 16 years of alleged life of mine, making a five-year rolling average meaningless in terms of limiting production throughout the complex.

Alleged mine fugitive emissions also include significant on-site hauling associated with Portable Crusher and Screening Plant, lime plant and limestone amendment activities that are months or years removed from mine production; and maintenance, load/unload, watering truck, lime plant, limestone amendments to the gold-refinery, etc. emissions that are applied continually, independent of mine production. These Haul Road and other fugitive emissions are dependent on mineral processing schedules, not mine production. As a result, these should be separately addressed in T-RACT as enforceable operational process rate limitations imposed on milling, refining, and disposal operations, as well as mine production. These sources should also be considered in Source Categorization determinations, as noted above.

Calculating T-RACT Ambient Concentrations: State regulations specify that TAPs increments be calculated as follows:

03. Quantification of Ambient Concentrations. (6-30-95)

a. The applicant may use the modeling methods provided in Subsection 202.02 to estimate the ambient concentrations at specified receptor sites for any toxic air pollutant emitted from the point(s) of emission. (6-30-95)

i. For screening modeling, the models use arbitrary meteorological data and predict maximum one (1) hour concentrations for all specified receptor sites. For toxic air pollutants listed in Section 586, multiply the maximum hourly concentration output from the model by a persistence factor of one hundred twenty five one-thousandths (0.125) to convert the hourly average to an annual average. For toxic air pollutants listed in Section 585, multiply the maximum hourly concentration output from the model by a persistence factor of four tenths (0.4) to convert the hourly concentration to a twenty-four (24) hour average. (6-30-95)

ii. For refined modeling, the models use site specific information. If actual meteorological data is used and the model predicts annual averages for toxic air pollutants listed in Section 586 and twenty-four (24) hour averages for toxic air pollutants listed in Section 585, persistence factors need not be used. (6-30-95)

In order to secure a permit under T-RACT, the Applicant needs to identify enforceable operational limitations that reduce PTE to levels that, when applied through refined modelling, comply with the appropriate AACC. The appropriate comparison under T-RACT is the maximum one-year annual average concentration compared to 10 times the listed AACC. This process is equivalent to PTE modeling of PM pollutants compared to ambient air quality standards. There is no provision for altering or averaging emissions or ambient concentration for intended operations schemes. Similarly, there should be no provision to modify either emissions or the AACC for alleged long-term cancer exposure considerations. The cancer risk calculation is an incremental screening method that looks at the immediate potential impact of the source in the absence of background, past, or future exposures from other sources. As such, both procedures have inherent large margins of safety (i.e., emissions calculated at maximum rates and compared to stringent standards annual maximum concentrations. The 78% life-of-mine (LOM) to receptor lifetime reduction (16 yr LOM/70 yr lifetime) is inappropriate, as this facility is not entitled to consume the remaining 54 years of the receptor's lifetime acceptable exposure during the Applicant's alleged 16 years of operation.

b. The point of compliance is the receptor site that is estimated to have the highest ambient concentration of the toxic air pollutant of all the receptor sites that are located either at or beyond the facility property boundary or at a point of public access; provided that, if the toxic air pollutant is listed in Section 586, the receptor site is not considered to be at a point of public access if the receptor site is located on or within a road, highway or other transportation corridor transecting the facility.

The ambient concentrations used for the point of compliance are incorrect. Three levels of inappropriate dilution of ambient values are accomplished by IDEQ in alleging compliance with T-RACT. In addition to the inappropriate dilution of emissions noted above, IDEQ

inappropriately dilutes ambient concentrations by averaging the results of two scenarios, decreasing the maximum annual average by 41%. This technique is justified on the basis that no one scenario will apply during the life of the mine. A third averaging technique further dilutes the ambient calculation by adjusting the by the ratio of the life of the mine to the assumed lifetime of the receptor. All three manipulations are incorrect.

Once again, IDEQ conflates conservativeness built into the evaluation criteria, with claims of conservatism associated with alleged intended operations. Additionally, the analysis then confuses screening level concentrations with exposure. The correct compliance comparison is the maximum annual ambient concentration to the annual AACC, or T_RACT AACC. There are no provisions for adjusting this concentration to alleged exposures average over multiple years. Any relaxation of health standards on the basis of exposure requires comprehensive risk assessment analyses considering external factors not addressed in the derivation of incremental standards.

The T-RACT analysis accepted by IDEQ seems to be a one-step hybrid of the traditional three step process of risk-adjusted compliance with carcinogenic exposures. The State of Washington, for example, requires a three-tiered analysis formalizing this procedure (Guidance Document First, Second, and Third Tier Review of Toxic Air Pollution Sources (Chapter 173-460 WAC.)

Generally, the first Step requires a relatively simple incremental calculation of ambient concentrations, compared to a conservative risk-based standard or acceptable concentration. These calculations are reviewed and compliance is confirmed if these conservative criteria are met. In this step, the calculation/comparison is the maximum annual concentration compared to the annual AACC and the averaging period is one year. IDEQ never performed, or disclosed, this comparison, which should be accomplished with RACT PTE. As frequently practiced throughout this PTC Application, the required conservative values were modified to reflect lower emission and the AACC was modified to reflect lower concentrations.

These analyses used a non-conservative emission rate, averaged over five years (not one year). It is not possible from the available data to determine how this five-year average compared to the maximum one-year emission rate that should have been used. The overall, reduction appears to be 43% of RACT PTE. The ambient concentration predicted is then additionally reduced by 41% by averaging two different five-year scenarios. Finally, the AACC is reduced by adjusting the result downward by 78% to account for the life of the mine (LOM). This inappropriate triple dilution comparison then alleges compliance.

Direct comparison of the once-diluted emissions predicted annual concentration to the one-year incremental AACC fails by 30-fold (or is 3-fold times the T-RACT AACC). These exceedances are dependent on the once-diluted five-year, non-conservative emission calculations discussed extensively in these comments. Use of required one-year maximum conservative emission calculations, would likely result in orders of magnitude exceedances of the associated one-year maximum concentration T-RACT AACC.

IDEQ should present this calculation.

In a typical carcinogenic risk analyses, the second Step in evaluating the TAPs exemption would apply risk assessment techniques, requiring consideration of receptor and environmental setting characteristics; site history; other sources, including background and potential future increments; susceptible populations, and alternate exposure frequencies and duration, data quality, and uncertainties. This step would transparently address many of the factors allegedly considered in the dilution of the AACC in this PTC analysis.

Revision of the incremental AACC through post-modeling to collectively reflect select factors inherent in the risk assessment/management is neither correct nor transparent, and neglects numerous factors that should be considered in the public interest.

The third Step introduces risk management considerations that would limit emissions sufficiently to effect ambient concentrations consistent with allowable exposures determined in the risk assessment phase (i.e. the T-RACT emission level). This step would consider effective

operational limits and controls, establish a *de facto* design capacity, and establish rigid permit limits that would guarantee compliance with the T-RACT AACC.

Even considering these diluted non-conservative emissions used in these analyses, the prospect for complying with carcinogenic risk criteria is doubtful. The modeled results, based on the .232 lbs/hr alleged T-RACT emission rate, indicate that the maximum one-year average ambient air arsenic concentration at the point of compliance is .00698 ug/m³ under the W-3 scenario. This value exceeds the 10⁻⁶ AACC for Arsenic of 0.00023 ug/m³ by 30 times. Applying the allowable T-RACT relief factor of 10 increase in cancer risk indicates a 3-fold exceedance of the appropriate .0023 ug/m³ maximum annual increment limit. This translates to a required T RACT emission limit of $.232 / (.00698/.0023) = .076$ lbs/hr to achieve compliance.

This is an $(1-(.076/.544)) = 86\%$ required reduction in the under-estimated PTE. In reality, the currently accepted PTE for this facility must be reduced by 86% to achieve compliance through enforceable operational constraints to comply with T-RACT. Even accepting the underestimated PTE as accurate, and assuming that $(43-24\%) = 19\%$ can be obtained through application of low arsenic road gravel, a 67% reduction is required to be achieved through enforceable production limitations to comply under T-RACT.

This calculation uses the five-year rolling average mining production limitation, offered as an operational control. This proposed operational control both dilutes the emission calculation, and is practically meaningless in limiting emissions and largely unenforceable. The most effective and enforceable limitations would likely be restrictions on annual site-wide VMT limits, rigorously applied to both mineral process-related and mine hauling activities. A 67% annual VMT reduction will require substantial decreases in both mine and process related milling, refining, and disposal operations hauling.

Additionally, IDEQ has argued that the T-RACT controls proposed in the current PTC are conservative citing various levels of mine operation schemes offered by the Applicant. (i.e., 180,000 TPD design rate, alleged 135,000 TPD T-RACT rate, 402,859,000 ton LOM alleged MODPRO2 rate), However, the required >67% reduction required to meet T-RACT likely requires limits well below MODPRO2 mine production rates. Developing such a plan would likely require substantial re-evaluation of MODPRP2 strategy.

9.0 ENFORCEABILITY

With regard to air pollution impacts, there are major concerns associated with potential mining and mineral processing fugitive emissions of particulates and arsenic. Unprecedented fugitive emissions control levels will be required to meet NAAQS criteria especially with regard to PM10 compliance. The Applicant is also requesting T-RACT relief from TAPs carcinogenic risk health standards. T-RACT, by definition, asserts that the required PM10 control levels are insufficient to meet carcinogenic risk levels in the ambient air.

There is considerable, if not unprecedented, levels of uncertainty in the magnitude and toxicity of the PTE and T-RACT emission estimates. Should the optimistic emission rates and control levels proposed by the Applicant prove untrue, the facility emissions and subsequent ambient air concentrations will exceed health standards at the facility boundary and result in hazardous exposures to workers, resident worker families, and on-site visitors within the facility.

The proposed Permit Conditions are ineffective in exercising requisite control over these emissions and rely largely on a Fugitive Dust Control Plan, to be developed and implemented later, after issuance of the Permit.

Because this is a proposed T-RACT Site, the Fugitive Dust Control Plan is the primary enforcement mechanism for both NAAQS and TAPs. The control and enforcement strategies for the sources are inextricably linked, as these are the same physical particles. Curiously, NAAQS compliance is achieved by Applicant asserted extra-ordinary (93.3%) controls levels, which is 33% less emissions than the alleged RACT (90.0%), TAPs compliance requires (RACT) and adds operational controls limiting production capacity to achieve emissions well below design PTE. Whether this is supposedly accomplished at 93.3% or at 90% is unclear, and not trivial as it represents a 33% increase in emissions.

The T-RACT operational controls must be effective in reducing T-RACT emissions to levels that result in meeting the AACC. To effectively reduce these emissions, the operational controls should be aimed at reducing traffic-related fugitive releases. This should be accomplished by the Operator demonstrating the capacity to maintain required Emission Factors (EF)s that will result in NAAQS and T-RACT AACC compliance; and monitoring the ambient environment to assure the necessary control level has been achieved.

As a result, to provide health and environmental protectiveness and ensure enforceability and the effectiveness of the Fugitive Dust Control Plan:

- The facility should be Classified as Major A to ensure federal oversight of the simultaneous NAAQS and TAPs controls, and associated federal review and approval of the Fugitive Dust Control Plan should be required.
- The specific technical specifications, monitoring plan, and corrective action requirements of the Fugitive Dust Control Plan should be explicitly stated as Permit Conditions prior to issuance of the PTC, included in the Operating Permit, and be a condition for State and federal approval.
- The Permit Conditions should include explicit monitoring requirements for ambient air and the key emission factors (EF)s used in estimating PTE and T-RACT emissions. These are roadbed silt content, silt arsenic content, ambient air total PM and PM arsenic content at select property line locations and roadside locations within the facility, ambient PM10 at select property line locations, and VMT for all on-site traffic.
- The operational controls should be daily (PM10 related) and annual (PM and arsenic related) site-wide VMT limits. The operational VMT limits should be tiered, with tier levels related to the monitored EF and ambient concentrations. For example, the initial VMT limits would correspond to maintaining 4% silt content and 90 mg/kg arsenic in the silt. Should these silt and arsenic levels not be maintained, VMT operational limits shall be decreased, proportionately, to a lower VMT limited operational tier. Simultaneously, should PM, PM-arsenic or PM10 monitoring exceed ambient criteria, VMT limits should be lowered accordingly. There should be provisions to refine the tier levels at two year intervals, as site-specific data are obtained.

10.0 RECOMMENDATION

With respect to reviewing this T-RACT application, IDEQ is obligated to:

- e. If the Department determines that the applicant has proposed T-RACT, the Department shall determine which of the options, or combination of options, will result in the lowest emission of toxic air pollutants, develop the emission standards constituting T-RACT and incorporate the emission standards into the permit to construct. (5-1-94)
- f. If the Department determines that the applicant has not proposed T-RACT, the Department shall disapprove the submittal. If the submittal is disapproved, the applicant may supplement its submittal or demonstrate preconstruction compliance through a different method provided in Section 210. If the applicant does not supplement its submittal or demonstrate preconstruction compliance through a different method provided in Section 210, the Department shall deny the permit. (6-30-95)

This application is clearly deficient with respect to T-RACT and IDEQ should disapprove the Application for, at least, the following considerations:

- It based on PTE emissions that have not been calculated using conservative emission factors.
- The emissions used to support modeling are based on inappropriate multi-year averages and do not reflect PTE or T-RACT.
- The proposed operational limits on mine production will have no practical constraint on facility operations, emissions or ambient impacts.

- The post-model multi-year and lifetime averaging of exposures are inappropriate, as this facility's 16-year life of mine is not entitled to expend a receptor's equivalent 70-year of allowable exposure.
- Correctly applied, direct comparison of predicted maximum annual average ambient arsenic concentrations to the AACC shows a 30 factor exceedance, or 3 times the T RACT AACC.
- Considerably higher levels of operational constraints will be required to support T RACT. These limits are likely to require reductions in the proposed MODPRO2 levels of operations.
- The Permit Conditions are largely unenforceable, do not require any effective monitoring, or provisions for corrective actions, should the Applicant's assurances prove unachievable.