5.0 CUMULATIVE EFFECTS

5.1 Introduction

A cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Major past and present land uses in the cumulative effects analysis areas (CEAs), which are projected to continue into the future include: mining, roads/trails, timber harvesting, wildfires, fisheries restoration, and exercise of Tribal Treaty Rights. Dispersed recreation (including hunting, fishing, float boating) and residential development also occur in parts of the CEAs.

Guidance from CEQ, "Considering Cumulative Effects – January 1997," was used in identifying geographic boundaries and ultimately the CEA for each resource. The CEA for each environmental resource is presented in **Table 5.1-1** and discussed under the specific resource subsection.

5.1.1 Cumulative Effects Areas

Past, present, and reasonably foreseeable future actions include activities, developments, or actions that have the potential to change the physical, social, economic, and/or biological nature of a specified area. Existing and projected activities directly associated with past and present activities, and other RFFAs, provide the basis for defining and analyzing cumulative impacts. A cumulative effect overlaps in space and time with the direct and indirect effects of the action.

Due to the nature of the SGP that requires many miles of transmission line and roads, the direct and indirect effects areas are expansive. However, the effects themselves are not expansive. Therefore, the analysis of cumulative effects does not result in a broader analysis area for most resources. **Table 5.1-1** presents the CEAs by resource and the associated figure number.

Table 5.1-1 CEAs by Resource and Rationale

Resource	Cumulative Effects Area	Figure
Geologic Resources and Geotechnical Hazards	The HUC 12 subwatershed boundary surrounding the SGP components.	Figure 3.8-1
Air Quality	The near field region is defined as a 50-km radius from the SGP. The far field region is defined as a 300-km radius from the SGP.	Figure 3.3-2
Climate Change	The SGP components including the mine site and access roads, utilities, and offsite facilities, and the vehicles and equipment that operate within those areas.	No figure
Soils and Reclamation Cover Materials	The subwatersheds of the TSRC analysis area.	Figure 3.5-1
Noise	Areas within a 5-mile radius of SGP components including the mine site and access roads, utilities, and offsite facilities.	Figure 3.6-1

Resource	Cumulative Effects Area	Figure
Hazardous Materials	Bounded by the bordering transportation routes that would provide access to the mine site. SGP components including the mine site and access roads.	Figure 3.16-1
Surface Water and Groundwater Quantity	The HUC 12 or subwatersheds that overlap the SGP.	Figure 3.8-1
Surface Water and Groundwater Quality	For surface water, the 22 watersheds that encompass the SGP, access roads, transmission lines, and off-site facilities. For ground water, the two sub-watersheds that encompass the SGP.	Figure 3.9-1 Figure 3.9-2
Vegetation: General Vegetation Communities, Botanical Resources, and Non-native Plants	The 300-foot buffer around SGP action alternative components.	Figure 3.10-1
Wetlands and Riparian Resources	Watersheds containing the SGP components including the mine site and access roads, utilities, and offsite facilities.	Figure 3.11-1
Fish Resources and Fish Habitat	All of the watercourses and waterbodies in the HUC 6th field (10-digit code) watersheds that overlap potential SGP disturbance areas. SFSR hydrological subbasin and the North Fork Payette River hydrological subbasin.	Figure 3.12-1
Wildlife and Wildlife Habitat including TEPC Species	The wildlife 6th-level HUC at the 12-digit scale (HUC 12) subwatershed boundaries.	Figure 3.13-1
Timber Resources	The PNF and BNF, as well as any commercial timberlands in Valley County.	Figure 3.14-1
Land Use and Land Management	The SGP components including the mine site and access roads, utilities, and offsite facilities.	Figure 3.15-1
Access and Transportation	The overall road system encompassing the SGP components.	Figure 3.16-1
Heritage Resources	The VAV APE.	Figure 3.17-1
Public Health and Safety	Valley County, as well as recreational visitors who frequent the area.	No Figure
Recreation	A 5-mile radius from the SGP components to account for where the SGP could be visible within foreground or middle ground distances and noise from SGP activities could be audible and thus could potentially affect recreation opportunities and settings.	Figure 3.19-1
Scenic Resources	NFS lands in Valley and Adams Counties.	Figure 3.20-1
Social and Economic Conditions	Valley and Adams Counties.	Figure 3.21-1
Environmental Justice	Valley and Adams Counties and Native American Tribes whose traditional subsistence range includes the mine site.	Figure 3.22-1
Special Designations	All WSR waterways in the watershed. IRAs and RNAs within 5 miles of SGP facilities.	Figures 3.23-1 through 3.23-4
Tribal Rights and Interests	Lands administered by the PNF and BNF, and other federal, state, and private lands within and adjacent to these National Forests.	No Figure

5.1.2 Past and Present Actions

Present effects of past actions include activities that may have been initiated in the past but may have lingering effects in impacting the environment or may influence trends in the physical, biological, or social environment, and could have a cause-and-effect relationship with the effects of the proposed action or alternatives (36 CFR 220.4(f)).

Present actions include other mining projects and their related activities (i.e., exploration, reclamation) that are currently underway. They also may include other non-mining related projects currently in progress, such as timber sales or vegetation treatment; tribal fisheries restoration activities; recreation; other utility lines (e.g., powerlines) and roads; maintenance and use of the existing transportation network; urban development in Valley County; private land development and uses; and sand and gravel extraction.

Past and present actions in the SGP area are described below.

Mineral Exploration and Mining Activities – Past and present mineral exploration and mining have occurred in the vicinity of the SGP, including prospecting, exploration, underground mining, and open pit mining. To support past mining, other related activities occurred at or near the SGP site, including ore milling and processing, tailings disposal, smelting, heap leaching of ore, spent heap leach ore disposal, development rock disposal, hydropower generation, water retention dam construction, sawmill operations, electric power transmission line construction, and occupancy by thousands of people in housing camps and later in the town of Stibnite.

Two major periods of mineral exploration, development, and operations have occurred in the past century, and have left behind substantial environmental impacts. Between the mid-1920s and the 1950s, the area was mined for gold, silver, antimony, and tungsten mineralized materials by both underground and, later, open pit mining methods. The second period of major activity started with exploration activities in 1974 and was followed by open pit mining and seasonal on-off heap leaching and one-time heap leaching from 1982 to 1997, with ore provided by multiple operators from several locations, and processed in adjacent heap leaching facilities (Forest Service 2015c).

The past mining, milling, and processing activities created numerous legacy impacts including underground mine workings, multiple open pits, development rock dumps, tailings deposits, heap leach pads, spent heap leach ore piles, a mill and smelter site, three town sites, camp sites, a ruptured water dam (with its associated erosion and downstream sedimentation), haul roads, an abandoned water diversion tunnel, and an airstrip. Subsequent reclamation activities have also occurred. Between 2002 and 2009, the Forest Service conducted reclamation activities including removal of tailings and soils, reconstruction of Meadow Creek and its floodplain, revegetation of the new channel banks, backfill and reclamation of the old channel, and grading and covering of additional tailings, as described in **Section 1.3**.

Other past and/or present mining projects considered in the cumulative effects analysis include:

- Fourth of July Mine – Located in Government Creek on NFS land, Fourth of July Mine has been inactive (Forest Service 2012d).

- Camp Bird Mine – Located in Logan Creek on private land, Camp Bird Mine has been inactive for more than 30 years (Forest Service 2012d).

- Valley County Quarry Development – Development and operation of an aggregate source to support the road maintenance activities on McCall-Stibnite Road (CR 50-412), Johnson Creek Road (CR 10-413), and other backcountry roads as determined by Valley County (Forest Service 2017j).

- Walker Millsite – Located in Logan Creek on private land, the plan of operations approved in 1990 included a 50 ton per day ball mill and gravity milling process with the following components: a 50-foot by 100-foot by 8-foot-deep tailings impoundment, 1,000 feet of access road, a water transmission line, and explosives magazine. The millsite on NFS land has been reclaimed (Forest Service 2012d).

- Golden Hand No. 1 and No. 2 Lode Mining Claims – Located in the Big Creek drainage on 1,309 acres of NFS land, approximately 19 miles north of Yellow Pine, the plan of operations included drilling operations, trenching and sampling, and reopening the caved Ella Mine adit. The project also would include the collection of subsurface geological information to prepare for a new mineral examination. The claims encompass approximately 20 acres each and are adjacent to Coin Creek (Forest Service 2012d).

- Cinnabar Mine – Located 15 miles east of Yellow Pine and approximately 50 acres in extent, most of the mining occurred during the 1950s. No reclamation has been performed at the site and contaminants of concern include mercury, methylmercury, and arsenic (EPA 2020). This site was evaluated for remediation by the EPA due to elevated metal concentrations, including mercury and arsenic, associated with mine tailings, sediment, and water (USGS 2017). However, a large-scale remediation effort is not currently feasible due to access restrictions (Ecology and Environmental, Inc. 2018). Objectives of future remediation would be to improve water quality for the salmon fishery.

Exploration activities for potential future mining development have been occurring for the last decade and are ongoing at or within the vicinity of the SGP. Affiliates of Midas Gold initiated mineral exploration activities in 2009 as part of the Golden Meadows Exploration Project to better define the mineral deposit potential for the area. Activities associated with the Golden Meadows Exploration Project included the use of the existing road network, and construction of several temporary roads to access drill sites, drill pad construction, drilling on both NFS and private lands, and reclamation (Forest Service 2015c). AIMMCO's Big Creek Roads exploration project included the use of existing roads to access and investigate mining claims. The following is a brief summary of the activities:

- Midas Gold Exploratory Drilling (2009-2012) –Exploratory drilling consisting of approximately 6 to 122 drill pads mostly occurred on private land. Crews were housed on private property in Yellow Pine. All equipment was staged on private property and drilling activities generally occurred 24 hours per day. Water withdrawal sites included existing sediment retention ponds and streams. Private and Forest Service temporary roads were used and/or authorized to access drill pads located on NFS lands. Road maintenance was needed to open the existing roads. For winter

activities, chained rubber-tired vehicle, helicopter, snowcat, or snowmobile provided access. Where drill pads were located next to roads, some snow plowing occurred at select locations. During snow-free periods, access occurred by helicopter, and where there was authorized access on NFS land or on private land, rubber-tired vehicles also were used for access. Midas Gold also drilled 16 new groundwater alluvial and bedrock monitoring wells on 8 pads in 2012 (Forest Service 2015c).

- Monitoring Wells and Exploratory Drilling for the Golden Meadows Project (2013) – Midas Gold drilled four new groundwater alluvial and bedrock monitoring wells on two pads in 2013. Exploration drilling was conducted in 26 drill areas within NFS land. Twenty-four of the drill areas were accessed by helicopter (i.e., for transport of equipment and crew) and contained temporary helicopter-supported drill pads. No temporary roads were needed for these 24 drill sites (Forest Service 2015c).

- Morgan Ridge Exploratory Drilling Plan of Operation Access Road Plan (2016) – The project authorized use of 3.1 miles of road and 1.4 miles of temporary road for access to support exploratory drilling in the North Fork of Lang Creek drainage and Government Creek drainage.

- Midas Gold Baseline Studies (2013-2017) – Baseline data collection studies including water quality, fishery surveys, wildlife surveys, and vegetation mapping were conducted (Forest Service 2015c).

- Winter Geotechnical Study (2017) – Exploration drilling was conducted in 26 drill locations within NFS land. Twenty-four of the drill sites were accessed by helicopter (i.e., for transport of equipment and crew) and contain temporary helicopter-supported drill pads (Forest Service 2015c).

- Geotechnical Studies along Meadow Creek (2017) – Geotechnical study field work program was conducted in support of feasibility level engineering work on the proposed tailings impoundment and impoundment dam foundation conditions. Midas Gold utilized a track mounted Cone-Penetrometer Test rig to access eight locations along Meadow Creek in September/October 2017 (Forest Service 2015c).

- Big Creek Road Plan of Operation Project (2017) – Authorization to use 26.3 miles of roads to conduct exploration and development of locatable claims. The approved plan of operations authorized AIMMCO to conduct geochemical analysis and sampling, geologic mapping, and similar activities that did not require significant disturbance of surface resources (Forest Service 2017k).

- Operations Exploratory Drilling (2016-2019) – In addition to exploratory drilling for the winter geotechnical study in 2017, expansion of an existing borrow source on NFS land just east of the camp and shop area also occurred. The borrow material supplied approximately 7,000 cubic yards of crushed rock to support the exploration program, including road maintenance and site reclamation activities and also was used by previous operators and the Forest Service. Approximately 141,000 gallons of fuel (diesel, gasoline, and jet fuel) per calendar year was

transported on existing Valley County roads to the fuel storage facility (located on private land) (Forest Service 2015c).

- Exploration and Geotechnical Drilling (2018) – Midas Gold drilled 62 exploration and geotechnical drilling pads within the project area. Fifty-six of the pads were track-supported and the remaining six were helicopter-supported. The 62 proposed pads are located in the vicinities of the following water bodies: Upper East Fork SFSR, Meadow Creek, Middle East Fork SFSR, Lower East Fork SFSR, Upper Meadow Creek, and West End Creek (HDR 2017p).

- On-going Monitoring for Golden Meadows Project – Monitoring for weeds, water quality, minerals and geology, access and haul route water quality monitoring, monitoring of water quality best management practices and project standard operating procedures associated with haul and access road use, wildlife and rare plants continue to be conducted (Forest Service 2015c).

Transportation Projects – Road maintenance, improvement projects, airstrip operations and maintenance, and culvert and bridge replacements have occurred in the past and are expected to continue in the future. Installation or improvement of culverts and bridges may impact aquatic habitat due to construction-related effects and erosion. Maintenance of existing roadways, culverts, and bridges will likely be short-term, while new roadways, culverts, and bridges would have a larger effect. More information regarding current and future road maintenance and airstrip operations are provided below:

- Road Maintenance of NFS Roads – Thunder Mountain Road (FR 50375) and Meadow Creek Lookout Road (FR 51290) are both NFS maintenance Level 2 roads that received maintenance in 2014 and are on a regular maintenance schedule. Road maintenance activities include blading, slough removal, and culvert cleaning. It is assumed that private landowners on private lands keep roads open and maintained to meet their needs.

- Recreation and Access Management Plans: Big Creek Restoration and Access Management Plan (signed 2017) has been implemented. The project objective was to implement a range of restoration activities, including route decommissioning/rehabilitation, route designation and improvements, stream crossing improvement, educational improvements, and a Forest Plan amendment.

  The South Fork Restoration and Access Management Plan (RAMP) is in the implementation phase with the decision dated July 13, 2021. The project's objective is to determine the minimum road system, improve watershed condition, provide ATV and motorcycle trail opportunities, and provide dispersed camping and parking opportunities. The project includes numerous actions relating to watershed restoration, motorized and non-motorized access, and improvements of recreation facilities within the SFSR watershed within a 329,000-acre project area. Target dates for implementation are 2022-2027 (Forest Service 2021d).

- Road Maintenance of County Roads –Warren Profile Gap Road (CR 50-340) and the road to the Big Creek Trailhead are currently maintained by Valley County under a cooperative agreement; both roads are on an annual or biannual maintenance schedule. Road maintenance activities

include blading, slough removal, and culvert cleaning. Smith Creek and Pueblo Summit Roads have not received any maintenance for years (Forest Service 2016h).

- McCall-Stibnite Road (CR 50-412) is currently maintained on a regular maintenance schedule by Valley County under a cooperative agreement. There is an agreement between Valley County and Perpetua to allow Perpetua to provide maintenance along the road from Yellow Pine to Perpetua's property.

- Road Maintenance of State Roads – SH 55 is maintained by the ITD. Recent upgrades and improvements included the Banks Beach parking study and the ongoing Smiths Ferry safety improvements. SH 55 was recently repaved between Donnelly and McCall (ITD 2021). The project addressed wear and tear to increase the service life of the roadway. Warm Lake Road which intersects SH 55 at Cascade is maintained by Valley County.

- Airstrips - The ITD, Division of Aeronautics, maintains and operates the Johnson Creek, Warm Springs, and Bruce Meadows airstrips which are located on NFS land.

Mine Closure and Reclamation – Closure and reclamation of Hecla and SMI mining and processing facilities located in the headwaters of East Fork SFSR and Sugar Creek occurred between 1993 and 2000. Several CERCLA Removal Actions also were conducted in the same area by the Forest Service, EPA, and Exxon-Mobil Corporation to minimize risks to human health and the environment from legacy mining and processing activities during the 1930s, 40s, and 50s.

This work continues today according to a January 2021 ASAOC between Perpetua, EPA, and the Forest Service. Phase 1 of the ASAOC work was conducted between 2021 and 2024 with ongoing post removal site control continuing beyond 2025; the other phases of the ASAOC scope of work would potentially be completed at later dates. The scope of work proposed by Perpetua would consist of the reclamation of certain legacy mining impacts to improve the water quality and channel/riparian condition of certain streams within the SGP area and includes:

- The Lower Meadow Creek Tailings Removal included excavation of approximately 22,000 cubic yards (CY) of tailings and mine waste from 3.5 acres of lower Meadow Creek that has already been impacted by the past deposition of legacy mill tailings. The excavated wastes were moved to a permanent repository located on the nearby legacy on-off heap leach pad. Native growth medium that was encountered has been stockpiled for future use. Borrow and growth medium were spread over the completed removal area and the repository and revegetated.

- The Northwest Bradley Dumps are areas of legacy mine waste along the East Fork SFSR north of the Yellow Pine Pit. Approximately 68,000 CY of mine waste from an area of approximately 1.4 acres were removed from the floodplain and moved higher on the waste rock dump. Once the removal action areas were regraded to final contour, they were covered with borrow material and growth medium and then revegetated.

- The Bradley Man Camp Dumps were a large area of legacy mine waste immediately adjacent to the East Fork SFSR downstream of Meadow Creek and upstream of the Yellow Pine Pit.

Approximately 137,000 CY of mine waste were removed from the floodplain and moved to a final repository located on the legacy on-off leach pads. This removal action also included reopening 0.5 mile of legacy haul road between the dumps and the repository. When the removal action was completed the regraded mine dumps and the repository were covered with borrow and growth medium and seeded for revegetation.

- Three existing stream channels in the SGP area currently flow over or along legacy mine wastes in the Northwest Bradley Dumps area, the DMEA Waste Rock Dump, and the Smelter Flats/Hangar Flats area. The stream channel has been rerouted around the Northwest Bradley Dumps and the other two stream channels were rerouted and reconstructed where they contact the legacy mine wastes to prevent future contact of the stream flow with the mine wastes.

Increased traffic along existing travel routes into the SGP would also occur during the removal activities.

Recreation and Tourism – Past and present recreation and tourism activities include sport hunting, fishing, trapping, boating and river recreation, bike races, OHV use, camping, hiking, backpacking, outfitter/guide operations, tourist services – Big Creek Lodge, Elk Springs Outfitters, and Juniper Mountain Outfitters. These activities take place primarily from late spring to late fall, and there may be small plane, helicopter, and vehicle traffic associated with access. OSV use, skiing, and snowshoeing occur in winter months. Some of the OSV routes are groomed for use.

Infrastructure Development – Past and present community infrastructure projects include the transmission line upgrades in the West Central Mountain Electric Plan 2014, which follows the general location of the SGP upgraded transmission line route (IPCo 2014). In 2020, IPCo rerouted approximately 2.5 miles of the existing Warm Lake Feeder overhead 7.2kV distribution line with approximately 2.75 miles of single-phase underground line in the Yellow Pine area (Forest Service 2020i).

Water Diversions and Hydro Power Projects – There are eight water diversions on federal and private lands in vicinity of the SGP area. There also are three residential, small-scale hydroelectric operations (0.4 to 0.9 cubic feet per second permitted), and one hydroelectric operation at Big Creek Lodge.

Wildland Fire, Vegetation Management, Noxious Weed Control, and Firewood Harvest – There have been numerous wildland fires in vicinity of the SGP area and more could occur in the future. Past fires within the headwaters of the East Fork SFSR and Sugar Creek include Indian Creek Point (12,204 acres); Tamarack (2,348 acres); Bishop Creek (2,610 acres); Cascade Complex (299,930 acres); Thunder City (13,263 acres), Buck Fire (19,474 acres), and the Sugar Cane Fire (86 acres). Removal of firewood for non-commercial use has occurred in the past and is expected to continue in the future on NFS land, in compliance with general permit requirements for the PNF.

Authorized in May 2021, the Big Creek Hazardous Fuel Reduction project was a community protection project for Edwardsburg/Big Creek area using commercial and noncommercial treatments and prescribed fire to reduce hazardous fuels on both NFS lands and private property. Treatments were on NFS lands along public roads and adjacent to private property, outside of wilderness. Approximately 10,290 acres were treated including, approximately 631 acres of mastication and/or hand thin, no removal; 847 acres of commercial and pre-commercial thinning; 1,047 acres of hand-thinning, no removal; 7,765 acres of

natural fuel prescribed fire burn blocks; and less than 1 mile of temporary road constructed to facilitate equipment access and product removal reclaimed after vegetation management treatments were completed. On the Krassel Ranger District, prescribed burns in areas east of Yellow Pine (Bald Hill Vegetative Management Project area) and along the SFSR (Four Mile Prescribed Fire project area) are being implemented and will continue for the next 5-10 years.

Several noxious weed species have been identified in the vicinity of the SGP including spotted knapweed, Canada thistle, yellow toadflax, and rush skeletonweed. Treatment of noxious weeds occurs regularly throughout the area. Treatments include chemical spraying and pulling. Main areas of treatment for noxious weeds include Chamberlain area, Beaver Creek, and Big Creek trails, and along road access areas. The Lost Horse vegetation management project was completed within the Clear Creek drainage along FRs 405, 406, 407, 409, and 433; the objective of this project was to restore species composition and stand structure while reducing undesirable tree densities and favoring retention of larger diameter, more fire-resistant trees (Forest Service 2020i).

Special Use Management - These activities include easements and other management actions. There are several easements in the SGP area and vicinity that are granted and maintained by the Forest Service including: Road ROW, FRTA on McCall-Stibnite Road (CR 50-412), Road ROW and Linear Utility easement to the IPCo. The Yellow Pine Blowdown Project near Yellow Pine was conducted to remove down material from camping and recreating areas, reduce the risk of insect outbreak, and to reduce the fuel loading to help to ensure the safety of the Yellow Pine community. In 2020, the BNF decommissioned approximately 18 miles of non-system routes in the Six-bit Creek and Curtis Creek subwatersheds, part of the SFSR subbasin (Forest Service 2020i).

In 2023, the Krassel Ranger District issued a permit for a water system that delivers water from lower Zena Creek to Zena Creek Ranch after a change in ownership. The private property is off of Lick Creek Road along the Secesh River. The water system stems from an impoundment on Zena Creek on Forest Service land.

Fisheries Restoration – The Nez Perce Tribe began the Johnson Creek Artificial Propagation Enhancement (JCAPE) Project in 1998 in response to critically low numbers of returning adult Chinook salmon to Johnson Creek (Columbia River Inter-Tribal Fish Commission 2018). Activities include the operation and maintenance of a temporary adult Chinook salmon trap and weir; adult holding and spawning at the South Fork Salmon River Satellite; egg incubation and juvenile rearing of JCAPE fish at McCall Fish Hatchery; transportation of broodstock, eggs, and smolts between facilities; and the direct release of smolts into Johnson Creek. The program uses only natural-origin returns for broodstock, and currently has an annual target release level of 100,000 yearling smolts into Johnson Creek (NMFS 2016). In 2022, as part of their funding evaluation, Bonneville Power Administration decided to continue to fund the JCAPE program and increase smolt production from 100,000 to 150,000 (BPA 2022).

Further, the Nez Perce Tribe and IDFG translocated adult Chinook salmon from the SFSR to Meadow Creek, but not as part of the Johnson Creek Artificial Propagation Enhancement Project. Since 2008, Chinook salmon spawners were released into Meadow Creek a majority of the years. Spawning-ready adult Chinook salmon are regularly translocated from the SFSR to upstream of the Yellow Pine pit lake barrier with support from the Nez Perce Tribe.

The Dewey Mine Sediment Stabilization project (Forest Service 2019l), located in the Upper Monumental Creek 6th Field HUC, consisted of constructing check dams to counteract further erosion by reducing water flow velocity, adding gradient control, and by capturing sediment that would otherwise be transported downstream. The project objective was to reduce sediment into Monumental Creek, which is a spawning and rearing habitat for Chinook Salmon, steelhead trout, bull trout, and westslope cutthroat trout.

The Snake River Basin Hatcheries project (NMFS 2021) analyzed continued operation and maintenance of 15 hatchery programs in the Snake River Basin in Idaho. Each program includes the collection and spawning of adult salmon or steelhead, incubation of eggs, and rearing and release of juveniles.

Commercial and Subsistence Harvest of Fish and Wildlife – Past and present harvest of fish and wildlife for recreational and subsistence purposes puts some degree of pressure on those resources. Legal hunting, fishing, and trapping has occurred and is currently occurring in the SGP area and vicinity. Fish and wildlife resources are managed by the IDFG and federal agencies to maintain sustainable populations. Managers use management tools such as harvest limits and areas open and closed to sport and commercial harvest of fish and wildlife to maintain sustainable resources and allocate harvest.

5.1.3 Reasonably Foreseeable Future Actions

Per 40 CFR 1508.7, reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person should be considered (also see 36 CFR 220.4(f)). Reasonably foreseeable future actions (RFFAs) are those Federal or non-Federal activities not yet undertaken, for which there are existing decisions, funding, or identified proposals (36 CFR 220.3). Guidance from CEQ, "Considering Cumulative Effects Under the National Environmental Policy Act – January 1997," was used for identifying RFFAs. **Table 5.1-2** describes RFFAs in the CEAs.

Table 5.1-2 RFFAs in the Vicinity of the SGP Area

Project or Activity Name	Agency Document/ District	Brief Description	Approximate Implementation/ Construction/ Operation Dates
East Fork South Fork RAMP	EA/PNF SOPA	The spatial extent of the East Fork South Fork RAMP could include Yellow Pine, Big Creek, and Thunder Mountain within the PNF. The purpose of the East Fork South Fork RAMP is travel management. The Forest Service would conduct travel planning to identify a Minimum Road System (MRS) (36 CFR 212 Subpart A) and the routes open for public use (36 CFR 212 Subpart B), including motorized trail opportunities, dispersed camping, and parking opportunities and update the Forest Motor Vehicle Use Map. Implementation is expected to be long-term.	Scoping Initiation: 10/21/2021 Estimated Public Notice: 03/2023 Expected Decision and Implementation: 2024

Project or Activity Name	Agency Document/ District	Brief Description	Approximate Implementation/ Construction/ Operation Dates
Granite Goose Landscape Restoration Project	EA/PNF SOPA	On the McCall Ranger District, the Granite Goose Landscape Restoration Project is a landscape scale effort to improve conditions across multiple resource areas including vegetation, watersheds, roads, and recreation. The proposal includes a variety of vegetation treatments including thinning (of all class sizes), regeneration harvest, and prescribed fire to address hazardous fuels and reduce fuel loading to counter catastrophic wildfire risk, respond to insect and disease outbreaks, and promote whitebark pine (*Pinus albicaulis*) conservation in the project area. Other actions proposed include watershed restoration, recreation management, and travel management. Approximately 500 to 10,000 acres would be subject to prescribed burning annually.	Scoping Initiation: February 2023 Estimated Public Comment: 2023 Expected Decision and Implementation: 2024
Stallion Gold Horse Heaven Exploration Project	CE/BNF SOPA	Stallion Gold proposes an exploration project involving drilling exploration holes, use of existing roads, and construction of temporary drill pads.	Scoping initiation: 01/2023 Expected Decision: 06/2024 Expected Implementation: 07/2024
South Fork Plunge Watershed Restoration	CE/BNF SOPA	The project would decommission NFSR 490; remove old bridge, abutments, and road fill from the active floodplain of the SFSR.	On hold
Big Creek Airstrip Maintenance Building Replacement/ Upgrade	CE/PNF SOPA	IDT proposes to replace a decaying shed at Big Creek Airstrip.	Scoping initiation: 10/25/2022 Expected Decision: 2023 Expected Implementation: 2023 or 2024
Big Creek Work Center Water Systems Upgrade Project	CE/PNF SOPA	The PNF is proposing to upgrade water system infrastructure at the Big Creek Work Center including irrigation systems, water tanks, and stream flow measuring flumes. These upgrades will improve irrigation and provide potable water.	Scoping initiation: 06/01/2023 Expected Decision: 08/2023 Expected Implementation: 09/2023
Rice Creek Road Repair	CE/BNF SOPA	This project proposes to repair the Rice Creek Road. The work would include earthwork to regrade and reshape the existing road into a series of fords at all drainages. Located approximately 8 miles south of Warm Lake on NFSR 478.	On hold

Project or Activity Name	Agency Document/ District	Brief Description	Approximate Implementation/ Construction/ Operation Dates
Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project	EA/PNF SOPA	The proposed project would authorize prescribed burning, hand thinning, and mechanical thinning of up to 30,000 acres across the Forest every year to restore health and resiliency to vegetation communities on the PNF. The prescribed fires planned would vary in size (up to 15,000 acres) with smaller burn units being used where infrastructure or other high value resources and assets are present; larger burn units could be designed where the prescribed fire objectives permit.	Scoping initiation: 11/16/2022 Expected decision: early to mid-2024 Expected Implementation: 2024
Southwest Idaho Resilient Landscape Project	EA/BNF SOPA	A landscape scale effort to reduce the risk of catastrophic and undesirable wildfire while increasing the resiliency of the landscape to climate change and other stressors. The Forest Service proposes to authorize an increasing number of multiple prescribed burns and associated treatments on up to 77,000 acres of NFS lands within the BNF each year over the next 20 years. Treatments on NFS lands in conjunction with efforts to treat adjacent federal, state, and private land through a shared stewardship approach will aid in meeting the primary project objectives of reducing the risk of catastrophic wildfire to communities, improving watershed health, sustaining industry, protecting recreation, and improving forest resilience.	Scoping Initiation: 08/08/2022 Decision: 2024 Expected Implementation: 2024
Profile Creek Culvert Replacement	CE/PNF SOPA	Replace a culvert at Profile Creek on Profile Gap Road NFSR 340 with a 90-foot bridge for aquatic organism passage through an agreement with Valley County.	Scoping initiation: 10/28/2022 Expected Decision and Implementation: 2024

Source: Forest Service 2018d, 2020i, 2020j, 2020k, 2021d, 2021e, 2022a, 2022b, 2023s, 2023t, 2023u, 2023v, 2023w, 2023x; ITD 2020, 2021

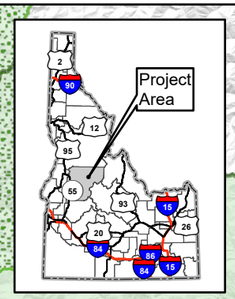
CE = Categorical Exclusion; EA = Environmental Assessment; SOPA = Schedule of Proposed Actions

Figure 5.1-1 shows the general locations of past, present, and RFFAs that are relevant to the cumulative effects analysis.

Project Locations Key

A - Fourth of July Mine
B - Golden Hands No 1 and 2 Lode Mining Claims
C - Big Creek Airstrip Building Replacement; Big Creek Work Center Water Systems Upgrade
D - Big Creek Hazardous Fuel Reduction
E - Camp Bird Mine
F - Walker Millsite
G - Profile Creek Culvert Replacement
H - Zena Creek Water System
I - Granite Goose Landscape Restoration Project
J - Valley County Quarry
K - Nez Perce Research Equipment / JCAPE Project
L - Stallion Gold Horse Heaven Project
M - Stibnite ASAOC
N - Cinnabar Mine
O - Golden Meadows Project
P - Big Creek Roads POO
Q - East Fork South Fork RAMP
R - Morgan Creek Project
S - Dewey Mine Sediment Stabilization Project
T - South Fork Plunge Watershed Restoration Project
U - Southwest Idaho Resilient Landscape Project (entire BNF except research natural areas)
V - PNF Resilience and Fuels Reduction Prescribed Fire Project (entire PNF except congressionally designated wilderness areas, research natural areas, or select project areas considered by previous NEPA
decisions)

Note: Locations of projects/activities are approximate.



LEGEND

- PPRFFA
- SGP Operations Area Boundary

Historic Fire Boundary

Fire Year

- 1990 (Bishop Creek)
- 2000 (Indian Creek Point)
- 2006 (Bishop Creek; Tamarack)
- 2007 (Cascade Complex)
- 2013 (Thunder City)
- 2015 (Cougar)
- 2018 (Bum)
- 2018 (Johnson)
- 2018 (Kiwah)
- 2020 (Buck)
- 2021 (Scarface)
- 2022 (Four Corners)

Other Layers

- U.S. Forest Service
- Wilderness
- County
- City/Town
- Highway
- Road
- Railroad
- Lake/Reservoir
- Stream/River

Surface Land Management

- Bureau of Land Management
- Bureau of Reclamation
- Private
- State
- U.S. Forest Service

0 4 8 Miles

1 in = 8 Miles when printed at 11x17

N

Figure 5.1-1 Past, Present, and Reasonably Foreseeable Future Actions Stibnite Gold Project Stibnite, ID

Base Layer: USGSShadedReliefOnly: USGS The National Map: 3D Elevation Program. USGS Earth Resources Observation & Science (EROS) Center: GMTED2010. Data refreshed March, 2021.
Other Data Sources: State of Idaho Geospatial Gateay (INSIDE Idaho); Boise National Forest; Payette National Forest; USGS; Midas Gold

Map Date: 2024-06-28

Document Path: U:\2023\21981\03_data\gis_gw\gis\FEIS\MXD\SIFEIS\General\Fig_5_1_1Fig_5_1_1.aprx (Updated by)

5.2 Geologic Resources and Geotechnical Hazards

The CEA for geologic resources and geotechnical hazards that could be directly or indirectly affected by the SGP encompasses the direct and indirect impact analysis area, which is the footprint of disturbance of all SGP components, and extends out to the sixth-level HUC at the 12-digit scale (HUC 12) subwatershed boundaries (**Figure 3.8-1**); HUCs used in this analysis are local subwatershed levels that encompass tributary stream systems where mine site activities that affect geology are proposed.

5.2.1 No Action Alternative

Under the No Action Alternative there would be no open-pit mining or ore processing at the mine site, or other supporting infrastructure corridors and facilities. The effects of past mining activities and their current geological/geotechnical conditions (e.g., alteration of topography/ridgelines, the presence of the Yellow Pine pit and current condition of the adjacent highwall slopes, reclaimed areas, etc.) would remain. Under the No Action Alternative, Perpetua could continue to implement the proposed actions included in the applicable Golden Meadows Exploration Project Plan of Operations and EA (Forest Service 2015c). The Stallion Gold exploration project would include drilling exploration holes, use of existing roads, construction of temporary drill pads, and then reclamation of that disturbance.

Phase 1 of the ASAOC includes removal of tailings and other mining wastes from the stream channels of lower Meadow Creek and East Fork SFSR and placing the excavated wastes in selected, on-site locations where they would no longer impact water quality in these streams. It also includes construction of three stream diversions to avoid contact of runoff with legacy mining wastes. The exploration and subsequent reclamation activities combined with the ASAOC activities would have a negligible to minor direct effect to geology/soils and therefore a negligible cumulative contribution.

5.2.2 Action Alternatives

Cumulative effects associated with the 2021 MMP and Johnson Creek Route Alternative consider the range of past, present, and reasonably foreseeable activities and their potential effects with respect to geologic resources and geotechnical hazards. Potential effects to geologic resources and geotechnical hazards consist of mineral resource depletion, topographic changes, and geotechnical instability. Past and present actions that have, or are currently, affecting geologic resources and geotechnical hazards include mineral exploration and mining activities, infrastructure and road development, and previous road construction or upgrades within the CEA.

Both action alternatives would have the same permanent impact on ore reserves in the CEA, which would combine with the impacts of past mining activities such as from Valley County Quarry Development, Fourth of July Mine, Camp Bird Mine, etc., that also have depleted ore reserves in this part of Idaho, as well as combine with any future mine operations in the region, which would further deplete ore reserves. The contribution of either action alternative to this cumulative impact would deplete an additional approximately 115 million tons of ore, the volume of ore proposed to be extracted under the 2021 MMP and Johnson Creek Route Alternative.

Both action alternatives would increase risks from mass wasting hazards by introducing additional personnel and equipment into existing hazard areas. Geohazards and seismic conditions are site-specific, as individual project sites would be geologically removed from one another. Current activities and RFFAs

(e.g., reclamation activities associated with the ASAOC; mineral exploration associated with the Horse Heaven Project; other activities associated with projects such as Big Creek Airstrip Maintenance Building Replacement/Upgrade and Big Creek Work Center Water Systems Upgrade) have the potential to increase traffic on Stibnite Road (CR 50-412) to access their respective project sites. Although Stibnite Road has an existing avalanche hazard (i.e., is located at the bottom of avalanche runout zones) that could impact travel along the road, use of this road by the SGP and by RFFAs would not exacerbate the existing avalanche occurrence, but it would add additional personnel on this road, which would increase the risk of damage, injury, or loss of life from the hazard.

Geohazards and seismic conditions are site-specific, as individual project sites would be geologically removed from one another. As such, the RFFAs would not increase risks associated with geotechnical hazards.

By their nature, impacts on geologic resources and geotechnical hazards are geographically isolated and not interdependent within the area. Therefore, while individual impacts are measurable, the cumulative effects are still considered to be limited given the spatially-separated nature of disturbance over the region.

5.3 Air Quality

With respect to air quality, activities directly associated with the SGP and other RFFAs having air pollutant emissions at a level that cause overlap with SGP-related effects in time and location, would result in cumulative impacts. The air quality cumulative effects analysis considers the potential contributions of actions that could occur in the relatively large analysis area. The CEA for air quality is generally the same as the larger far-field region (**Figure 3.3-2**).

5.3.1 No Action Alternative

For the No Action Alternative, the nature and extent of cumulative effects is represented by the current air quality conditions in the CEA. Ambient air data for CO, NO_2, SO_2, and on-site data for PM_{10} and $PM_{2.5}$ are available to serve as quantitative indicators for the impacts from current non-SGP sources on air quality. These background ambient air measurements offer the best indication of cumulative effects due to current emissions sources, absent the SGP. The monitored baseline values used for the air quality impact assessment were obtained at locations that are more developed than the SGP area. By comparison, the cumulative effects in the analysis area due to the current activities and air emission sources would be minor.

The federal agencies entered into an ASAOC with Midas Gold (now Perpetua) in January 2021 for the cleanup of certain legacy mining wastes in the SGP area. The work involves excavating the wastes out of certain portions of Meadow Creek and East Fork SFSR and then relocating those wastes to more suitable locations on site. This work commenced in 2021 and is expected to continue through 2025; activities include excavation and hauling equipment as well as other vehicles for personnel and fuel/supplies transportation on the current access roads to the area. This produces dust and tailpipe emissions that likely precede the major construction activities of the action alternatives and so would not be cumulative to the air emissions from those activities.

The ambient air data for CO, NO_2, SO_2, and on-site data for PM_{10} and $PM_{2.5}$ indicate existing impacts from off-site sources on air quality near the SGP area have occurred and this data was reviewed for this analysis (**Section 3.3**). These background ambient air measurements offer the best indication of cumulative effects due to current emissions sources. Although some background measurements of ozone in the Boise urban area, that occurs with the air quality CEA, are above the NAAQS. The ozone baseline value for this assessment recommended by the IDEQ is compliant with the NAAQS. The monitored baseline values used for the SGP air quality impact assessment were obtained at locations that are more developed than the SGP area. By comparison, the cumulative effects in the analysis area due to current activities and air emission sources would be minor.

There are no other permitted sources of HAP emissions in the vicinity of the SGP area. One source, the Tamarack Mill, LLC is 75 miles from the SGP, and has reported minor source level emissions to IDEQ. The HAP emission inventory in the vicinity of the SGP area is unknown; however, given the absence of large HAP emission sources near the SGP area, it can be assumed that the baseline HAP cumulative effects are low.

5.3.2 2021 MMP

For the far-field air quality impact analysis, a suitable far-field modeling domain was defined as an area 420 km by 420 km in extent, centered on the SGP, as shown in **Figure 3.3-2**. This area encompasses the closest Class I areas and Class II wilderness areas that are most likely to have impacts. The four Class I areas for which far-field modeling results were reported are SAWT, SELW, HECA, and CRMO.

Cumulative effects analysis for air quality considers the geographic range and timeframe of impacts from past, current, and foreseeable activities. The air quality effects from past projects do not generate cumulative effects with current ones due to the transient nature of air quality conditions. Transport from far more distant urban regions, even overseas, may contribute to local air conditions (e.g., ozone) but are not quantifiable within the scope of a cumulative effects analysis. Therefore, past operations by Perpetua in the SGP area, such as exploratory drilling, monitoring wells, and roadway construction and maintenance, are not contributors to air quality cumulative effects. Similarly, past activities in the CEA, such as prior roadway and infrastructure construction projects, and timber and underbrush harvesting, would not have effects that overlap in time with the SGP emissions, and therefore would not contribute to air quality cumulative effects.

Several present and RFFAs in the CEA that were considered regarding cumulative air quality effects are listed in **Tables 5.3-1** and **5.3-2**. The nature of the air emissions and contributions to potential cumulative effects are described for each project. Activities that are anticipated to have overlapping impacts with the SGP related to air quality include wildfires and fuels reduction projects.

Table 5.3-1 RFFAs Considered Regarding Cumulative Air Quality Effects for Specific Planning Projects

Project Type	Project Names/Description	Nature of Air Emissions and Contribution to Cumulative Effects
Roadway Development and Maintenance	• Rice Creek Road Repair • Profile Creek Culvert Replacement • Such projects authorize the use of and/or improvement of roads to conduct exploration and development of locatable mineral claims	Dispersed short-term local emissions of road dust and vehicle tailpipe emissions. Negligible long-term cumulative air quality effects in combination with the SGP.
Exploratory Drilling for Mineral Resources	• Horse Heaven Exploration Project • Project involves exploratory drilling for locatable minerals from remote drill pads approximately 10 miles north of the SGP. Project is reportedly on hold.	Local emissions from drilling equipment (e.g., compressor engines), road dust, and tailpipe emissions. The magnitude of emissions is not expected to be sufficient to have overlapping pollutant concentration effects at this distance from the SGP.
Forest Maintenance and Fire Risk Reduction	• Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project • Southwest Idaho Resilient Landscape Project fuels reduction project • East Fork South Fork RAMP EA, East Fork South Fork Salmon River watershed and Thunder Mountain area in the headwaters of Middle Fork Salmon River east of Monumental Summit • Projects to reduce wildfire risk and fire severity/intensity on NFS lands and private property using commercial timber harvest, understory treatment, and prescribed burning	Local emissions from portable generator equipment (e.g., compressor engines, road dust, and tailpipe emissions. Particulate emissions from lumbering activities and hauling. Any concurrent prescribed fuel reduction projects may be of sufficient magnitude to have overlapping PM concentration effects from the SGP. However, PM emissions from any prescribed burns would be temporary and typically dissipate within a few days. Prescribed burn days will be posted for the general public. The East Fork South Fork project would likely have negligible to minor cumulative air quality effects. There may be a beneficial air quality outcome if some current roads are redesignated to reduced use or foot traffic only.

Table 5.3-2 RFFAs Considered Regarding Cumulative Air Quality Effects for Ongoing Projects and Foreseeable Emissions Sources

Project Type	Project Names/Description	Nature of Air Emissions and Contribution to Cumulative Effects
Construction Projects	• Road maintenance and culvert replacement projects	Short-term emissions during construction with no long-term emission impacts that would likely overlap with impacts related to the SGP.
Natural Emission Events	• Wildland fires • Past fires with the headwaters of the East Fork SFSR and Sugar Creek include Indian Creek Point (12,204 acres); Tamarack (2,348 acres); Bishop Creek (2,610 acres); Cascade Complex (299,930 acres); Thunder City (13,263 acres), and Buck Fire (19,474 acres)	Areas devoid of trees and vegetation may have potentially short-term air quality effects, due to increased windblown dust.
Mining Activities	• Ongoing mining activities on patented land. • Mineral exploration and related activities around the SGP area.	Local emissions from drilling equipment (e.g., compressor engines), road dust, and tailpipe emissions. Known mine operations are small in size (50 tpd or less) or are inactive. Locations of foreseeable projects with low emissions are at sufficient distances from the SGP to not contribute overlapping effects. Those that are adjacent may include minor, short-term overlapping effects given specific meteorological conditions.
Recreation and tourism	Recreation and Tourist activities: • Sport hunting, fishing, trapping • Snowmobile trails • Fugitive dust and tailpipe emissions from traffic on unpaved roads • Boating and river recreation • Camping, hiking, backpacking • Outfitter/Guide Operations • Tourist Services – Big Creek Lodge • Off-highway vehicle use • Tourist Services – e.g., Big Creek Lodge	Collectively air emissions from vehicles on unpaved roads and trails, boats, and stationary fuel combustion sources. Depending on the proximity of these activities to the SGP area, transient cumulative effects may occur.

Present actions that influence air quality are expected to continue, such as existing infrastructure operations, transportation modes, plus energy and utility development and upgrades. RFFAs in the CEA would likely induce little additional change to air quality, because large scale activities associated with RFFAs are speculative at this time. Overall, air emissions are expected to increase as a result of the SGP when added with the present and future action emissions. However, these emissions would be regulated in accordance with State and federal air permitting requirements.

5.3.3 Johnson Creek Route Alternative

Although the magnitude and location of SGP air emission sources related to access roads are different for the two action alternatives, the differences are not large enough to substantially change off-site air quality impacts. Consequently, the potential for cumulative air quality effects described above for the 2021 MMP would also apply to the Johnson Creek Route Alternative. The extent and magnitude of potential cumulative air quality effects due to foreseeable projects in the analysis area would be the same.

5.4 Climate Change

RFFA emission sources directly associated with the alternatives, and RFFAs having emissions that may or may not overlap with the alternatives in time, could result in cumulative climate change impacts, even though it is not possible to quantify such incremental effects. The climate change CEA comprises the SGP components including the mine site and access roads, utilities, and offsite facilities, and the vehicles and equipment that operate within those areas.

Regional levels of GHG emissions will change due to many factors, the primary ones being trends in industrial activity, pace of energy resource development, transportation fuel consumption rate, and population growth. But within this generalized framework, it cannot be predicted with certainty the extent to which the mix of all these activities will collectively contribute to the global phenomenon of climate change. However, cumulative regional emissions can be estimated by including SGP values to current and predicted future numbers. A specific regional impact directly from those emissions or sources would not be definitive because of the numerous other factors described above.

5.4.1 No Action Alternative

Under the No Action Alternative, the SGP would not be implemented and therefore would not contribute to cumulative climate effects. The same cumulative effects contributions from potential development in the surrounding area would be the same as described above.

Past and ongoing activities in the region surrounding the SGP area include forest management (e.g., prescribed burns), motorized use of roads for land management and recreation, and fire suppression. These activities would continue as GHG contributors in the context of the total GHG inventory for Idaho and would not be expected to add to substantial cumulative GHG-related effects in the region or to climate change in general. **Table 5.4-1** describes the current and RFFAs that may affect cumulative GHG emissions.

Areas of the SGP disturbed by previous mining activities would remain as they are, except those identified in the ASAOC, and (without targeted revegetation efforts tied to required mine reclamation) would be anticipated to recover at a natural, although very slow, rate as new soil forms and plants are established.

Table 5.4-1 Current Activities and RFFAs Considered Regarding Cumulative GHG Emissions

Project Type	Project Names/Description	Nature of Air Emissions and Contribution to Cumulative Effects
Exploratory Drilling for Mineral Resources	• Stallion Gold Horse Heaven Exploration Project. Exploration for locatable minerals adjacent to and west of the SGP involving drilling exploration holes, use of existing roads, and construction of temporary drill pads	Local GHG emissions from drilling equipment (e.g., compressor engines), and vehicle tailpipe emissions. Expected to have GHG emissions that are a very small portion of the Idaho inventory[1].
Forest Maintenance and Fire Risk Reduction	• Present Big Creek Fuels Reduction Project, approximately 10 miles north of the SGP. • South Fork RAMP, approximately 25 miles southwest of the SGP. • East Fork South Fork RAMP, approximately 5 miles northwest of the SGP. • Projects to reduce wildfire risk and fire severity/intensity on NFS lands and private property using commercial timber harvest, understory treatment, and prescribed burning. • Granite Goose Landscape Restoration Project, north and west of McCall.	Local GHG emissions from portable generators equipment (e.g., compressor engines), and vehicle tailpipe emissions. GHG emissions may also increase due to a loss of carbon sequestration from timber removal. Expected to have GHG emissions that are temporary and a very small portion of the Idaho inventory (**Section 3.4.4.1, Table 3.1-1**) .
Construction Projects	Creek restoration. • South Fork Plunge watershed restoration. Trail construction and maintenance. • Legacy Roads and Trail Bridges Repair project. Bridge and culvert replacement projects. • Profile Creek culvert replacement project. Hydroelectric projects: small residential projects for power generation. Water systems. • Zena Creek Water System special use permit. Road maintenance. Rice Creek Road Repair. • Big Creek Airstrip maintenance and building replacement.	Short-term GHG emissions during construction with no long-term emission impacts that would overlap with impacts related to the SGP.

Project Type	Project Names/Description	Nature of Air Emissions and Contribution to Cumulative Effects
Natural Emission Events	Wildland fires • Between 2005 and 2015, over 88,000 acres of the Big Creek watershed have been burned. Between 1990 and 2013 over 330,000 acres have burned within the headwaters of East Fork SFSR and Sugar Creek. In 2020, the Buck Fire burned 19,474 acres in the Johnson Creek Road area north of Warm Lake.	Future fires may add additional GHG to the atmosphere.
Mining Activities	• Ongoing mining activities on patented land. • Mineral exploration activities are ongoing for potential future mining development (e.g., Horse Heaven Exploration Project).	Local emissions from drilling equipment (e.g., compressor engines), and tailpipe GHG emissions. Known mine operations are of small size (50 tons per day or less) or are inactive. Expected to have GHG emissions that are temporary and a very small portion of the Idaho inventory[1].
Reclamation Activities	• ASAOC - Reclamation of certain legacy mining impacts including construction of stream diversion ditches, removal of 325,000 tons of development rock and tailings from Meadow Creek or East Fork SFSR that are currently impacting water quality.	Local emissions from tailpipe GHG emissions. Expected to have GHG emissions that are temporary and a very small portion of the Idaho inventory[1].
Recreation and tourism	Recreation and Tourist activities: • Sport hunting, fishing, trapping • Snowmobile trails/OSV use • Fugitive dust and tailpipe emissions from traffic on unpaved roads • Boating and river recreation • Camping, hiking, backpacking • Outfitter/Guide Operations • Tourist Services – Big Creek Lodge • OHV use • Tourist Services – e.g., Big Creek Lodge	Collectively substantial GHG emissions from vehicles on unpaved roads and trails, boats, and stationary fuel combustion sources. These sources are already included in the Idaho inventory[1].

[1] The total Idaho GHG emissions estimates are 31.44 MMT (EPA 2021d).

5.4.2 Action Alternatives

While the magnitude and location of air emission sources associated with the SGP are different for the action alternatives, the differences are not sufficiently large enough to substantially affect GHG emission and climate change. The extent and magnitude of potential cumulative GHG emission and climate change effects due to foreseeable projects in the CEA when added to the GHG emissions and climate effects (**Table 5.4-1**) would be the same for both action alternatives.

Past and present actions that have influenced climate changes are expected to continue, such as existing infrastructure operations, transportation modes, plus energy and utility development and upgrades. RFFAs in the CEA would likely induce little additional change to climate change trends. While the

individual impacts of the SGP are measurable, the cumulative effect is still considered to be limited, given the limited contribution of GHGs from the SGP over the region, state, or world.

5.5 Soils and Reclamation Cover Materials

The CEA for soils and RCM is the same as the larger analysis area defined in **Section 3.5** that encompasses the various activity areas used for analysis of TSRC and DD. Thus, the CEA for this resource includes the sixth-level (12-digit hydrologic unit code) subwatersheds within which disturbance of SGP components would occur (**Figure 3.5-1**).

5.5.1 No Action Alternative

Under the No Action Alternative, there would be no open-pit mining or ore processing at the SGP, or construction disturbance for other supporting infrastructure and facilities. The long-term impacts of past mining activities on soil chemistry would remain except for the removal of legacy mine waste materials under Phase I of the ASAOC. Although removal of legacy material reduces impacts to soil resources in the Phase I areas, effects from other legacy mining would continue. The ASAOC removal activities are targeting approximately 30 acres of historical tailings and waste rock that also need to be reclaimed using locally obtained growth media from sources in the Operations Area Boundary near the removal locations.

Some of the RFFAs identified in **Table 5.1-3**, such as the East Fork South Fork RAMP, Southwest Idaho Resilient Landscape Project, and the Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, would physically overlap with the action alternative disturbance footprints. Forest management activities, motorized use of road systems, fire suppression, prescribed fire and wildfire, dispersed camping, fishing, and hunting activities would continue in the CEA and vicinity, which would continue to utilize dedicated facilities (areas of [TSRC]) or contribute to measurable but small-scale soil (DD) effects in instances where these activities did not occur on existing disturbance.

Under the No Action Alternative, Perpetua would continue to comply with reclamation and monitoring commitments included in the applicable Golden Meadows Exploration Project Plan of Operations and EA, which include reclamation of the drill pads and temporary roads by backfilling, re-contouring, and seeding using standard reclamation practices; however, as described in the Golden Meadows EA, the exploration and subsequent reclamation activities would have a negligible direct effect to geology and soils and therefore a negligible cumulative contribution to effects upon soils and RCM.

5.5.2 Action Alternatives

Past and ongoing activities in the CEA include forest management, mining and mine reclamation, mineral exploration (e.g., Golden Meadows Exploration Project), motorized use of road systems, fire suppression, prescribed fire and wildfire, dispersed camping, boating, fishing, and hunting. RFFAs include the Stallion Gold Horse Heaven Exploration Project, East Fork South Fork RAMP, Granite Goose Landscape Restoration Project, Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, and South Fork Plunge Watershed Restoration projects (**Table 5.1-2**).

The potential for cumulative effects to soils and RCM, as it relates to the analysis of the issues and indicators for the SGP, would be additional soil disturbance within the activity areas for TSRC or incremental detrimental soil disturbance within the vicinity of SGP components. Ongoing mineral

exploration activities associated with Perpetua's Golden Meadows Exploration Project in the vicinity of the SGP would contribute a very small (less than 5 acres) incremental increase in disturbance within the PNF. Exploration activities associated with the Horse Heaven Project to the west could contribute an increase in disturbance within the BNF. Both projects would comply with reclamation and monitoring commitments, which would include reclamation of the drill pads and temporary roads by backfilling, re-contouring, and seeding using standard reclamation practices. This reclamation would entail growth media and RCM volume requirements that could require development of additional growth media to offset the salvageable volume deficit. The East Fork South Fork RAMP and South Fork Plunge Watershed Restoration projects would have minor benefits to the TSRC by improving soil quality and related soil functions.

Phase 1 of the ASAOC work commenced in 2021 and would be accomplished by 2025; the other phases of the ASAOC scope of work would potentially be completed at later dates. Wildland and prescribed fires that occur in the CEA could temporarily (i.e., 0 to 3 years) remove ground cover that holds soil in place, leading to increased erosion and sedimentation from burned areas, or lead to increased detrimental soil disturbance, especially if logging (or motorized use) were to occur in the area shortly after.

Increased regulatory control on soil erosion, verified by reclamation monitoring, would minimize impacts to soil productivity and erosion within the CEA.

5.6 Noise

The CEA for noise is a 5-mile radius of SGP components including proposed mine site and access roads, utilities, and offsite facilities (**Figure 3.6-1**), as noise from mining is attenuated by vegetation and topography to levels that are not discernable to humans at long distances.

Cumulative noise impacts typically occur when sensitive receivers are exposed to multiple noise sources at approximately the same time. The SGP, access roads, construction of utilities (transmission lines), and off-site facilities would each contribute to the noise environment at varying levels, durations, and locations during each SGP phase.

Past actions include activities such as mineral exploration, infrastructure development, and non-mining related actions that would not contribute to present current noise impacts.

Present actions include mining projects, timber harvest or vegetation treatment; recreation; utility lines work, maintenance and use of the existing transportation network, urban development in Valley County, and private land development uses. RFFAs in the vicinity of the SGP area that could affect the noise environment are described in **Table 5.6-1**. Each of these activities could contribute to noise levels in the CEA.

Table 5.6-1 RFFAs Considered Regarding Cumulative Noise Emissions – Ongoing Projects and Foreseeable Noise Sources

Project Type	Project Names/Description	Nature of Noise Contribution to Cumulative Effects
Construction Projects	• Road maintenance and culvert replacement projects	Short-term noise emissions during construction with no long-term noise impacts that would overlap with impacts related to the SGP.
Mining Activities	• Ongoing mining activities on patented land • Mineral exploration activities	Local noise from drilling equipment (e.g., compressor engines), and vehicles. Known mine operations are of small size (50 tons per day or less) or are inactive.
Recreation and tourism	Recreation and Tourist activities: • Sport hunting, fishing, trapping • Snowmobile trails • Traffic on unpaved roads • Boating and river recreation • Camping, hiking, backpacking • Outfitter/Guide Operations • OHV use • Tourist Services – e.g., Big Creek Lodge	Collectively noise from vehicles on unpaved roads and trails, boats, and generators.

5.6.1 No Action Alternative

Under the No Action Alternative, the SGP would not be implemented and therefore would not contribute to cumulative noise effects. The same cumulative effects contributions from RFFAs in the surrounding area would be the same as described above.

5.6.2 Action Alternatives

Construction, exploration, and other projects would likely contribute noise levels similar to the SGP but over discrete and likely short timeframes. The spatial distance between cumulative SGP sites would make it less likely that noise would be detectable at a given point from more than one RFFA; the impacts from noise are not expected to be additive because the SGP would not occur in the same place or the same time as most RFFAs.

The SGP has the greatest potential to contribute to cumulative noise impacts in the vicinity of the FCRNRW. However, given the mountainous topography, cumulative impacts would likely only occur if other ongoing or future actions in the general area occur within the same mountain valley or on nearby ridgelines.

5.7 Hazardous Materials

The CEA for hazardous materials is bound by the bordering transportation routes that would provide access to the SGP and the SGP components including the mine site and the access roads. RFFAs in the vicinity of the SGP area that could contribute hazardous materials effects are described in **Table 5.7-1**.

Table 5.7-1 RFFAs Considered Regarding Cumulative Hazardous Materials Effects

Project Type	Project Names/Description	Nature of Hazardous Material Contribution to Cumulative Effects
Roadway Development and Maintenance	• Rice Creek Road Repair • Profile Creek Culvert Replacement	Vehicles and machinery constructing and maintaining roadways contain petroleum fuels.
Exploratory Drilling for Mineral Resources	• Horse Heaven Exploration Project. Project involves exploratory drilling for locatable minerals from remote drill pads approximately 10 miles north of the SGP. Project is reportedly on hold.	Transportation of fuel (diesel, gasoline, and jet fuel) to the project site. This activity occurs on existing County and Forest Service roads.
Forest Maintenance and Fire Risk Reduction	• Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project • Southwest Idaho Resilient Landscape Project fuels reduction project • East Fork South Fork RAMP EA, East Fork South Fork Salmon River watershed and Thunder Mountain area in the headwaters of Middle Fork Salmon River east of Monumental Summit • Projects to reduce wildfire risk and fire severity/intensity on NFS lands and private property using commercial timber harvest, understory treatment, and prescribed burning	Vehicles using local roadways contain petroleum fuels. Use of drip-torches, fuses, flares, Terra Torches, and/or Very pistols, and/or plastic spherical ignition devices to ignite prescribed fire.

5.7.1 No Action Alternative

Under the No Action Alternative, there would be no large-scale mine operations by Perpetua and use or transportation of certain hazardous materials would continue due to past and present actions, RFFAs, and by currently permitted Perpetua exploration activities as described in **Section 5.7.2**.

5.7.2 Action Alternatives

Cumulative effects associated with the SGP consider the range of past, present, and RFFAs and their potential effects with respect to hazardous materials. Past and present actions that have, or are currently, involving hazardous materials include the following:

Some of the RFFAs have the potential to use some of the same roads as the SGP for access (e.g., Warm Lake Road, Johnson Creek Road, Stibnite Road). Although there is insufficient information about the nature of the RFFAs to assess specific hazardous materials usage, these RFFAs would similarly be required to comply with state and federal regulations regarding transport and use of hazardous materials. The Stallion Gold - Horse Heaven exploration project may use the same roads as it is adjacent to the Operations Area Boundary on the west. The Southwest Idaho Resilient Landscape and the Payette National Forest Resilience and Fuels Reduction Prescribed Fire projects could be accessed via any of the local roads including Warm Lake Road, Johnson Creek Road, and McCall - Stibnite Road; however, these projects would involve treatment over a short period of time annually in various locations, such that the

contribution of the SGP combined with this, and other similar projects would result in negligible changes to the overall traffic volume along routes that would be used to transport hazardous materials for the SGP.

5.8 Surface Water and Groundwater Quantity

The CEA for surface water and groundwater quantity is the same area that could be directly or indirectly affected by the SGP on stream flows and/or the quantity of groundwater in storage, groundwater levels, and groundwater transmission (**Figure 3.8-1**).

Past and present actions that may have impacted water quantity through short-term water use include historical mining and reclamation activities in the area, as well as the Golden Meadows Exploration Project, which requires water for borehole drilling and other purposes.

The active Valley County Quarry (located near the village of Yellow Pine and about 7 miles to the west of the SGP area) may require some groundwater consumption, but since the quarry is located in a different sub-watershed from the SGP that is outside the CEA, it would not contribute to cumulative groundwater quantity impacts.

There are no RFFAs that have or would affect surface water and groundwater quantity in the CEA. In making this determination, a number of other nearby projects that have the potential to affect surface water and groundwater quantity were considered. These include Big Creek area's small-scale hydroelectric projects plus the Stallion Gold Horse Heaven Exploration Project. Although these projects could affect the surface water and groundwater systems within their respective watersheds, activities identified to date are located within a different sub-watershed from the SGP and lack direct communication via waterways to combine and result in cumulative water quantity effects.

5.9 Surface Water and Groundwater Quality

For surface water, the CEA includes 22 watersheds that encompass the SGP, access roads, transmission lines, and off-site facilities (**Figure 3.9-1**). For groundwater, the CEA includes two sub-watersheds that encompass the SGP (**Figure 3.9-2**).

Cumulative effects associated with the SGP consider the range of past, present, and reasonably foreseeable activities and their potential effects with respect to surface water and groundwater quality. Past and present actions that have, or are currently, affecting surface water quality include development projects, transportation projects, mineral exploration and mining activities, and mine closure and reclamation projects. Past and present actions that have or are currently affecting the mine site groundwater quality mainly include historical mining activity and recent mineral exploration undertaken by Perpetua.

RFFAs that could cumulatively contribute to water quality impacts in the CEA include:

- East Fork South Fork RAMP,
- Granite Goose Landscape Restoration Project;
- Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project;

- Southwest Idaho Resilient Landscape Project;
- South Fork Plunge Watershed Restoration Project;
- Profile Creek Culvert Replacement Project;
- Stallion Gold Horse Heaven Project, and
- the Stibnite ASAOC.

5.9.1 No Action Alternative

The existing baseline surface water quality associated with the mine site is expected to improve to an extent due to the removal of legacy mining materials in contact with surface waters in Meadow Creek and the East Fork SFSR under the ASAOC Phase I. Phase I of the ASAOC is a separate action and not tied to the permitting of the SGP. Although impacts would likely be reduced due to a reduction of mine waste available for contact with surface water, elevated arsenic and antimony concentrations would persist as a cumulative impact with inputs from other historical sources (e.g., SODA) and inputs from natural sources that would continue to cause contaminant loading to the environment and influence Meadow Creek and East Fork SFSR stream water quality.

Cumulative surface water quality impacts also could occur in the CEA due to continuing surface exploration for the Golden Meadows Exploration Project and additional exploration associated with the Station Gold Horse Heaven Exploration Project. The continuation of approved exploration activities at the SGP by Perpetua could cumulatively increase stream sediment levels resulting from surface disturbance and erosion; however, this increase would be incremental because of the limited activity and disturbance area. Exploration activities also could cause cumulative surface water quality impacts through accidental spills of diesel, gasoline, and jet fuel stored at the SGP in aboveground tanks. However, the restoration and access management plans and landscape restoration plan will improve water quality.

5.9.2 2021 MMP

Compared to the No Action Alternative, the 2021 MMP would remove additional legacy mining materials and further reduce their impacts on water quality but would also contribute new sources of mine waste material to the East Fork SFSR drainage. However, the new mine waste materials would be equipped with current technologies, design features (e.g., liner and cover systems), and regulatory controls to diminish their impacts compared to the legacy materials. Therefore, the net effect of legacy material removal and new material placement is predicted to be a reduction in the effect of solute leaching from mined materials on water quality.

Across the rest of the CEA, future actions that could impact surface water quality would mainly affect stream temperatures and stream sediment concentrations. Other RFFAs in the CEA would mainly contribute sediment loading to adjacent streams although landscape restoration under RAMPs would target reduced sedimentation. Although most of these future actions would likely have sediment control measures in place, the cumulative effect across the watershed may still include higher sediment loads in the East Fork SFSR and its tributaries.

Valley County Quarry, an active aggregate mine approximately 0.25 mile east-southeast of the village of Yellow Pine, is separated from the East Fork SFSR and Johnson Creek by the village itself, as well as several forest roads and native vegetation buffers. The quarry also includes surface water management

features that retain runoff within the quarry perimeter (Forest Service 2017j). Thus, the Valley County Quarry would not contribute to cumulative surface water quality effects in the CEA.

5.9.3 Johnson Creek Route Alternative

Compared to the No Action Alternative and the 2021 MMP, cumulative effects to stream sediment concentrations from RFFAs would be affected by mine access because the Johnson Creek Route Alternative would require all mine-related traffic during construction, operations, and reclamation to use the Johnson Creek Route. This would increase traffic on Johnson Creek Route during the mine operational and reclamation period, leading to potentially higher erosion rates from the road surface along the Johnson Creek Route. The cumulative effect from this change could combine with other planned activities in the Johnson Creek watershed to increase the sediment load in Johnson Creek. This consideration is especially important given that Johnson Creek Road primarily follows the course of Johnson Creek.

5.10 Vegetation: General Vegetation Communities, Botanical Resources, and Non-native Plants

The CEA for vegetation resources is the same extent as the analysis area for direct and indirect impacts to vegetation, which is the 300-foot buffer around SGP components (**Figure 3.10-1**). Past and present actions in the CEA that have affected or are currently affecting vegetation resources are summarized in **Table 5.10-1**.

Table 5.10-1 Past and Present Actions in the Vegetation Analysis Area

Past or Present Action	Potential Effects on Vegetation
Past and present mineral exploration and mining in the vicinity of the SGP	Vegetation has been removed and soil conditions have been altered in areas with past and present mineral exploration and mining in the vicinity of the SGP. Increased dust and transportation of non-native plant propagules associated with these projects have likely indirectly impacted vegetation communities in the vicinity of these areas.
Wildland Fire	Wildland fires have occurred in the vegetation analysis area, which has resulted in seral changes to vegetation communities. Fires have been both characteristic and uncharacteristic.
South Fork RAMP	The numerous actions relating to watershed restoration, motorized and non-motorized access, and improvements of recreation facilities within the SFSR watershed within a 329,000-acre project area are likely to impact vegetation communities and special status plants in various ways. Impacts to vegetation communities and special status plants were documented as part of the project analysis.
Removal of Firewood	Removal of firewood by the public has likely occurred in the vegetation analysis area, resulting in loss of coarse woody debris and snags over time, primarily adjacent to roads.
Recreation and tourism	Recreational activities (i.e., camping, hiking, hunting, trapping, trail riding, etc.) are likely to continue to affect vegetation communities. Increased road networks (e.g., new portions of the Burntlog Route) open new NFS areas to additional human disturbance, which will likely result in increased non-native plant spread and establishment in the analysis area.

Past or Present Action	Potential Effects on Vegetation
Mineral exploration and mining activities	Exploration activities for potential future mining development in the vegetation analysis area have likely impacted vegetation via removal and soil compaction at drill pad sites and temporary roads and will likely continue to do so as these activities continue until reclamation occurs.
Mining reclamation	Reclamation activities including removal of tailings and soils, reconstruction of Meadow Creek and its floodplain, revegetation of the new channel banks, backfill and reclamation of the old channel, and grading and covering of additional tailings. These activities may impact vegetation regrowth in the short term but would be beneficial long term.
Transportation projects	Road maintenance projects (McCall-Stibnite Road [CR 50-412], Profile Gap Road [CR 50340] and the road to the Big Creek Trailhead, and Yellow Pine Road) are ongoing in the analysis areas. Roadways impact vegetation communities through habitat fragmentation, noxious weed introduction, and possibly dust propagation during construction. Maintenance projects for existing roadways will likely impact vegetation indirectly and only during the time of construction.
Infrastructure Development projects	Transmission line upgrades and maintenance of Line 328 (West Central Mountain Electric Plan 2014) have required removal of tall trees in the right-of-way for safe operation of the transmission line. Removal of tall trees has altered understory vegetation community composition and likely removed potential habitat for special status plants.

Source: Forest Service 2020i, 2020j, 2020k, 2021d, and 2021e; Idaho Power 2014.

RFFAs in the CEA that are anticipated to impact vegetation resources are shown in **Table 5.10-2**. These RFFAs would result in loss of habitat, but all projects (private or federal actions) would have to meet the requirements of Section 7 of the ESA, which include consultation with federal agencies on listed plant species, completion of appropriate analysis documents, and compliance with agency-mandated reasonable and prudent measures to protect listed species.

Table 5.10-2 RFFAs in the Vegetation Analysis Area

Project	Potential Effects on Vegetation
East Fork South Fork RAMP	This travel management planning would likely impact vegetation communities and special status plants located within the spatial extent of the East Fork South Fork RAMP which could include Yellow Pine, Big Creek, and Thunder Mountain within the PNF. Impacts to vegetation communities and special status plants were documented as part of the project analysis.
Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project	This fuels reduction project would likely impact vegetation communities, particularly tree species such as Douglas-fir, lodgepole pine, and subalpine, as this type of vegetation community would not recover as quickly as grass/forb and shrub-dominated vegetation communities. Additionally, the fuels reduction project would likely impact habitat for special status plant species and individuals, unless pre-burn surveys are conducted to avoid prescribed fire in areas of occurrence by these species. Impacts to vegetation communities and special status plants were documented as part of the project analysis.

Project	Potential Effects on Vegetation
South Fork Plunge Watershed Restoration	This watershed restoration project would likely impact vegetation communities and special status plant species and their habitat in the short term; however, beneficial impacts are anticipated based on the restoration of the area around South Fork Plunge. Impacts to vegetation communities and special status plant species were documented as part of the project analysis.
Southwest Idaho Resilient Landscape Project	This fuels reduction project would likely impact vegetation communities, particularly tree species such as Douglas-fir, lodgepole pine, and subalpine, as this type of vegetation community would not recover as quickly as grass/forb and shrub-dominated vegetation communities. Additionally, the fuels reduction project would likely impact habitat for special status plant species and individuals, unless pre-burn surveys are conducted to avoid prescribed fire in areas of occurrence by these species. Impacts to vegetation communities and special status plants were documented as part of the project analysis.
Stallion Gold – Horse Heaven Project	The Forest is processing a plan of operations for mineral exploration. This project would share its eastern boundary with the SGP.

Source: Forest Service 2023s and 2023t.

5.10.1 No Action Alternative

Forest management, motorized use of road systems, fire suppression, prescribed fire and wildfire, dispersed camping, fishing, and hunting activities would continue in the CEA and vicinity, which would alter vegetation resources through direct removal (trampling, cutting, harvest, etc.) and incidental damage. Under the No Action Alternative, Perpetua would continue to comply with reclamation and monitoring commitments included in the applicable Golden Meadows Exploration Project Plan of Operations and EA, which include reclamation of the drill pads and temporary roads by backfilling, re-contouring, and seeding using standard reclamation practices. However, as described in the Golden Meadows EA, the exploration and subsequent reclamation activities would have only a small direct effect on vegetation resources, as the disturbance footprint associated with the Golden Meadows EA is primarily isolated to temporary access roads to pads and the exploration drilling holes. Additionally, Perpetua would continue to comply with the reclamation and monitoring commitments included in the Stibnite Mine Site ASAOC Project, which focuses on restoring portions of Meadow Creek and the East Fork SFSR after removing mill tailings and mine waste. Therefore, implementation of the No Action Alternative would present a minimal cumulative contribution to impacts to vegetation resources.

5.10.2 Action Alternatives

Acres of previous disturbance from past mining actions within 300 feet of the action alternatives are presented in **Table 5.10-3**. The total cumulative disturbance to vegetation in the CEA under both action alternatives is the sum of acres of previous disturbance within 300 feet of each alternative and the acres of previously undisturbed vegetation that would be impacted under each of the alternatives.

The 2021 MMP would result in the larger contribution to mining-related cumulative impacts to vegetation communities with the Johnson Creek Route Alternative impacting approximately 251 acres less. Cumulative impacts of the SGP on botanical resources and non-native plants would follow the same ranking as for vegetation communities, with the 2021 MMP having the highest potential and the Johnson Creek Route Alternative having a reduced potential for negative impacts on botanical resources and non-native plants in conjunction with past mining actions.

Table 5.10-3 Cumulative Disturbance to Vegetation

Vegetation[1]	2021 MMP	Johnson Creek Route Alternative
New Disturbance to Previously Undisturbed Areas	2,050.1[2]	1,841.0[2]
Previous Disturbance within 300 feet of an Alternative Footprint	1,593.6	1,552.1
Total Cumulative Disturbance to Vegetation within 300 feet of an Alternative Footprint[3]	3,643.7	3,393.1

Source: Perpetua 2021a; Acres of new disturbance to previously undisturbed areas were calculated by overlaying SGP components with PVG data (Forest Service 2005a, 2017g), VCMQ data (Forest Service 2016b, 2021a), and LANDFIRE data (USGS 2016a). Acres of previous disturbance within 300 feet of an alternative footprint were calculated by overlaying a 300-foot buffer of SGP components with previous mine site disturbance spatial data (Perpetua 2021a) and omitting areas of new disturbance.

[1] Vegetation communities are defined for the purpose of these calculations as a combination of forest PVGs on NFS-administered lands, non-forest areas on NFS-administered lands identified through PVG mapping, and LANDFIRE vegetation classes outside NFS-administered lands.

[2] Includes acreage associated with tall tree clearing as shown in Table 7-6 and Table 7-11 of the Vegetation Specialist Report (Forest Service 2023g).

[3] Due to rounding, numbers presented in this table may not sum precisely to the totals provided.

PVG = Potential Vegetation Group

VCMQI = Vegetation Classification, Mapping, and Quantitative Inventory

Other past and present actions (**Table 5.10-1**) and RFFAs (**Table 5.10-2**) have and would likely impact vegetation communities, occurrences of special status plants including the federally threatened whitebark pine, habitats for special status plants, and distribution of non-native plants throughout the analysis area. The Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project and the Southwest Idaho Resilient Landscape Project would conduct prescribed fire on up to approximately 100,000 acres per year that may include areas that contain whitebark pine and other special status plants. Specific impact acreages of most of these actions on these resources are not known. It is likely that the ranking of potential contribution of the SGP alternatives when combined with other RFFAs on vegetation, most special status plants, and non-native plants would be the same as described in the preceding paragraph for mining-related impacts, with the 2021 MMP having the highest potential for cumulative impacts on these resources based on disturbance acreage. For whitebark pine, the potential for cumulative impacts would be lowest under the Johnson Creek Route Alternative and higher under the 2021 MMP based on disturbance acreage and estimated number of trees removed.

Cumulative impacts of the SGP on known special status plant occurrences from either action alternative would likely be the same as described in **Section 4.10**, even when considered with past, present, and RFFAs (i.e., no loss of viability or trend towards ESA listing for all species known to occur in the analysis area).

5.11 Wetlands and Riparian Resources

The CEA for wetlands and riparian resources is the same extent as the analysis area for direct and indirect impacts to these resources, which is the watersheds containing the SGP components (**Figure 3.11-1**).

5.11.1 No Action Alternative

No new impacts to wetlands would occur under the No Action Alternative from the SGP. The SGP would not contribute to cumulative effects on wetlands or riparian areas in the CEA. Although no new impacts would occur, existing elevated arsenic, antimony, and mercury concentrations would continue to contribute to contaminant loading to surface water, affecting adjacent and downstream wetlands due to legacy mining.

Under the No Action Alternative, Perpetua would continue to comply with reclamation and monitoring commitments included in the applicable Golden Meadows Exploration Project Plan of Operations and EA, which includes reclamation of the drill pads and temporary roads by backfilling, re-contouring, and seeding using standard reclamation practices. However, as described in the Golden Meadows Environmental Assessment, the exploration and subsequent reclamation activities would have only a small direct effect on wetland and riparian resources, as the disturbance footprint is confined to exploration holes.

The CERCLA removal actions planned for Phase I of the ASAOC would disturb stream channels and adjacent riparian habitats to remove mining wastes from these areas. The stream channels would be restored better than their baseline conditions and the riparian habitats would also be restored which would be beneficial to wetlands and riparian habitat.

Therefore, the No Action Alternative would not present a substantial contribution to cumulative impacts on wetland and riparian resources.

5.11.2 2021 MMP

The present South Fork RAMP and the reasonably foreseeable East Fork South Fork RAMP, Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, Southwest Idaho Resilient Landscape Project, South Fork Plunge Watershed Restoration Project, and Profile Creek Culvert Replacement Project (**Table 5.1-2**) include numerous actions related to watershed reclamation within the SFSR watershed and are therefore expected to have a long-term beneficial effect on wetlands and riparian habitat conditions.

The 2021 MMP, combined with past, present, and future actions may cumulatively impact wetlands and riparian resources through removal or disturbance of wetland and riparian communities in the CEA; through the removal of vegetation from upland areas; through potentially altering flow within wetlands and riparian areas in the CEA; through reducing the quantity of water received by wetlands and riparian areas within the CEA; through degradation of aquatic habitat or other resources associated with wetlands and riparian areas; and through compensatory wetland mitigation that would replace losses of wetland acreages and/or functions in the CEA.

5.11.3 Johnson Creek Route Alternative

The Johnson Creek Route Alternative would have similar cumulative impacts to wetlands and riparian resources as described in **Section 5.11.2**.

5.12 Fish Resources and Fish Habitat

The cumulative effects analysis area for fish and aquatic habitat consists of all of the watercourses and waterbodies in the HUC 6th field (10-digit code watersheds that overlap potential SGP disturbance areas (**Figure 3.12-1**).

Cumulative effects consider past, present, and reasonably foreseeable activities and their potential effects with respect to fish and aquatic habitat when combined with the potential direct and indirect impacts of the SGP. Past and present actions that have, or are currently, affecting fish and aquatic habitat include past and current mining activities (including exploration), infrastructure projects, ongoing Forest Service management projects, recreation, fishing, transportation projects, water diversions, hydropower projects, and wildland fires.

RFFAs that could cumulatively contribute to fisheries and aquatic habitat impacts in the analysis area include:

- East Fork South Fork RAMP;
- Granite Goose Landscape Restoration Project;
- Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project;
- Southwest Idaho Resilient Landscape Project;
- South Fork Plunge Watershed Restoration Project;
- Profile Creek Culvert Replacement Project; and
- Stallion Gold Horse Heaven Exploration Project.

5.12.1 No Action

The existing baseline conditions of fish and aquatic habitat in and adjacent to the mine site are expected to improve due to the removal of legacy mining materials that are in contact with surface waters in Meadow Creek and the East Fork SFSR under the ASAOC Phase I. The ASAOC is a separate action and not tied to the permitting of the SGP. Although impacts would likely be reduced due to a reduction of mine waste in contact with surface water, elevated arsenic and antimony concentrations would persist as a cumulative impact with inputs from other historical sources (e.g., SODA) and inputs from natural sources that would continue to cause contaminant loading to the environment and influence Meadow Creek and East Fork SFSR water quality. Cumulative impacts to fisheries also could occur at the SGP area due to continuing surface exploration for the Golden Meadows Exploration Project. These previously approved activities include construction of several temporary roads (approximately 0.32 mile of temporary roads) to access drill sites (total of 28 drill sites), drill pad construction (total of 182 drill pads) and drilling on both Forest Service and private lands at and in the vicinity of the SGP. The continuation of approved exploration activities at the SGP by Perpetua could cumulatively increase stream sediment levels resulting from surface disturbance and erosion; however, this increase would be incremental because of the limited activity and disturbance area. Exploration activities also could cause cumulative surface water quality impacts through accidental spills of diesel, gasoline, and jet fuel stored at the SGP in aboveground tanks. Similarly, exploration activities associated with the Stallion Gold Horse Heaven Exploration Project could contribute as well.

5.12.2 2021 MMP

Some of the RFFAs (**Table 5.1-2**) would occur in the same watershed and are expected to have similar types of impacts to fish and aquatic habitat as described for the 2021 MMP, such as increases in sediment and stream temperatures, stream flow reductions, and stream channel changes. However, because these projects appear to be at a smaller scale than the SGP, their impacts also would be less. These RFFAs also could have beneficial effects on fish and aquatic habitat in the long-term and are summarized below.

The present South Fork RAMP and the reasonably foreseeable East Fork South Fork RAMP, Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, Southwest Idaho Resilient Landscape Project, South Fork Plunge Watershed Restoration Project; Profile Creek Culvert Replacement Project include numerous actions related to watershed reclamation within the SFSR watershed and are therefore expected to have a long-term beneficial effect on habitat conditions for fish. Further, the Profile Creek Culvert Replacement Project would replace a culvert at Profile Creek on Profile Gap Road NFSR 340 with a 90-foot bridge for aquatic organism passage.

Cumulative effects from large-scale management of Forest vegetation could include short-term disturbance of fish habitats and increases in sediment; but would be beneficial in the long-term. **Table 5-12-1** provides a general description of effects on fish and aquatic resources from the other types of projects that are expected to occur in the CEA.

Table 5.12-1 Cumulative Effects on Fish and Aquatic Habitat from RFFAs

Cumulative Project Type	Effects on Fish and Aquatic Habitat
Mineral exploration and mining activities	Currently planned or future mine development would affect fish and habitat during development through direct disturbance of habitat, increase sediment, changes in stream flow and temperature.
Closure and reclamation projects	Projects within fish habitat that are currently, or in the future, undergoing reclamation would likely improve fish habitat because these projects involve the removal of some infrastructure and reclamation of native habitats.
Transportation projects	Road maintenance, bridge or culvert replacement, and improvement projects are likely in the analysis area. Installation or improvement of culverts or bridges may impact fish habitat due to construction-related effects such as erosion and sediment in streams. Maintenance of existing roadways and culverts/bridges would create short-term impacts, while new roadways and culverts/bridges could have impacts for a longer period.
Recreation and tourism effects	Recreational activities such as fishing would continue to affect fish in the future. Fishing activities could decrease localized fish populations. These are regulated by the IDFG and would not lead to cumulative impacts when combined with impacts from the SGP.

When combined with the potential impacts and duration of the 2021 MMP, the duration and scale of cumulative impacts on fish and aquatic habitat would be larger because all these projects would occur during the same time period. The resulting cumulative effect on fish and aquatic habitat in the CEA would be temporal losses or degradation of habitat and behavioral disturbances, along with some long-term beneficial effects from habitat improvements.

5.12.3 Johnson Creek Route Alternative

The effects discussed for the 2021 MMP for the SGP and RFFAs would also occur under the Johnson Creek Route Alternative. The use of the Johnson Creek Route rather than the construction of the Burntlog Route would increase the risk of spills and sedimentation in Johnson Creek and East Fork SFSR. Therefore, the potential for cumulative effects to fish and aquatic habitat from the Johnson Creek Route Alternative would be greater in degree with regards to spills and sediment compared to the 2021 MMP but would be comparable with regard to other effects.

5.13 Wildlife and Wildlife Habitat including Threatened, Endangered, Candidate, and Sensitive Species

The CEA for wildlife and wildlife habitat is the same as the area that could be directly or indirectly affected by the SGP consists of the analysis area shown on **Figure 3.13-1**.

Cumulative effects associated with the SGP consider the range of past, present, and reasonably foreseeable activities and their potential effects with respect to wildlife and wildlife habitat. Past and present actions that have, or are currently, affecting wildlife and wildlife habitat, as well as RFFAs that could cumulatively contribute to wildlife and wildlife habitat impacts in the analysis area include mineral exploration and mining activities, closure and reclamation projects, transportation projects, recreation and tourism effects, wildfire, prescribed fire and noxious weed control projects, and development projects (**Table 5.13-1**).

Table 5.13-1 Cumulative Effects on Wildlife Species in the Analysis Area

Cumulative Project Type	Potential Effects on Wildlife
Mineral Exploration and Mining Activities	Several historic mines in the analysis areas have changed the habitat over time through removal of vegetation and displacement of wildlife species. Currently planned or future mine development will modify additional habitat types during development; these habitats will likely also be reclaimed in part on closure of the mine projects. During exploratory drilling, development, and operations, the increased noise and light impacts and road networks will be a source of disturbance and mortality for wildlife and will likely also displace wildlife sensitive to human disturbance.
Closure and Reclamation Projects	Projects that are currently undergoing reclamation, or will in the future, will likely improve habitat for wildlife. Additional habitat would generally become available to wildlife use within different time frames, depending on the type of reclamation. Early successional and grassland habitats would be available for wildlife within a short time, while mature forest types would not be available for decades.
Transportation Projects	Road maintenance, improvement projects, and bridge replacements are likely in the analysis areas. As roadways represent a threat to wildlife due to vehicle-wildlife collisions, habitat fragmentation, and noxious weed introduction, these types of projects are likely to also cause an impact on wildlife. Maintenance of existing roadways will likely only be short-term effects, while new roadways would have a larger effect.
Recreation and Tourism	Recreational activities (i.e., camping, hiking, hunting, trapping, trail riding, firewood harvest, etc.) are likely to continue to affect wildlife in the future. Increased road and trail networks open new areas to additional human disturbance, which can displace wildlife. Hunting activities also could decrease localized wildlife populations, although these are regulated closely by IDFG.

Cumulative Project Type	Potential Effects on Wildlife
Wildfire, Vegetation Management, and Noxious Weed Control Projects	Wildfires and noxious weeds have affected wildlife throughout the analysis areas. Additional wildfires and prescribed burns are likely to affect wildlife in the future by reducing mature forest structure and transitioning to early successional communities. Small-scale harvesting of timber on private lands in the area also reduces the amount of forested habitat available. Control of invasive and noxious plant species also is likely to affect wildlife positively, because spraying or hand-pulling will reduce the invasive species present.
Mining reclamation	Reclamation activities including removal of tailings and soils, reconstruction of Meadow Creek and its floodplain, revegetation of the new channel banks, backfill and reclamation of the old channel, and grading and covering of additional tailings. These activities may impact wildlife individuals and wildlife habitat in the short term but would be beneficial long term.

Some RFFAs (**Table 5.1-2**) would result in loss of habitat, but all projects (private or federal actions) would have to meet the requirements of Section 7 of the ESA, which include consultation with federal agencies (e.g., USFWS, NOAA, etc.) on listed species, completion of appropriate analysis documents, and compliance with agency-mandated reasonable and prudent measures to protect listed species. In addition, actions on PNF and BNF must meet the standards of the Forest Plans, which specifically addresses threatened, endangered, proposed, or candidate species, as well as sensitive species and species of special interest, such as elk, and related habitat.

5.13.1 No Action

Under the No Action Alternative, the CEA would still be impacted by the types of projects discussed in **Table 5.13-1**. Also included is continued exploration work at the SGP by Perpetua that may occur and the ASAOC Phase I mine waste removal project that is presently being conducted and would continue through 2025.

5.13.2 2021 MMP

The 2021 MMP would impact 3,266 acres from the combined mine site, access roads, utilities, and off-site facilities, which would be a large increase of disturbed habitat compared to other past, present, and RFFAs in the CEA. Various components of this larger area would be considered habitat for different species, depending on the potential vegetation groups, tree size classes, and canopy cover classes present. However, these impacts would be offset and reduced through restoration of vegetation communities native to the area during the closure and reclamation process. I result is that long-term, net impacts (e.g., functional habitat losses and disturbed habitat in the analysis areas) would be reduced, although it would be decades before habitats would be restored to similar functionalities. The effects of road upgrades and traffic-related incidents with wildlife are likely under the 2021 MMP, which would contribute to the other past, present, and RFFAs.

Following closure and reclamation, existing and ongoing mineral exploration for the SGP would cease in the wildlife CEA. Activities that would continue in the future, and may contribute to cumulative effects on wildlife and habitats would include mineral exploration activities outside the Operations Area Boundary; other closure and reclamation projects; continued road use, transportation infrastructure improvements and maintenance; recreational and tourism activities; wildfire and vegetation management

actions (e.g., mechanical vegetation treatment [Southwest Idaho Resilient Landscape Project and South Fork Plunge Watershed Restoration Project], salvage harvest, and prescribed fire [Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project]); and private development projects. Potential cumulative effects from these types of actions would include further ground disturbance and habitat alteration. These RFFAs would have the potential to disturb wildlife habitats because of vegetation removal and ground disturbance. However, several of these projects would improve conditions across multiple resource areas and restore health and resiliency to vegetation communities, improve watershed health, and improve wildlife habitat. RFFAs would be governed by applicable laws and regulations and would be required to conform to applicable forest plan standards on PNF and BNF.

Cumulative impacts from past and present projects have resulted in temporary and permanent losses of habitats and ecological functions in the region, and future projects also would likely impact terrestrial wildlife species. However, the region is still somewhat remote and relatively wild, and the types of projects listed above are unlikely to substantially change the habitat value for terrestrial wildlife species in the near long term, with the exception of additional wildfires reducing mature forest structure.

The 2021 MMP includes a variety of reclamation projects over the course of mine construction, operation, and closure and reclamation. However, the 2021 MMP would likely result in impacts that would be considered to permanently contribute to an adverse cumulative impact on these resources when combined with past, present, or RFFAs.

5.13.3 Johnson Creek Route Alternative

The Johnson Creek Route Alternative would impact 3,096 acres from the combined mine site, access roads, utilities, and off-site facilities footprints, and would be a large increase in the amount of disturbed habitat compared to other past, present, and RFFAs in the area. Because the size of the disturbance footprint is smaller than that of the 2021 MMP due to the absence of the Burntlog Route, the cumulative impacts of the Johnson Creek Route Alternative would be less than the 2021 MMP.

5.14 Timber Resources

The CEA for timber resources is the entire area of the PNF and BNF, as well as any commercial timberlands in Valley County. The analysis focuses on current and future projects on the PNF and BNF as those forests have established harvest volume limits and spatially designated lands suitable for timber production. Timber harvest projects occurring on commercial timberlands in the analysis area are unknown at this time and are therefore unavailable to consider in the analysis of cumulative effects to timber resources.

Cumulative effects associated with the SGP consider the range of past, present, and reasonably foreseeable activities and their potential effects with respect to timber resources. This includes past and present actions that have, or are currently, affecting timber resources and areas from which timber is harvested, as well as RFFAs that could cumulatively contribute to timber resource impacts in the analysis area. This list of projects (**Table 5.1-2**) includes mineral exploration and mining activities, road repair, hazardous fuels and noxious weed control projects, and wildfires that could occur within the same timeframe as the impacts of SGP. Projects with a vegetation management component that includes incidental removal of conifer tree species would not be considered to cumulatively contribute to timber

resource impacts in the CEA unless the project included sale of the cut conifer trees. The potential for cumulative effects associated with each project type, and example projects in the CEA, are described below.

5.14.1 Forest Management

None of the current and future forest management projects within the timber resources CEA include a commercial timber sale component and are therefore not considered to contribute to cumulative impacts on timber resources.

5.14.2 Mineral Exploration and Mining Activities

None of the currently planned or future mine development projects in the CEA include sale of cut trees at this time and therefore were determined to not contribute to potential cumulative effects on timber resources.

5.14.3 Transportation Projects

Road maintenance, improvement (widening) projects, and bridge replacements are likely to occur in the future in the timber resources CEA. Roadway projects could impact timber resources through removal of productive timber along roadways. Maintenance of existing roadways would likely be short-term, while new roadways could have a larger effect by removing timberland from permanent production, depending upon the location of the project and its proximity to land suited for timber production. Projects with a road improvement or transportation element include the East Fork South Fork RAMP on the PNF and the South Fork RAMP on the PNF as well as the BNF.

5.14.4 Hazardous Fuels Reduction and Noxious Weed Control Projects

Wildfires have affected timber resources throughout the analysis area and will continue to do so in the future. Future wildfires may affect timber resources, in the event they occur on land suited for timber production, by applying hazardous fuels reduction treatments to the landscape. The damaging effect of wildfire may be mitigated and projects with this aim could contribute beneficially to the cumulative effect of timber removal in the analysis area. The Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project and the Southwest Idaho Resilient Landscape Project would utilize prescribed burning to improve reduce fuel accumulations and to improve vegetation and habitat into the future. Similarly, control of invasive and noxious plant species is likely to benefit timber resources by improving stand productivity. Fuels management projects include Big Creek Fuels Reduction, Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, Southwest Idaho Resilient Landscape Project, and the Granite Goose Landscape Restoration Project. Both Big Creek Fuels Reduction and the Granite Goose Landscape Restoration projects include explicit discussions of commercial timber sales associated with fuels reduction activities therefore they both could contribute to cumulative effects on timber resources.

These RFFAs could result in loss of timber resources. However, all projects (private or federal actions) would have to meet the requirements of either National Forest Management Act of 1975 or The State of Idaho and Valley County, which include appropriate planning and compliance to meet their standards for timber stand health and productivity (sustained yield). In addition, actions on NFS lands must meet the

standards of the Forest Plan, which specifically addresses annual harvest limits for timber resources on suited and unsuited timberlands.

5.14.5 No Action Alternative

Implementation of the No Action Alternative would present no cumulative impact contribution to timber resources.

5.14.6 Action Alternatives

Available information for RFFAs indicates approximately up to 117,000 acres of vegetation including timber would be subject to prescribed burning annually with implementation of the Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, the Southwest Idaho Resilient Landscape Project, and the Granite Goose Landscape Restoration Project . It is unknown if portions of these areas would occur on land suited for timber production. It also is not known what volume of timber resources these project areas support, but the projects are PNF-sponsored actions and therefore would be coordinated with the local silviculturist on the PNF and designed to not exceed ASQ and TSPQ. In addition, these projects would not remove suited lands from production, rather they would, by their intent, maintain forest health and productivity. Implementation of activities proposed under the action alternatives, when combined with other potential activities associated with projects in the cumulative impact analysis area would not exceed harvest volume limits or contribute substantially to removal of timber from land suited for timber production in the CEA. Therefore, these activities would not result in impacts that would be considered to contribute to cumulative effect on timber resources.

5.15 Land Use and Land Management

The CEA for land use and land management would be the same as the analysis area for direct and indirect effects (**Figure 3.15-1**).

Cumulative effects associated with the SGP consider the range of existing and RFFAs and their potential effects with respect to land use and management. Past and present actions that have, or are currently, affecting land use and land management include ongoing and planned mining activities, exploratory drilling (e.g., Golden Meadows Exploration Project), reclamation and closure of mining and processing facilities, road and airstrip maintenance, infrastructure management and development, noxious weed control, recreation and tourism, water diversion projects, firewood and timber harvest on public and private lands, wildlife conservation and rehabilitation plans, creek restoration, trail construction and maintenance, and hydroelectric projects. RFFAs that could cumulatively contribute to land use and land management impacts in the analysis area include (briefly described in **Table 5.1-2**):

- East Fork South Fork RAMP,
- Granite Goose Landscape Restoration Project,
- South Fork Plunge Watershed Restoration Project,
- Big Creek Airstrip Maintenance Building Replacement/Upgrade,
- Big Creek Work Center Water Systems Upgrade,
- Rice Creek Road Repair,
- Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project,

- Southwest Idaho Resilient Landscape Project,
- Profile Creek Culvert Replacement, and
- Stallion Gold Horse Heaven Exploration Project.

5.15.1 No Action Alternative

Cumulative impacts to land use and land management under the No Action Alternative would result from the current ongoing activities combined with past and present actions, as well as the RFFAs in the CEA. These include ongoing and planned mining activities, exploratory drilling, reclamation and closure of mining and processing facilities, road and airstrip maintenance, infrastructure management and development, noxious weed control, recreation and tourism, water diversion projects, firewood and timber harvest on public and private lands, wildlife conservation and rehabilitation plans, creek restoration, trail construction and maintenance, and hydroelectric projects.

5.15.2 Action Alternatives

Cumulative effects associated with the action alternatives would occur in combination with past, present, and future actions if these actions result in changes in land use and land management, or if additional ROW or easements were authorized by federal, state, or local entities.

Land use would be impacted by the action alternatives from construction and operations of the mine site and construction of associated facilities (access roads, utilities, and off-site facilities). The conversion of these lands to mine and transportation uses, combined with past, present, and planned mining activities, would result in a larger portion of the analysis area being used for industrial and transportation land uses. Other activities that could change land management include ongoing and planned mining activities, exploratory drilling, reclamation and closure of mining and processing facilities, road and airstrip infrastructure maintenance, infrastructure management and development, noxious weed control, recreation and tourism, water system upgrade projects, firewood and timber harvest on public and private lands, wildlife conservation and rehabilitation plans, creek restoration, trail construction and maintenance, and hydroelectric projects. Land use in the CEA would change from existing conditions as a result of the action alternatives and land management activities associated with the RFFAs. Cumulative effects on land use would be greater than the direct effects of the action alternatives, depending on which RFFAs occur.

5.16 Access and Transportation

The CEA for access and transportation includes the overall road system encompassing the SGP components (**Figure 3.16-1**). Transportation should not be substantially affected beyond this area; travel and transportation outside of the CEA would not likely be impacted by the SGP.

5.16.1 No Action Alternative

Under the No Action Alternative, there would be no construction and operations related to the SGP. The effects of past mining activities and the currently occurring ASAOC activities would remain. The RFFAs identified in **Table 5.1-2** including forest management, motorized use of road systems, fire suppression, prescribed fire and wildfire, dispersed camping, fishing, and hunting activities would continue in the CEA and vicinity, which could impact access and transportation in the CEA. Under the No Action Alternative, the Golden Meadows Exploration Project and Stallion Gold Horse Heaven Exploration Project would

have a negligible direct effect to access and transportation and, therefore, a negligible cumulative contribution.

5.16.2 Action Alternatives

Supplies and deliveries for the SGP during construction, operations, and closure and reclamation would go to the SGLF using SH 55 to Warm Lake Road. It is anticipated that approximately two-thirds of all mine-related traffic would originate south of Warm Lake Road and would use SH 55 through the communities of Cascade, Banks, and Horseshoe Bend. Approximately one-third of all mine-related traffic would originate north of Warm Lake Road and would use SH 55 to access Warm Lake Road through the communities of Donnelly, Lake Fork, and McCall. The cumulative impacts of the SGP in conjunction with other RFFAs would be minor, long term, and regional.

As previously discussed, the traffic for the action alternatives would travel on SH 55 to Warm Lake Road then either along Johnson Creek Road to Stibnite Road or along the existing Burnt Log Road and newly constructed Burntlog Route to access the SGP. The SGP would generate considerable impacts to access and transportation as the action alternatives would individually add over a 100 percent increase in traffic volume on Burnt Log Road, Johnson Creek Road, and Stibnite Road during construction and operations.

The local NFS roads within the CEA are in a rural area, and baseline traffic volumes are generally low. A higher percent increase in traffic volumes for the action alternatives would be likely the closer the roads are to the SGP. The Big Creek Airstrip Maintenance Building Replacement/Upgrade, the Big Creek Work Center Water Systems Upgrade Project, South Fork RAMP, the East Fork South Fork RAMP, the Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, and the Southwest Idaho Resilient Landscape Project, are located in proximity to the SGP. The contribution to traffic volumes of the action alternatives which include traffic generated from the reconstruction of the transmission line combined with these projects would likely have a greater cumulative effect on the roadways closer to the SGP, including along the Burntlog Route.

Contrary, the closer to the larger arterial (e.g., SH 55) and collector (e.g., Warm Lake Road) roads, the percent increase in traffic volume decreases to less than approximately four percent for the action alternatives. The Granite Goose Landscape Restoration Project is located along or accessed via SH 55 and would affect traffic along the major arterial and collector roads. The traffic contribution of the action alternatives combined with these projects would result in negligible changes to the overall traffic volume as the SGP-level volumes dissipate into the larger traffic volumes of other projects and general travel along these roads.

The ASAOC (EPA 2021f) (**Table 5.1-3**) would be additive to anticipated SGP traffic. Light vehicle traffic is occurring with approximately five roundtrips every two weeks over three months, totaling 30 trips. Additionally, 28 trips occur in support of seven fuel hauls. In total, light vehicle traffic resulted in 58 trips in 2022, and heavy truck traffic resulted in approximately six roundtrips. The seven anticipated fuel haul trips included three-truck convoys (using 4,500-gallon trucks), amounting to a total of 21 individual trips. In 2023, 50 contractors have been traveling to and from the SGP, with five people per vehicle over six months. Light vehicle traffic (including buses and vans) resulted in approximately 12 round trips every two weeks, for a total of 144 trips, plus 64 trips in support of 16 fuel hauls, which amounted to 208 trips total. Heavy truck traffic during 2023 equaled approximately 15 roundtrips. The 16

fuel haul trips also included three-truck convoys (using 4,500-gallon trucks), amounting to a total of 48 individual trips. Phase I of the ASAOC work is anticipated to be completed by 2025.

A helipad would be located at the SGP for exploration during daylight hours, Medevac purposes, and avalanche control activities and would contribute a cumulatively negligible level of air transportation via helicopter in the vicinity. Approximately one round trip (two truck trips) of antimony concentrate would be hauled off-site daily to a commercial barge or truck loading facility depending on the refinery location; the daily shipment of antimony and the potential transport of supplies and materials to and from the SGP would generate minimal to negligible changes in transportation when combined with existing levels of transportation of supplies and materials. There is potential for the trucks to transport mine products to rail lines located in Boise or for supplies and materials to be transported to the SGP by trucks originating from rail shipments; however, these activities would contribute a negligible level of cumulative changes to rail transport when combined with existing rail transportation activities and would not substantially alter the level of service.

A**s** such, the SGP combined with other RFFAs would have a greater cumulative effect on roads closer to the Operations Area Boundary and less contribution on the larger arterials (i.e., SH 55) farther from the Operations Area Boundary.

5.17 Heritage Resources

The CEA for heritage resources is the same area as the VAV APE. This includes approved activities, such as continued mining and reclamation work on private land. Existing and future activities directly associated with a proposed action and other RFFAs provide the basis for defining and analyzing cumulative impacts.

Past actions (**Section 5.1.2**) have impacted heritage resources in the CEA. Mining activities have impacted archaeological and historic resources. Natural activities like wildfires also have impacted heritage resources and could continue to do so. Many of the past human activities were conducted prior to statutory and regulatory protection measures for historic properties resulting in the loss of unknown resources.

Present actions include mining projects and their related activities (i.e., exploration, reclamation) that are currently underway. They also may include other non-mining related projects currently in progress, such as timber sales or vegetation treatment; recreation; maintenance of utility lines (e.g., powerlines) and other infrastructure; maintenance and use of the existing transportation network; urban development in Valley County; private land development and uses; and sand and gravel extraction.

RFFAs are described in **Table 5.1-2**. **Table 5.17-1** summarizes potential cumulative impacts to historic properties from RFFAs.

Table 5.17-1 RFFAs and Potential Cumulative Effects to Historic Properties

Cumulative Project Type	Potential Effects to Historic Properties
Mineral exploration and mining activities	Historic mines in the analysis areas have changed the landscape over time through removal of vegetation and displacement of soils. Currently planned or future exploration and mine development would further alter the landscape from its pre-contact and historic state during exploratory drilling, development; and operations upon closure of the mine. During exploratory drilling, development, and operations, the increased ground disturbance may disturb historic properties.
Closure and Reclamation Projects/CERCLA Actions	Projects that are currently undergoing reclamation or will in the future could possibly cause further damage to any historic properties in the area. These projects would likely be closed, which involves the removal of some of the infrastructure and reclamation of the land to restore native wildlife and plant habitats. Several CERCLA Removal Actions were conducted by the Forest Service, EPA, and Exxon-Mobil Corporation. These actions also can impact historic properties by removing potentially hazardous, but also historic tailings and capping historic dumps.
Transportation projects	Road maintenance, improvement projects, and culvert replacements are likely in the analysis areas. These types of improvements cause ground disturbance that represents a potential impact to historic properties. Maintenance of existing roadways would likely only be short-term, while new roadways would have a more permanent effect. Also related to transportation projects are gravel quarry or gravel pit development to provide fill material for road construction. This activity would be a potential impact to any historic properties present in those areas.
Infrastructure Development	Local communities perform upgrades to infrastructure, such as electrical transmission lines. These development activities can cause ground disturbance that could impact historic properties, and they often involve physical upgrades to historic transmission lines.
Recreation and tourism	Recreational activities (i.e., camping, hiking, fishing, hunting, trapping, trail riding, firewood harvest, etc.) are likely to continue to affect historic properties in the future. Increased road and trail networks open new wilderness areas to additional human disturbance, which can increase access to historic properties in the APE potentially leading to vandalism or accidental destruction of artifacts of site features.
Wildfire, Vegetation Management, and noxious weed control projects	Wildfires, prescribed fire, and noxious weeds have affected historic properties throughout the analysis area either by burning structures or by increasing visibility of pre-contact historic properties. Additional wildfires could affect historic properties in the future in the same way. Control of invasive and noxious plant species could have an effect on historic properties, as mechanical or hand-pulling would increase ground surface visibility and would cause some ground disturbance.
Development projects	Private residential developments could impact historic properties in the future. Pre-contact and historic landscapes would be lost, while additional human presence would potentially affect historic properties through increased access.
Watershed Management	Watershed management can involve repairs and reclamation of roads and recreation site repairs to prevent erosion into watersheds, but many projects involve only monitoring of erosion of roadway sediments into watersheds, and this would not have an impact on historic properties. Ground disturbance from road repairs or reclamation could impact unidentified historic properties in those areas; however, the Forest Service Heritage Programs would generally complete archaeological surveys of any Forest Service roads or campsites being repaired or reclaimed so any historic properties encountered during the surveys could be avoided.

5.17.1 No Action Alternative

Cumulative effects associated with the No Action Alternative could occur with approved activities associated with the Golden Meadows Exploration Project or proposed such as the Stallion Gold Horse Heaven Exploration Project, such as exploratory drilling for mineral resources and construction of support facilities on private land. The CERCLA work that is underway per the current ASAOC would continue over the next few years but would not affect any historic properties. Although adverse effects could be avoided with certain activities through avoidance or redesign, vegetation management through prescribed burning could destroy historic properties. Impacts to historic properties would be governed by the NHPA Section 106 process, and, therefore, minimal impacts would occur.

5.17.2 Action Alternatives

The 2021 MMP, taken together with other past and present actions and RFFAs, would create an increase in ground disturbance and visual and noise intrusions along with increased public access in some areas and restricted access in other areas within the analysis area. These cumulative actions would increase the impacts to historic properties within the CEA. For all RFFAs on federally managed lands, historic properties would be governed by the NHPA Section 106 process. Section 106 directs agencies to seek to avoid, minimize, or mitigate adverse effects to historic properties therefore reducing potential cumulative effects. RFFAs identified in the CEA could generate incremental changes to historic properties, exposing additional sites, or causing disturbance to the sites or their setting. Effects to historic properties would also occur due to physical disturbance or changes to the character or setting of historic properties. There would be adverse cumulative effects on historic properties. For some projects, a PA would be recommended to ensure compliance with the NHPA and 36 CFR 800. The PA would serve to resolve adverse effects to historic properties through the memorialization of mitigative actions therefore lessening the potential cumulative effects of the RFFAs to historic properties. Cumulative impacts under the Johnson Creek Route Alternative would be similar to the 2021 MMP.

5.18 Public Health and Safety

The CEA for Public Health and Safety includes Valley County (no figure). Existing and RFFAs have the potential to result in cumulative impacts by increasing variables related to public health and safety such as effects on air quality, soil quality, water quality, economy, public services and infrastructure, and demographics.

5.18.1 No Action Alternative

Under the No Action Alternative, there would not be the cumulative benefit of the SGP-related reclamation of legacy impacts in addition to those required under the ASAOC. There would be potential for wildfire from natural and man-made causes. However, under the Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project and the Southwest Idaho Resilient Landscape Project, prescribed fire would help address hazardous fuels and reduce fuel loading to counter catastrophic wildfire.

5.18.2 Action Alternatives

Past and present activities and RFFAs that could cumulatively contribute to public health and safety impacts in the analysis area include all the projects listed in **Table 5.1-2** pertaining to land use

management and development, landscape resiliency, road management, and hazardous materials management. The economic benefits associated with increased SGP employment opportunities and tax revenues, could lead to continued or improved access to health services (through employment insurance benefits and/or increased income), better nutrition, and better overall well-being for the local community. The potential negative effects from economic dislocation and disruption to local area economy after cessation of mine operations ("boom and bust" impacts) would be somewhat offset by the residual positive impacts on social economic conditions.

Because of the amount of activity associated with the 2021 MMP and Johnson Creek Route Alternative compared to the other activities and RFFAs, it is likely that cumulative impacts would not be noticeably different than the direct and indirect effects of the SGP.

5.19 Recreation

The CEA for recreation is the same as the analysis area for direct and indirect effects to recreation (**Figure 3.19-1**). Other past, present, and RFFAs occurring on federal and non-federal lands, with similar effects that overlap in time and space include forest management, mining and mine reclamation, road maintenance, campground upgrades, and winter motorized use of forest roads.

Past actions include activities that may have been initiated in the past but also could have lingering effects in degrading the environment or may influence trends in the physical, biological, or social environment.

Present actions include mining projects and their related activities (i.e., exploration, reclamation) that are currently underway and are causing impacts. They also may include other non-mining related projects currently in progress, such as timber sales or vegetation treatment; recreation; other utility lines (e.g., powerlines) and roads; maintenance and use of the existing transportation network; urban development in Valley County; private land development and uses; and sand and gravel extraction.

5.19.1 No Action Alternative

Cumulative effects would be minimal as there would be minimal displaced recreation use or changes to recreation opportunities from the SGP. In the long term there would be some modifications to the recreation setting in the SGP area from continued surface exploration, continued low level of unauthorized motorized use, and increased winter motorized access and use. Vegetation management such as prescribed fire could alter the recreation opportunities and setting in some areas and displace recreation to other areas in the short term. The RFFAs in combination with the No Action Alternative could result in cumulative effects to the designated ROS classes and the estimated ROS physical setting by increasing development, resulting in an overall increase in more developed ROS settings and a decrease in less developed settings within the CEA.

5.19.2 2021 MMP

5.19.2.1 Recreation Opportunities, Facilities, Use, and Recreation Special Use Permits

Other mining-related activities in the CEA (i.e., exploration, reclamation) would decrease the area for dispersed recreation due to physical development and wildlife displacement and would decrease the

overall area available for any recreation and permitted use displaced from the CEA due to impacts to recreation from the 2021 MMP. Development in the Big Creek area also may result in displacement of recreation and permitted use to other areas, possibly to campgrounds and wilderness trailheads south of Stibnite Road (CR 50-412). This displacement could increase recreation and permitted use within the analysis area, which may already see an increase in recreation use due to new motorized access, in addition to displacement of some recreation use to other areas. The South Fork RAMP, the East Fork South Fork RAMP, the Granite Goose Landscape Restoration Project, the Southwest Idaho Resilient Landscape Project, and the Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project may in the short term also reduce the area available for displaced recreation use from the 2021 MMP and could result in displaced recreation use during restoration and development activities. Therefore, the RFFAs in combination with the 2021 MMP may result in cumulative effects to recreation use, recreation opportunities, and recreation special use permits.

5.19.2.2 ROS Classes and Physical Setting

Planned restoration projects of forest and roads would enhance the natural appearance of the greater cumulative area. However, mining and other development projects would likely decrease the natural appearance of the area and may lead to a decrease in non-motorized areas due to mine operations and new access roads, particularly north of Stibnite Road (CR 50-412) towards Big Creek. Overall, the RFFAs in combination with the 2021 MMP could result in cumulative effects to the designated ROS classes and the estimated ROS physical setting by increasing development, resulting in an overall increase in more developed ROS settings and a decrease in less developed settings within the CEA.

5.19.3 Johnson Creek Route Alternative

Cumulative effects would be similar to those described for the 2021 MMP; however, cumulative effects to recreation use, opportunities, and the recreation setting related to displaced use would be less due to use of the Johnson Creek Route instead of the creation of the Burntlog Route, which would both displace recreation use and increase recreation use in the CEA. However, any cumulative effects along Johnson Creek Road and Stibnite Road would be increased due to use as part of the Johnson Creek Route.

5.20 Scenic Resources

For scenic resources, the CEA is broader than the analysis area for direct and indirect effects; and in this case, includes areas on NFS lands in Valley and Adams counties (**Figure 3.20-1**), including several projects in the PNF and BNF.

5.20.1 No Action Alternative

Under the No Action Alternative, neither action alternatives would be implemented, and no development of the SGP or supporting facilities would occur or be introduced. Some reclamation activities would still occur, such as those associated with the Golden Meadows Exploration Project and the Phase I of the ASAOC. These activities would contribute some visual changes to the landscape in the area of the historical mine activities, but others would persist and continue to contribute to the cumulative visual changes to the landscape in the forest.

5.20.2 Action Alternatives

Legacy mining activities have impacted visual resources, including surface disturbances along roads, mining pits, and facilities; however, due to rugged terrain, visual impacts of these activities are highly localized. Activities associated with mineral exploration would locally increase the amount of vegetation removed to accommodate drill pad sites and improvement of access roads. Timber harvest and other vegetation management activities, such as prescribed fire, also would contribute incrementally to landscape modification through the removal of vegetation over time. Forest management–related plans for noxious weed management, rehabilitation, and reclamation would result in a positive cumulative effect for the landscape by enhancing the natural, rugged setting that is characteristic of this area. There would be no new major utility corridors introduced through infrastructure development projects, although there is the 8.5-mile segment of new transmission line that would extend from the Johnson Creek substation to the Operations Area Boundary. Some mineral development projects have been put on hold in the CEA; but overall, mining activity has not substantially modified these backcountry landscapes. However, RFFAs, such as the Stallion Gold Horse Heaven Exploration Project, could change that. The characteristic backcountry landscape setting would continue to be modified locally by these activities, but collectively, they would not trend toward a more highly developed or industrial-type setting. Disturbance associated with the SGP components would be reclaimed. Most disturbance areas would be reclaimed concurrently or at mine closure, and the visual effects of the disturbance would gradually decrease as vegetation matures reducing color contrasts. For areas where revegetation is not possible, color contrasts would be permanent because of the coloration and angular nature of the granitic rock against more surficial sedimentary type rocks. Permanent visual contrast would range from minor to major and would contribute to the cumulative effects from past and present actions and RFFAs.

5.21 Social and Economic Conditions

The CEA for social and economic conditions is the same area as the analysis area as described for direct and indirect socioeconomic effects (**Figure 3.21-1**). However, given its size and scope, the SGP also could have social and economic effects in combination with other economic activities beyond the analysis area. As a result, this socioeconomic analysis also considers the SGP's expected impacts from a statewide perspective when appropriate. Other past and present actions and RFFAs occurring on federal and non-federal lands, with similar effects that overlap in time and space include forest management, mining and mine reclamation, roadway changes, campground upgrades, and winter motorized use of forest roads.

Past and present mining and mining-related activities have occurred around the Stibnite Mining District for over 100 years. These activities have contributed to the local analysis area's present socioeconomic conditions.

5.21.1 No Action Alternative

Under the No Action Alternative, the SGP would not be approved by the Forest Service. There would be no open-pit mining or ore processing in the SGP area, no new or upgraded access roads, no changes to utilities, and no construction of off-site facilities. Although none of the RFFAs identified in **Table 5.1-2** would physically overlap with action alternative disturbance footprints, the existing or future activities such as forest management, motorized use of road systems, fire suppression, prescribed fire and wildfire, dispersed camping, fishing, and hunting activities would continue in the CEA and vicinity. These existing

and future activities would remain and continue to contribute to the cumulative socioeconomic effects on the local area's residents, businesses, or economy triggered by or related to the RFFAs. Under No Action, continuation of the Golden Meadows Exploration Project, the Stallion Gold Horse Heaven Exploration Project, and activity associated with the ASAOC would have negligible cumulative effects to socioeconomic conditions on the local area's residents, businesses, and economy. Therefore, the No Action Alternative would result in negligible cumulative effects on the local area's residents, businesses, and economy.

5.21.2 Action Alternatives

Social and economic conditions and effects within the CEA have occurred and would occur from past, present, and RFFAs. These effects have occurred statewide, but primarily in Valley and Adams counties in terms of tax revenues, purchases of equipment and other services, and resulting employment income impacts.

The 2021 MMP, in addition to the reasonably foreseeable Stallion Gold Horse Heaven Exploration Project, would provide the economic benefits associated with such endeavors. The anticipated increases in the populations of Valley and Adams counties associated with in-migration as a result of these projects would be minor to moderate depending on the actual distribution of in-migrating resident locations. Further, there would be a related level of adverse cumulative effects to housing availability, housing affordability, community services, and infrastructure.

The SGP, ASAOC, South Fork Plunge Watershed Restoration Project, and East Fork South Fork RAMP could have potential positive cumulative effects with regard to antimony and arsenic concentrations in water and reduced sedimentation; these effects could have an indirect effect on socioeconomics for activities benefiting from improved water quality such as recreation and fisheries restoration.

The cumulative effects under the Johnson Creek Route Alternative would be the same as under the 2021 MMP.

5.22 Environmental Justice

The CEA for environmental justice conditions is the same area as the analysis area for direct and indirect effects (**Figure 3.22-1**). Other past and present actions and RFFAs occurring on federal and non-federal lands, with similar effects that overlap in time and space include forest management, mining and mine reclamation, roadway changes, campground upgrades, and winter motorized use of forest roads (**Sections 5.1.2** and **5.1.3**).

5.22.1 No Action Alternative

Cumulative effects associated with the No Action Alternative include past and present actions, as well as RFFAs. These include ongoing and planned mining activities, exploratory drilling, reclamation and closure of mining and processing facilities, recreation and tourism, timber harvest on federal lands, and transportation projects. These projects could affect Tribal communities with environmental justice concerns by changing access to, availability, and/or quality of subsistence resources and/or traditional use area conditions, but the SGP would not contribute any additional impacts or restricted access.

5.22.2 Action Alternatives

Cumulative impacts resulting from constructing and operating the SGP and other simultaneous construction projects and RFFAs could alter access to Tribal traditional use areas and subsistence resources; use of identified sacred sites within the affected area (e.g., noise, vibration, and visual impacts); cause habitat loss, behavioral disturbance to resources from increased noise and human activity, concerns about contamination of resources, and avoidance by Tribal members of traditional use areas; and discourage and restrict subsistence use by Tribal members in proximity to construction activity locations.

The SGP and RFFAs (**Table 5.1-2**) may facilitate increased public and Tribal member access, particularly for recreational users. The South Fork RAMP and East Fork South Fork RAMP include numerous actions relating to motorized and non-motorized access and improvements of recreation facilities within the SFSR watershed. Vegetation management, such as prescribed fire, under the Granite Goose Landscape Restoration Project, the Southwest Idaho Resilient Landscape Project, and the Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project could temporarily displace recreation and tribal use of areas. Other RFFAs, such as development in the Big Creek area, may result in displacement of recreation to other areas, possibly increasing recreation and permitted use within the analysis area, which may already see an increase in recreation use from the SGP. This increased access and use could result in potential indirect adverse cumulative impacts to Tribal members due to increased human activity if it results in actual or perceived decreases in their access to, availability, and/or quality of subsistence resources and/or traditional use area conditions.

In general, cumulative effects of the 2021 MMP or the Johnson Creek Route Alternative with other RFFAs and their potential to impact subsistence resource availability on Tribal communities with environmental justice concerns would potentially be adverse.

5.23 Special Designations

5.23.1 Wilderness

For untrammeled, natural, undeveloped, solitude, remoteness, and primitive recreation opportunities quality of wilderness character, the CEA includes NFS lands and projects in the Krassel and McCall Ranger Districts.

The following RFFAs have been identified that, in conjunction with the development of the SGP and the South Fork RAMP, could contribute to cumulative effects on the untrammeled, natural, and solitude, remoteness, and primitive recreation qualities of wilderness character.

- Stallion Gold Horse Heaven Exploration Project,
- East Fork South Fork RAMP,
- Granite Goose Landscape Restoration Project,
- South Fork Plunge Watershed Restoration,
- Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, and
- Southwest Idaho Resilient Landscape Project.

5.23.1.1 No Action Alternative

Under the No Action Alternative, the SGP would not be implemented. Topography and the distance between the FCRNRW and human activity at the SGP and locations of the RFFAs would not measurably change the untrammeled, natural, undeveloped, or solitude, remoteness, and primitive recreation opportunities quality of wilderness character compared to existing conditions, although smoke from prescribed fires could be visible and temporarily impact the wilderness character.

5.23.1.2 2021 MMP

Untrammeled

Under the 2021 MMP, the increase in human activity during the implementation of the RFFAs and construction and operation of the mine-related facilities could change the natural distribution of wildlife and plants. Increased human activity from project or recreation activities could change wildlife distribution into or from the FCRNRW or recommended wilderness areas. The extent where noise from these activities could change the natural distribution of wildlife would vary depending upon the season the activities were implemented, duration, topography, and weather. The potential for non-native plant species establishment could also increase. However, surveys and implementing treatments as described in the Frank Church-River of No Return Noxious Weed Prevention Plan and the Integrated Weed Management program for the PNF and BNF would reduce the spread of non-native plant species. In addition, each project is reviewed or surveyed for protected plant species and mitigation is developed where any of these species are found.

Although potential impacts would be reduced by various surveys, design features, and implementation of weed treatment, the 2021 MMP, in combination with the RFFAs, could cumulatively impact the untrammeled quality of wilderness character.

Natural

Plants

The activities from the RFFAs and the 2021 MMP would result in additional land disturbance. The potential for non-native plant species establishment could increase either from project activities or from changes in recreation use. These effects have or would occur primarily along the western boundary of the FCRNRW near the Idaho-Valley County border and Logan Creek, or the recommended wilderness areas west of the SFSR. The potential for an increase in non-native plant species to establish with FCRNRW or recommended wilderness would be influenced by existing vegetation, site conditions, and non- native plant species characteristics. The extent where non-native plant species could become established is unknown. Surveys and implementing treatments as described in the Frank Church-River of No Return Noxious Weed Prevention Plan and the Integrated Weed Management program for the PNF and BNF would reduce the spread of non-native plant species. The potential for introduction and spread of non-native plant species increases as visitors may transport vegetative matter on clothing and equipment along attractive, improved trails. As such, the 2021 MMP and RFFAs would cumulatively impact natural quality of wilderness character where non-native plant species become established.

Fish and Wildlife

The SGP and the RFFAs would disturb sensitive wildlife species within the FCRNRW and recommended wilderness areas. These actions could increase wildlife mortality from vehicles. The extent where the natural wildlife distribution and movement could change or increase in mortality is unknown. A cumulative impact to the natural quality of wilderness character would occur where there is a decrease in wildlife habitat quality, an impact on wildlife distribution, or mortality from vehicles.

The South Fork and East Fork South Fork RAMPs in combination with the 2021 MMP could reduce sediment in the SFSR drainage and barriers to fish passage. Reducing sediment in the drainage would improve water quality and indirectly fish habitat quality.

Replacing culverts (e.g., Profile Creek Culvert Replacement) could reduce barriers to fish passage and improve aquatic species habitat connectivity within the SFSR drainage. Long-term improvements to fish habitat quality could increase fish populations in the SFSR drainage. The increase in fish populations in a specific stream is unknown. The natural quality of wilderness character could improve where sediment load in streams decline and barriers to fish passage are removed.

Solitude, Remoteness, and Primitive Recreation Opportunities

The extent that wilderness visitors see or hear human activities could cumulatively increase. The extent where noise from human activity within the FCRNRW and recommended wilderness areas is influenced by topography and weather. The duration of increased noise from the RFFAs and project activities would be temporary as implementing the RFFAs would be completed in 10 days to several months in a specific area during weekdays. A temporary cumulative impact on solitude, remoteness, and primitive recreation opportunities quality of wilderness character would occur.

5.23.1.3 Johnson Creek Route Alternative

Under the Johnson Creek Route Alternative, the cumulative impacts described for the 2021 MMP would essentially be identical, although the impacts would be somewhat reduced as the Burntlog Route would not be constructed and the location of impacts would be shifted to the Johnson Creek Route area.

5.23.2 Wild and Scenic Rivers

The CEA for WSRs includes all federally managed land and actions in the SFSR watershed, and includes any action that could affect other eligible, suitable, or designated WSR waterways in the watershed. The Secesh River is in the SFSR watershed and is considered suitable for inclusion in the National WSR System. The upper and lower portions of the Secesh River are classified as Recreational, and the central portion, between NFST 080 and the Lick Creek Road portion of McCall-Stibnite Road (CR 50-412), is classified as Wild.

Cumulative effects associated with the SGP consider the range of existing activities and RFFAs and their potential effects with respect to WSR. Past and present actions that have, or are currently, affecting WSR and RFFAs that could cumulatively contribute to WSR impacts in the CEA are described in **Sections 5.1.2** and **5.1.3** and have the following effects with respect to the WSR indicators:

- No cumulative impacts to the free-flowing characteristics of eligible and suitable WSRs.

- Improvements to the water quality of eligible, suitable, and designated WSRs would likely result from watershed management; CERCLA actions; and bridge/culvert improvement projects.

- Improvements to fish ORVs would likely result from the RFFAs.

- No impacts to the preliminary Wild, Scenic, or Recreational classification for eligible and suitable WSRs from these projects combined with impacts from the SGP.

5.23.3 Idaho Roadless Areas

For IRAs, the CEA is a 5-mile buffer of SGP facilities. Effects on IRAs and the lands contiguous to unroaded areas could overlap in space and time with the direct and indirect effects and the following RFFAs:

- Stallion Gold Horse Heaven Exploration Project,
- South Fork RAMP,
- East Fork South Fork RAMP,
- Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, and
- Southwest Idaho Resilient Landscape Project.

The Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, and Southwest Idaho Resilient Landscape Project would generally improve roadless characteristics by promoting resiliency in forested areas during wildfires by reducing the potential for high severity fire behavior within IRAs. The East Fork South Fork RAMP project would reduce the miles of unauthorized routes in IRAs, improving roadless characteristics. The Stallion Gold Horse Heaven Exploration Project is not within an IRA but is within less than a half mile from the Horse Heaven IRA, therefore it is within the roadless expanse. The project would conduct exploratory drilling on existing roads over a one-year period. When added to the past, present, and reasonably foreseeable future actions there is no cumulative effect to the IRAs because some of the actions mitigate the effects of other actions or their effects are 1 year or less in nature.

Cumulative effects from the SGP and RFFAs could affect naturalness and outstanding opportunities for solitude and primitive types of recreation.

5.23.3.1 No Action Alternative

Naturalness

The No Action Alternative could affect the wilderness attributes of naturalness and undeveloped character which inform impacts to roadless characteristics. Under the No Action Alternative, surface exploration authorized as part of the RFFAs could increase the potential for non-native invasive plant species to spread. The surface exploration for the Horse Heaven Project could disturb soils and remove vegetation in the Horse Heaven IRA while the Golden Meadow project and the RFFAs could disturb soils and remove vegetation adjacent to Sugar Mountain IRA. Surface disturbing activities could increase the spread of non-native invasive plant species into Horse Heaven IRA and the adjacent area of Sugar Mountain IRA. The extent where non-native invasive plant species could become established is unknown. Surveys and treatments implemented for the RFFAs would reduce the cumulative effects on the natural roadless

character. Prescribed fires within IRAs would help move conditions toward a historical range of variability, thereby improving naturalness and meeting the roadless theme condition of improving natural integrity of the IRA.

Outstanding Opportunities for Solitude and Primitive Recreation

The wilderness attribute of outstanding opportunities for solitude or primitive and unconfined recreation corresponds with the roadless area characteristic of primitive, semi-primitive non-motorized, semi-primitive motorized recreation opportunity spectrum classes of dispersed recreation. Under the No Action Alternative, noise from surface exploration authorized for the Horse Heaven and Golden Meadow projects combined with the East Fork South Fork RAMP and the ASAOC activities, could decrease outstanding opportunities for solitude within the area of Sugar Mountain, Meadow Creek, and Horse Heaven IRAs. The noise extent from the Horse Heaven and Golden Meadows projects mineral exploration in combination with the RFFAs is unknown. Topography and distance between surface exploration activities and the RFFAs influence the area where noise could decrease outstanding opportunities for solitude and primitive recreation. Smoke during prescribed fire activities has the potential to affect recreational users within the IRA boundaries during implementation. Use would be displaced from prescribed fire burn units during these periods.

5.23.3.2 2021 MMP

Naturalness

The 2021 MMP could affect the wilderness attributes of naturalness and undeveloped character which inform impacts to roadless characteristics. Surface disturbance and vehicles from SGP and RFFA activities could spread non-native plant species. Depending on site conditions, and non-native plant species characteristics, non-native invasive plant species could spread into Sugar Mountain, Horse Heaven, and Meadow Creek IRAs. The extent where non-native invasive plant species could become established within these IRAs is unknown. Surveys and treatments implemented for the 2021 MMP and RFFAs would cumulatively reduce the effects on the natural roadless character and reduce the potential for non-native species to spread. However, prescribed fires within IRAs would help move conditions toward a historical range of variability, thereby improving naturalness and meeting the roadless theme condition of improving natural integrity of the IRA.

The 2021 MMP and the RFFAs could result in temporary to short term barriers to wildlife movement, disturbance, and increase vehicle-wildlife collisions. Wildlife mortality and distribution would be influenced by existing vegetation, site conditions, the wildlife species sensitivity to disturbance. The extent where wildlife distribution and movement could change or increase in vehicle-wildlife collisions is unknown. Changes in wildlife distribution from the activities associated with the 2021 MMP and the RFFAs could decrease natural roadless character in Meadow Creek, Horse Heaven, and Sugar Mountain IRAs.

Blowout Creek rock drain, hazardous fuel reduction, and potential changes to the miles of roads could reduce sediment in streams within the cumulative impact analysis area. Reducing sediment would improve water quality and long-term fish habitat quality. The extent and locations of streams where fish

habitat quality could improve is unknown; however, increases in fish habitat quality within IRAs would improve natural roadless character.

Outstanding Opportunities for Solitude and Primitive Recreation

The wilderness attribute of outstanding opportunities for solitude or primitive and unconfined recreation corresponds with the roadless area characteristic of primitive, semi-primitive non-motorized, semi-primitive motorized recreation opportunity spectrum classes of dispersed recreation. Noise from the 2021 MMP and the RFFAs would decrease outstanding opportunities for solitude within Sugar Mountain, Horse Heaven, and Meadow Creek IRAs and lands contiguous to unroaded areas and in areas where smoke from prescribed fires cause temporary impacts. The intensity of the effect would vary depending upon the forest visitor's sensitivity. Human activity and noise during the 20 plus years of mine construction, operation, and closure and reclamation and the RFFAs decrease the areas with outstanding opportunities for solitude. The extent where these effects could decrease roadless character within IRAs and lands contiguous to unroaded areas is unknown and influenced by topography, vegetation, and when activities for the RFFAs would be implemented.

5.23.3.3 Johnson Creek Route Alternative

Naturalness

The 2021 MMP could affect the wilderness attributes of naturalness and undeveloped character which inform impacts to roadless characteristics. Surface disturbance and vehicles from the Johnson Creek Route Alternative and implementation of the RFFAs could increase the potential for non-native plant species to spread into IRAs and lands contiguous to unroaded areas. Using the Johnson Creek Route for mine access, combined with the RFFAs, could increase the vehicle traffic and increase the potential for non-native invasive plant species to spread. The extent where non-native invasive plant species could become established is unknown. Existing vegetation and site conditions would influence the spread of non-native invasive plant species. Surveys and treatments implemented for the Johnson Creek Route Alternative and the RFFAs would cumulatively reduce the effects on the natural roadless character.

Traffic on Johnson Creek Route during mine construction and operation, combined with the RFFAs, would increase habitat fragmentation and barriers to movement, noise, and potential vehicle-wildlife collisions. These actions could increase wildlife mortality and change the distribution of wildlife within Sugar Mountain and Horse Heaven IRAs. The potential for an increase in wildlife mortality and habitat fragmentation would be influenced by existing vegetation, site conditions, and wildlife sensitivity to disturbance. The extent where wildlife distribution and movement could change is unknown; however, areas within the IRAs and lands contiguous to unroaded areas that are avoided by wildlife would have less natural roadless character.

Outstanding Opportunities for Solitude and Primitive Recreation

The wilderness attribute of outstanding opportunities for solitude or primitive and unconfined recreation corresponds with the roadless area characteristic of primitive, semi-primitive non-motorized, semi-primitive motorized recreation opportunity spectrum classes of dispersed recreation. Forest visitors avoiding the SGP or areas of IRAs accessed from the Johnson Creek Route and changes from access management plans could decrease outstanding opportunities for solitude within IRAs and lands

contiguous to unroaded areas. The intensity of the effect would vary depending upon the forest visitor's sensitivity. Human activity and noise related to the SGP and the RFFAs could decrease outstanding opportunities for solitude and displace recreational users within the IRAs. The extent where these effects could decrease roadless character within IRAs and lands contiguous to unroaded areas is unknown and would be influenced by topography, vegetation, and timing of when RFFAs are implemented.

5.23.4 Research Natural Areas

For RNAs, the CEA is a 5-mile buffer of SGP facilities. The RFFAs that could contribute to cumulative changes in research values, ecological site conditions, or change ecological processes within the CEA are:

- South Fork RAMP,
- East Fork South Fork RAMP,
- Payette National Forest Resilience and Fuels Reduction Prescribed Fire Project, and
- Southwest Idaho Resilient Landscape Project.

The SGP and these RFFAs include surface disturbing activities or changes in human activity that could indirectly affect research values and vegetation communities' conditions within an RNA.

5.23.4.1 No Action Alternative

Under the No Action Alternative, the exploration and ASAOC activities at the SGP site and the RFFAs are over 6 miles from the RNAs. Belvidere Creek, the RNA nearest to the SGP, is approximately 6 miles north, reducing the potential for cumulative effects from the RFFAs and SGP reclamation and monitoring activities.

5.23.4.2 2021 MMP

The RFFAs would not impact the RNAs; therefore, no cumulative effects would occur in the RNAs.

5.23.4.3 Johnson Creek Route Alternative

Under the Johnson Creek Route Alternative, during mine construction and operation, recreation use could increase in other areas, such as the SFSR and Big Creek drainages.

Improvements and maintenance of Stibnite Road as part of the Johnson Creek Route could indirectly increase recreation use in the Big Creek drainage. Recreation use in the Big Creek drainage during the 20 years of mine construction and operation, combined with the implementation of the Big Creek Hazardous Fuels Reduction Project, could increase the potential for non-native invasive plant species to spread into Belvidere RNA, although this potential is low.

Increased recreation use from forest visitors avoiding the SGP, areas with increased traffic volumes and human activity, combined with surface disturbance associated with implementing the RFFAs, could increase the potential non-native invasive plant species to spread into Belvidere RNA. The potential for non-native plant species to spread into the RNA depends upon vegetation conditions and the non-native plant species characteristics.

Changes in vegetation community composition and structure within the Belvidere RNA would occur where non-native invasive plant species become established, soils compacted, or trails widen. Changes to vegetation community composition and structure would result in the long-term loss of research values, ecological site conditions, and ecological processes within the Belvidere RNA.

5.24 Tribal Rights and Interests

For tribal rights and interests, the CEA is larger than the analysis area for direct and indirect effects, encompassing lands administered by both the PNF and BNF, and other federal, state, and private lands within and adjacent to these National Forests (no figure). Cumulative effects to the Tribes extend well beyond NFS lands, and this larger area lends a broader landscape perspective to maintaining ecological sustainability in the National Forest, which support tribal rights and interests. The Nez Perce Tribe, Shoshone-Bannock Tribes, and the Shoshone-Paiute Tribes, and their traditional and cultural affiliations, trading networks, and other intertribal communication pathways existed long before current governmental and administrative boundaries and continue to exist irrespective of current delineations. For this reason, it is recognized that in addition to the SGP, other mining project developments expected to occur in the analysis area, Valley County, and possibly elsewhere in the region also may adversely affect traditional tribal cultural practices and places that have significance to tribal cultural identities.

Past actions on federal, state, and private land have impacted tribal interests in the CEA. Mining and other activities on federal lands have impacted tribal rights and interests primarily by restricting access, but also by removing natural resources protected under treaties. Many of the past human activities (primarily historic mining in the analysis area) were conducted prior to statutory and regulatory protection measures for natural and cultural resources resulting in the loss of an unknown number of tribal resources and practices.

Descriptions of specific past, present, and RFFAs considered as part of the cumulative effects analysis for all resources are described in **Section 5.1.2** and **Table 5.1-2** and associated impacts from these types of activities are summarized in **Table 5.24-1** to identify potential impacts for tribal rights and interests.

Table 5.24-1 Potential Cumulative Effects to Tribal Rights and Interests

Cumulative Project Type	Potential Effects to Tribal Rights and Interests
Mineral exploration and mining activities	Historic mines in the analysis areas have changed the landscape over time through removal of vegetation and displacement of soils. Currently planned or future mine development would further alter the landscape from its natural state during exploratory drilling, development, and operations. During exploratory drilling, development, and operations, the increased ground disturbance may disturb tribal treaty rights, access to usual and accustomed fishing places and springs, tribal resources, historic properties, sacred sites or places, TCPs, and CLs.

Cumulative Project Type	Potential Effects to Tribal Rights and Interests
Closure and Reclamation Projects/ Comprehensive Environmental Response, Compensation, and Liability Act Actions	Projects that are currently undergoing reclamation or will in the future would likely cause further damage to any tribal treaty rights, tribal resources, historic properties, sacred sites or places, TCPs, and CLs in the area. These projects would likely be closed and reclaimed, which involves the removal of some of the infrastructure and reclamation of the land to restore native wildlife and plant habitats that are important to Tribes, though mature forest types would not be available for decades. Several Removal Actions were conducted by the Forest Service, EPA, and Exxon-Mobil Corporation in the mine site and nearby. Perpetua is currently conducting such activities under a current ASAOC with EPA and Forest Service. Phase 1 of the ASAOC is aimed at improving site conditions by removing some hazardous waste and mine tailings and capping historic waste rock dumps.
Transportation projects	Road maintenance, improvement projects, and culvert replacements are likely in the analysis area. These types of improvements cause ground disturbance that represents a potential impact to tribal resources, historic properties, sacred sites or places, TCPs, and CLs. Maintenance of existing roadways would likely involve short-term construction activity, while new roadways would have a more permanent effect and would impact previously undisturbed areas. Also related to transportation projects are gravel quarry or gravel pit development to provide fill material for road construction. This would be a potential impact to any tribal resources present in those areas as it requires ground disturbance.
Infrastructure Development	Local communities perform upgrades in infrastructure such as electrical transmission lines. These development activities can cause ground disturbance that could impact tribal resources, access to usual and accustomed fishing places and springs, historic properties, sacred sites or places, TCPs, and CLs. These activities can introduce visual and solitude impacts to tribal religious sites.
Recreation and tourism	Recreational activities (i.e., camping, hiking, hunting, trapping, trail riding, firewood harvest, fishing, etc.) are likely to continue to impact traditional tribal resources. Increased road and trail networks open new areas to additional human disturbance, which can lead to potential vandalism, introduction of noxious or invasive weeds, displacement or destruction of treaty resources, and destruction of historic properties, sacred sites or places, TCPs, and CLs.
Wildfire, vegetation management, and noxious weed control projects	Wildfires and vegetation management such as prescribed fires have affected tribal resources throughout the analysis areas either by burning vegetation or by increasing visibility of Native American archaeological sites. Additional wildfires and vegetation management are likely to affect tribal resources in the future in the same way. Control of invasive and noxious plant species could have a minimal effect on tribal resources as mechanical or hand-pulling would increase ground surface visibility and would cause ground disturbance.
Watershed Management	This can involve repairs and reclamation of roads and recreation site repairs to prevent erosion into watersheds, but many projects involve only monitoring of erosion of roadway sediments into watersheds and this would not have an impact on tribal resources.

5.24.1 No Action Alternative

Cumulative effects associated with the No Action Alternative could occur with approved activities associated with the Golden Meadows Exploration Project or the proposed Stallion Gold Horse Heaven Exploration Project, such as exploratory drilling for mineral resources and construction of support facilities either by Perpetua or other groups on private land. Surface water quality associated with the mine site would improve to an extent due to the removal of legacy mining materials in contact with surface waters in Meadow Creek and the East Fork SFSR under the ASAOC. Tribal access to areas where vegetation management activities are taking place could be restricted during active prescribed fire. Cumulative impacts in the analysis area to tribal resources would be minimal in comparison with those under the action alternatives.

5.24.2 Action Alternatives

The 2021 MMP, taken together with other concurrent actions and RFFAs would create an increase in ground disturbance, visual and noise intrusions, increased public access in some areas and restricted access in other areas within the CEA. These cumulative actions would cause disturbances that may affect tribal traditional practices, access to usual and accustomed fishing places and springs, fisheries restoration activities, and resources of concern within the CEA. Further, cumulative impacts to other resources (such as water, fish, wildlife, vegetation, etc.) as identified in the preceding sections also constitute cumulative effects to tribal resources.

Cumulative effects to tribal rights and interests under the Johnson Creek Route Alternative would be similar to the 2021 MMP.

6.0 CONSULTATION AND COORDINATION

6.1 Public Participation Summary

The following sections describe and summarize the public participation activities that have occurred for the Project.

6.1.1 Public Scoping Period and Meetings

The Stibnite Gold Project has been published in both the Boise and Payette National Forests' Schedule of Proposed Actions (SOPA) since January 1, 2017. The NOI for the SGP EIS was published in the Federal Register on June 5, 2017. Additionally, a legal notice was published in two local newspapers on June 1, 2017; *The Idaho Statesman* in Boise, Idaho; and *The McCall Star News* in McCall, Idaho.

In-person open house public meetings were held in Cascade (June 27, 2017), McCall (June 28, 2017), and Yellow Pine (July 15 2017), and two meetings were held in Boise, Idaho (June 29, 2017).

The open house meetings provided a project overview, maps of the project area, and a forum for exchange of information and ideas or concerns related to the SGP. Comment forms were available at the meetings. The Forest Service, Perpetua, cooperating agencies, and AECOM representatives were present. Lists of individuals who signed attendance sheets at the public meetings are included in the Scoping and Issues Summary Report (AECOM 2018).

The Forest Service received a total of 536 submissions during public scoping. The Scoping and Issues Summary Report can be viewed here: https://www.fs.usda.gov/project/?project=50516.

6.1.2 EIS Mailing List

The initial public mailing list for scoping was compiled and scoping letters were sent out to 519 interested individuals, agencies, and groups. The list included persons and agencies the Forest Service determined may have interest in the Project from past experience, the mailing list for the Project was then revised to add those persons who provided comments in response to scoping, requested to be on the mailing list, signed a scoping meeting list, or responded to the e-mail request for mailing addresses Notifications of availability of the DEIS were sent to over 1,900 individuals.

6.1.3 Distribution of DEIS

A NOA for the DEIS was published in the Federal Register August 20, 2020 initiating a 60-day public comment period. Accompanying documents were also made available on the project webpage. Numerous individuals and several organizations requested an extension of the public comment period. The request was accommodated by extending the public comment period through November 4, 2020, resulting in a total overall public comment period of 75 days. Due to the COVID-19 pandemic, only a virtual, online project information room provided the public with an opportunity to ask questions, learn about the project, and provide comments. The room contained posters describing the SGP and its key effects along with descriptions of ways to submit comments and questions. In total, approximately 10,000 comment letters from individuals, tribal governments, Federal, State, and local agencies, organized interest groups, and businesses were received during the 75-day public comment period in response to the DEIS.

6.1.4 Distribution of Supplemental DEIS

After the public comment period for the SGP DEIS, Midas Gold (now Perpetua) revised their Plan to address potential impacts and public concerns. The comments received on the SGP DEIS were reviewed as additional scoping input during development of this SDEIS.

Upon publication of the NOA for the SDEIS in the Federal Register on October 28, 2022, a 60-day SDEIS public comment period was initiated. The SDEIS was distributed to interested parties identified in the updated EIS mailing list, as previously described, and made available via the Forest Service website. Accompanying documents and a virtual, online Story Map summarizing the SGP and key effects were made available on the project webpage. In addition, SDEIS reference documents, such as resource specialist reports, were available as linked documents on the Project webpage, except for information held as confidential per Forest Service procedures.

Individuals and several organizations requested an extension of the public comment period. The request was accommodated by extending the public comment period through January 10, 2023, resulting in a total overall public comment period of 75 days.

Public meetings were held to obtain comments on the SDEIS and to answer questions that the public had regarding the SGP or the EIS process. The dates and locations of the public meetings were as follows:

- December 6, 2022 McCall, Idaho
- December 7, 2022 Cascade, Idaho
- December 9, 2022 Boise, Idaho (two meetings)

Approximately 19,400 comment submissions were received during the public comment period. All substantive comments were considered and evaluated for revisions to the EIS. Responses to substantive comments were compiled and are presented in **Appendix B**.

6.2 Consultation with Agencies and Tribal Governments

6.2.1 Cooperating Agencies

The Forest Service is the lead federal agency for this EIS. Two federal agencies, four state agencies, and Valley County are serving as cooperating agencies for this EIS and are listed below. These cooperating agencies are informing the EIS process and providing input into certain issues addressed in the EIS, based on specific areas of jurisdiction by law and/or special expertise, and participating in development of an EIS that provides a full and fair disclosure of the probable impacts of the SGP, and that provides a sound basis for agency permit decisions. The following cooperating agencies assisted with the EIS preparation in several ways including providing research and baseline data information, reviewing scientific reports, identifying issues, assisting with the formulation of alternatives, assisting with comment response, and reviewing preliminary EIS content and other EIS materials.

- United States Army Corps of Engineers (USACE)
- United States Environmental Protection Agency (EPA)
- Idaho Governor's Office of Energy and Mineral Resources (OEMR)

- Idaho Department of Lands (IDL)
- Idaho Department of Water Resources (IDWR)
- Idaho Department of Environmental Quality (IDEQ)
- Valley County

6.2.2 Endangered Species Act Section 7 Consultation

The Forest Service is collaborating with USFWS and NOAA/NMFS to comply with consultation procedures intended to satisfy their requirements under the ESA and NEPA.

Consultation, for purposes of both ESA and NEPA compliance, should be sensitive to the concerns and needs of the consulting and cooperating agencies. The Forest Service collaborative process included utilizing regularly scheduled monthly meetings, primarily for informal consultation discussions on fish species. Informal consultation is important for a project with potential impacts to federally listed species as it provides an opportunity for the lead federal agency (i.e., Forest Service) to communicate and collaborate with the applicant, USFWS, NOAA/NMFS, and other state and local agencies, to gather important information while developing the Project's biological assessment (BA). Once the USFWS and NOAA/NMFS accepted the BA as complete, informal consultation ended and the SGP proceeded to formal consultation due to potential effects to the federally listed species.

6.2.2.1 Endangered Species Act

The ESA (16 USC Ch. 35 Section 1531 et seq. 1988) is federal legislation that is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and provide programs for the conservation of those species, thus preventing extinction of plants and animals. Aspects of the law pertaining to plants are administered by USFWS. The USFWS and NOAA/NMFS designate threatened, endangered, proposed, and candidate plant and wildlife species and their critical habitats under the ESA. Candidate species have no protection under the ESA, but they are often included in the NEPA process for early planning consideration. Section 7 of the ESA generally requires federal agencies, in consultation with the USFWS and NOAA/NMFS, to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the continued survival of any ESA-listed threatened or endangered plant or wildlife species, or to adversely modify their designated critical habitat.

Informal consultation on the Project began in 2017 and was completed in 2024. The pertinent letters, emails, meetings, and conference calls are summarized in a collaboration memo in the Administrative Record.

Formal consultation has now been initiated as the final BA has been deemed complete and has been accepted by USFWS and NOAA/NMFS. The U.S. Fish and Wildlife Service has jurisdiction over bull trout, Canada lynx, Northern Idaho ground squirrel, wolverine, monarch butterfly, and whitebark pine, while the National Marine Fisheries Service has jurisdiction over Chinook salmon, steelhead, and the killer whale. The following determinations were submitted to U.S. Fish and Wildlife Service and National Marine Fisheries Service for their review and concurrence: "may affect but is not likely to adversely affect" Southern Resident killer whale and critical habitat, Northern Idaho ground squirrel, and Canada lynx; "may affect, likely to adversely affect" Chinook salmon and critical habitat, steelhead and critical habitat, bull trout and critical habitat, North American wolverine, and whitebark pine; and "not likely to

jeopardize the continued existence" of the monarch butterfly. This FEIS is complying with the legal requirements set forth under Section 7 of the Endangered Species Act and Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act. The final decision will incorporate all the requirements set forth in the biological opinions from the U.S. Fish and Wildlife Service and National Marine Fisheries Service.

6.2.3 Tribal Consultation and Government-to-Government Consultation

The Forest Service collaborated with Tribal partners to comply with consultation procedures intended to satisfy their requirements under NEPA and also the NHPA to ensure consideration for tribal resources and concerns in the context of these requirements.

Inherent in the tribal consultation process is also consideration for guidance set forth in EO 13175 *Tribal Consultation and Coordination* and EO 13007 *Consultation with Tribes on Indian Sacred Sites.* EO 13175 outlines the process by which executive departments and agencies engage in regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications and are responsible for strengthening the government-to-government relationship between the United States and Indian Tribes. EO 13007 states that Federal agencies shall, to the extent practicable, accommodate access to, and use of, sacred sites by Indian religious practitioners, and to avoid adversely affecting the physical integrity of such sacred sites. Both EO 13175 and 13007 should be considered in the context of the NEPA and Section 106 consultation process.

Consultation, for purposes of both NEPA and NHPA compliance, consistent with EO 13175, EO 13007, SO 3206, SO 3403, and the 2022 Memorandum on Uniform Standards for Tribal Consultation, as well as CEQ Guidance for Federal Department and Agencies on Indigenous Knowledge, should be conducted in a manner recognizing the unique government-to-government relationship that exists between the federal government and tribes, should be respectful of tribal sovereignty, and should be sensitive to the concerns and needs of the Indian tribe or Native Hawaiian organization. The Forest Service collaborative process has included utilizing regularly scheduled periodic meetings to engage Indian tribes who may be interested or affected by the SGP, including the Nez Perce Tribe, Shoshone-Bannock Tribes, and the Shoshone-Paiute Tribes. The following sections describe the government-to-government consultation process and the framework within which the Forest Service implemented a collaborative process for tribal consultation in compliance with NEPA and the NHPA. Included in this collaborative approach is a process by which consulting parties, including Tribal partners, participate in the development of a PA designed to resolve adverse effects to historic properties under the NHPA Section 106 review process (**Section 6.2.4**).

6.2.3.1 Government-to-Government Consultation

The government-to-government relationship between federal agencies and federally-recognized tribes is a special relationship based on Tribal Sovereignty. The Forest Service is conducting government-to-government consultation regarding the SGP with the following federally-recognized tribes: the Nez Perce Tribe; Shoshone-Bannock Tribes; and the Shoshone-Paiute Tribes. This consultation process was initiated with the tribes through a notification letter from the Forest Service offering opportunities to participate in formal government-to-government consultation, to participate in the NEPA process as a cooperating agency, and/or to routinely receive information about the SGP.

Tribal governments have a special and unique legal and political relationship with the U.S. government as reflected in the U.S. Constitution, treaties, statutes, court decisions, executive orders, and memoranda. This relationship imparts a duty on all federal agencies to consult, coordinate, and communicate with American Indian tribes on a government-to-government basis.

The intergovernmental consultation process serves as the primary means for the federal agencies to carry out the United States' unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Consultation is not a single event, but instead is an informed process leading to a decision. Consultation means different things to different tribes. It can be either a formal process of negotiation, cooperation, and policy-level decision-making between tribal governments and the federal government, or a more informal process. Tribal rights, ideas, and interests are discussed and considered or incorporated into the decision. Tribal consultation is an on-going relationship between agencies and tribes, characterized by consensus-seeking approaches to reach mutual understanding and resolve issues. It may concern issues and actions that could affect the government's decision-making processes, or other tribal interests.

Consultation minimally serves five purposes:

- To identify and clarify issues;
- To provide for an exchange of existing information and identify where information is needed;
- To identify and serve as a process for conflict resolution;
- To provide an opportunity to discuss and explain the decision; and
- To recognize the unique legal relationship with Indian Tribal governments.

Because Native American tribes can be affected by the policies and actions of the Forest Service in managing the lands and resources under its jurisdiction, the Forest Service consults with them on matters affecting their interests. Because of this government-to-government relationship, efforts were made to involve local tribal governments and to solicit their input regarding the SGP.

The Forest Service first notified Nez Perce Tribe cultural resource staff about the SGP on March 1, 2017. Formal consultation with the Nez Perce Tribe was requested and initiated on May 23, 2017. The Nez Perce Tribe formalized opposition to the SGP in a resolution passed by the Nez Perce Tribal Executive Committee (the governing body of the Tribe) on October 9, 2018 and announced opposition in a press release the same day. Despite formal opposition to the SGP, the Tribe continues to participate in a previously established Project-specific informal consultation process, including discussion on ways to avoid, reduce, or mitigate impacts.

The Forest Service introduced the SGP to Shoshone-Paiute Tribal leadership during the Wings and Roots Program meeting (government-to-government consultation) on April 13, 2017. The Shoshone-Paiute Tribes do not conduct informal consultation; however, they have meetings between the Tribal Business Council Chair and the Forest Service Line Officers, with other members of the Council and/or tribal staff occasionally attending as well.

The SGP was formally presented to the Shoshone-Bannock Tribes Fort Hall Business Council and also informally to tribal staff on July 26, 2017. The Shoshone-Bannock Tribes expressed interest in the

Project. As a result, the Payette National Forest has engaged in formal and informal consultation on numerous occasions regarding aspects of the SGP and responded to Tribal comments on the DEIS and SDEIS.

Updates to each of these Tribes are provided in an ongoing basis during Project-specific, ad-hoc consultation meetings, and the Forest Service will continue to engage in government-to-government consultation throughout the NEPA process. Monthly staff-to-staff meetings are held between the Forest Service and the Nez Perce Tribe and the Forest Service and the Shoshone-Bannock Tribes. A consultation and coordination summary of consultation with the Tribes is available in the Tribal Rights and Interests Specialist Report (Forest Service 2023q) as well as the Project record.

The structure of formal government-to-government consultation is between tribal governing bodies (Executive Committee, Tribal Councils, Tribal Chairperson, traditional Chiefs, or those identified formally by a tribe's governing body as 'representative' of that tribe's interests) and Forest Service Line Officers. Staff-to-staff meetings usually include Forest Service technical specialists and tribal liaison and technical specialists.

USACE has been represented in one or more Project-specific Forest Service consultation meetings with each of these Tribes, in an informal capacity, to offer information on the CWA Section 404 permitting process.

The Nez Perce Tribe, Shoshone-Paiute Tribes, and Shoshone-Bannock Tribes were invited on April 30, 2020, to participate in development of a project-specific PA and associated HPTP and HPMP, which are being prepared to mitigate impacts and address Section 106 of the NHPA compliance.

The Forest Service remains available for government-to-government consultation with federally recognized tribes. Government-to-government consultation is an ongoing effort by the Forest Service to share information, answer questions, listen to concerns, and resolve issues.

6.2.4 NHPA Section 106 Process

6.2.4.1 NEPA and NHPA Policy Guidance and Process

Under the NEPA process, agencies evaluate the environmental and related social and economic effects of their federal action (40 CFR 1508.1(q)). Requirements in Sections 1501.2 and 1501.7 of the CEQ regulations call for the involvement of Tribes that may be affected by a federal proposal.

Review under the NHPA, often referred to as Section 106 review, is focused only on historic properties; defined in the NHPA (54 U.S.C. § 300308) as any "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on, the National Register of Historic Places, including artifacts, records, and material remains related to such a property or resource."

Although NEPA and the NHPA are two separate laws which require federal agencies to take into consideration the effects that a proposed project may have on historic properties, integration of the review process allows for efficiencies, promotes accountability and transparency in the consultation process, and encourages a broader discussion of potential effects to the human environment including historic

properties. Since Section 106 review must be completed prior to the completion of NEPA review, an integrated approach could include the combination of public involvement efforts, efforts to identify and assess potential effects to historic properties, and in the final stages of the process a path to resolve adverse effects. This approach not only meets the requirements and intent of Section 106 review, but it also informs the NEPA review process required to reach a ROD for a project. For projects where NHPA and NEPA compliance is required, the ACHP can be offered the opportunity to participate in the process and may offer guidance on the integration of reviews where they address potential effects to historic properties.

Under the NHPA process, agencies evaluate if there might be an effect to historic properties from a federal undertaking (36 CFR 800.16(y)). If an effect is identified, the agency proceeds with Section 106 review which involves identifying and assessing what historic properties could be affected by the project. The Section 106 process is by nature intended to be collaborative, and consulting parties should be included in and participate in the process. Consulting parties may include the State (or Tribal) Historic Preservation Officer, local government, interested federally recognized Indian tribes or Native Hawaiian organizations, and other interested parties. Historic preservation organizations and others with an interest in the preservation outcomes of the project or those with a legal or economic interest may also be invited to join Section 106 consultation.

The NHPA outlines when federal agencies must offer consultation with Tribes and the issues and other factors this consultation must address. Tribal consultation is required, if there is a potential affect to a tribe(s), in all steps of the Section 106 process when a federal agency undertaking may affect historic properties that are either (1) located on tribal lands, or (2) when any Indian tribe or Native Hawaiian organization attaches traditional use and/or religious or cultural significance to the historic property, regardless of the property's location. This consultation should take place through the formal government-to-government consultation process as described in the previous section. To reiterate, the intergovernmental consultation process serves as the primary means for the federal agencies to carry out their Section 106 responsibilities/obligations under Section 106 of the NHPA and NEPA. Because Native American tribes can be affected by the policies and actions of the Forest Service in managing the lands and resources under its jurisdiction, the Forest Service has a duty to consult with them on matters affecting their interests.

NHPA, Section 101(d)(6)(A) establishes that historic properties of "traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined to be eligible for inclusion" in the NRHP. Federal agencies are specifically instructed to consult with relevant Indian tribes or Native Hawaiian organizations when an undertaking may affect properties of traditional religious and cultural importance. These properties may be located on ancestral, aboriginal, or ceded lands of Indian tribes and Native Hawaiian organizations. The consultation requirement for properties of traditional religious and cultural importance applies regardless of the location of both the historic property and the Indian tribe or Native Hawaiian organization.

General principles for federal agencies in Section 106 tribal consultation include:

- Federal agencies shall ensure that tribal consultation in the Section 106 process provides the Indian tribe or Native Hawaiian organization with a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects.

- It is the responsibility of the federal agency to make a reasonable and good faith effort to identify Indian tribes and Native Hawaiian organizations that shall be consulted in the Section 106 process.

6.2.4.2 Development of the NHPA Programmatic Agreement

Through the Section 106 and NEPA review process, the Forest Service determined that the authorization of the SGP would result in adverse effects to historic properties and that the resolution of these adverse effects could be completed through the negotiation and eventual implementation of a project-specific PA.

Because of the SGP's size, scope, and alternatives under consideration, the Forest Service as the lead federal agency, initiated preparation of the PA as a management tool to address project effects on cultural resources and to minimize or resolve any potential adverse effects.

A PA outlines measures for compliance with Section 106 of the NHPA, including but not limited to: protocols for the identification and evaluation of historic properties; permitting requirements; treatment of historic properties; monitoring requirements; inadvertent discovery protocols; curation; and treatment of human remains. The SGP PA would identify known adverse effects to historic properties and provide a discussion of proposed mitigation measures that would be implemented. The SGP PA would also include a historic properties treatment plan and historic properties management plan to further refine the requirements for resolution of adverse effects and complete the Section 106 process. A PA is a legal document with signatories and concurring parties.

The Forest Service is collaborating with Consulting Parties in the development of the PA in order to comply with consultation procedures intended to satisfy their requirements under the NHPA and the NEPA. On April 30, 2020, the Forest Service initiated the consultation process for the development of the PA by extending invitations to participate in the process pursuant to the regulations of Section 106 of the NHPA to interested parties. Letters were sent to the Nez Perce Tribe, Shoshone-Paiute Tribes, and Shoshone-Bannock Tribes with a request for response within 30 days. Additionally, invitations were extended to the USACE, IPCo., Perpetua, the SHPO, and the ACHP.

The Forest Service collaborative process includes utilizing regularly scheduled periodic meetings to engage the identified Consulting Parties to the PA who are listed in **Table 6.2-1**.

Table 6.2-1 Programmatic Agreement Consulting Parties

Organization	Role in Project and PA
United States Department of Agriculture, United States Forest Service, Payette National Forest (Forest Service)	Lead Federal Agency, Signatory
Idaho State Historic Preservation Office (ID SHPO)	Section 106 Compliance, Signatory
Advisory Council on Historic Preservation (ACHP)	Signatory
Idaho Power Company (IPCo)	Invited Signatory
Perpetua Resources Idaho Inc. (PRII)	Project Proponent; Invited Signatory
Nez Perce Tribe	Consulting Party
Shoshone-Bannock Tribes	Consulting Party
Shoshone-Paiute Tribes	Consulting Party
United States Army Corps of Engineers (USACE)	Consulting Party
Mary Anne Davis	Consulting Party

Consultation and coordination with consulting parties to resolve adverse effects to historic properties in accordance with Section 106 of the NHPA will continue. A PA has been developed through discussions with the consulting parties to ensure that the requirements of Section 106 are satisfied.

6.3 List of Preparers and Reviewers

The SGP EIS was prepared under the supervision of the Forest Service. The individuals who contributed to the preparation of this document are listed here by organization, along with their Project role, education, and years of experience as appropriate (**Tables 6.3-1** through **6.3-4**).

The following Forest Service personnel were involved in review of the EIS documents and/or related Project documentation (**Table 6.3-1**).

Table 6.3-1 Forest Service

Forest Service Reviewer	Title
Matthew Davis	Forest Supervisor
Linda Jackson (PNF)	Forest Supervisor (retired)
Kevin Knesek (PNF)	Deputy Forest Supervisor
David Hogen (PNF)	Krassel District Ranger
Chris Bentley (BNF)	Cascade District Ranger
Jake Strohmeyer (BNF)	Sawtooth Forest Supervisor
Rick Rymerson (PNF)	Project Manager
Sitka Pence (WO)	Project Manager (former)
Kara Kirkpatrick-Kreitinger (PNF)	Forest Environmental Coordinator
Paul Klasner (PNF)	Natural Resources Staff Officer (former)
Jennifer Blake (PNF)	Recreation, Heritage, Lands and Minerals Staff Officer

Forest Service Reviewer	Title
Sarah Lau (PNF)	Recreation, Engineering, Archaeology, Lands and Minerals Staff Officer (retired)
Ronda Bishop (PNF)	Administration and Planning Staff Officer
Brian Harris (PNF)	Forest Public Affairs Officer and Tribal Liaison
Kellie Brown, ret. (PNF)	Administrative Assistant
Josh Simpson (PNF)	Forest Recreation Program Manager
Morgan Zedalis (PNF)	Heritage Resources Program Manager
Susie Osgood (BNF)	Forest Archaeologist (former)
Michael Wanzenried (BNF)	Forest Archaeologist (former)
Susan Miller (PNF)	Forest Ecologist (former)
Pleasant McNeel (R4) Brinda Ramanathan (R4)	Air Quality Program Manager
June Galloway (PNF)	Forest Wildlife Biologist (former)
Lisa Nutt (BNF)	Forest Wildlife Biologist
Todd Leeds (PNF)	Forest Hydrologist/R4 CERCLA On-Scene Coordinator
Kristin Williams (PNF)	Forest Botanist
Megan Heider (PNF)	Timber Program Manager
Jason Wright (PNF)	Forest Transportation Planner
Clayton Nalder (PNF)	Forest Fisheries Biologist
John Dixon (PNF)	Soil Scientist
William Perry (PNF)	Civil Engineer
Natalie Little (R4)	Regional Sustainable Operations & Climate Change Coordinator
Kathy Zamba (R4)	Environmental Engineer
Heidie Torrealday (R4)	Regional Geologist
Edward Gazzetti (WO)	Minerals and Geology Management - Hydrogeologist
Chris Miller (WO)	Economist
Bret Anderson (WO)	Physical Scientist
Jacob Deal (WO)	GHG ORISE Fellow
Catherine Doyle-Capitman (WO)	National-Level Social Scientist
Jennifer Purvine (WO)	Planning Biologist/IDT Leader (former)
Christine Bradbury (RO)	R1/R4 Tribal Liaison
Daniel Morris (RO)	Wilderness and Wild and Scenic River Program Manager
Amy Marshall (R4)	Idaho Roadless Coordinator (former)
Ilia Fiene (R4)	Landscape Architect

BNF = Boise National Forest; ORISE = Oak Ridge Institute for Science and Education; PNF = Payette National Forest; RO = Regional Office; R1 = Northern Regional Office; R4 = Intermountain Regional Office; ret = retired; WO = Washington DC Office

Table 6.3-2 Cooperating Agencies

Agency	Point of Contact
United States Army Corp of Engineers Walla Walla District Boise Regulatory Office 720 Park Boulevard, Suite 245 Boise, Idaho 83712	Ben Wilson Regulatory Project Manager
United States Environmental Protection Agency, Region 10 Policy and Environmental Review Branch U.S. EPA Region 10, Alaska Operations Office 1200 6th Avenue, Suite 155, MS 14-D12 Seattle, WA 98101-3144	Susan Sturges NEPA Reviewer
Idaho Department of Environmental Quality 1445 North Orchard Street Boise, Idaho 83706	Aaron Scheff Boise Regional Office Administrator
Idaho Department of Lands Payette Lakes Area Office 555 Deinhard Lane McCall, Idaho 83638	Diane Green Regulatory/Reclamation
Idaho Department of Water Resources 2735 Airport Way Boise, Idaho 83705	Manuel Rauhut, P.E. Staff Engineer
Governor's Office of Energy and Mineral Resources 304 North 8th Street, Suite 250 Boise, Idaho 83702	Jett Hawk Minerals Policy Analyst
Valley County Valley County Commission P.O. Box 1350 Cascade, Idaho 83611	Sherry Maupin Commissioner

Table 6.3-3 Third Party EIS Preparers – Stantec Consulting Services Inc.

Contributor	Project Role	Qualifications	Years of Experience
Brian Buck	Principal-In-Charge, NEPA Process, geology, hazardous materials	B.S., Geology M.S., Geological Engineering	46
George Fennemore	Project Manager, Proposed Action and Alternatives, Water Resources, Public Health & Safety, Environmental Justice	B.S., Mathematics M.S., Applied Mathematics Ph.D., Applied Mathematics	26
Greg Brown	Assistant Project Manager, Scenic Resources	B.S., Natural Resource Management (Wildlife Emphasis)	30
Jenni Prince Mahoney	Lead Author, Heritage Resources, Tribal Rights and Interests, Recreation	B.A., Anthropology Graduate Certificate, NEPA	30

Contributor	Project Role	Qualifications	Years of Experience
Ben Veach	Project Administrator, Noise, Transportation, Land Use & Management	B.S., Forestry	36
Stephanie Theis	Fisheries	B.S., Fisheries Ecology Graduate Education in Applied Ecology and Conservation Biology - Fish	32
Matt Brekke	Botanical Resources, Wildlife	B.S., Wildlife Biology; Minor: Fishery Biology	16
Melany Gagliardi	Administrative Record, Public Involvement (former)	A.A., Accounting	10
Hayley Barnes	Administrative Record, Project Coordination	B.S., Range Management	8
Cory Bolen	GIS Team Lead	B.S., Forest Resources – Ecosystem Management M.S., Forest Sciences w/emphasis in Geographic Information Systems (GIS), Ecology and Spatial Statistical Modeling	20
Dave Kikkert	Wetlands	B.S, Fisheries and Wildlife M.S., Ecology	20
Eric Clark	Air Quality, Climate Change	B.S., Environmental Science M.S., Civil Engineering	16
Ellen Brady	Heritage Resources, Programmatic Agreement	B.S., Anthropology M.A., Anthropology	25
Sierra Marke	Soils, Special Designations, Recreation, Noise	B.A., Geology - Environmental Science	2
Jen Sojka	Social and Economic Resources	B.A., Biology M.S., Biological Sciences	6
Shelby Hockaday	Scenic Resources, Transportation	B.S., Earth Sciences: Geography M.S., Geography	5
Jessica Jarvis	GIS	B.A., Environmental Studies	8
Chris Johnson	GIS (retired)	B.S., Geology	38
Jason Trook	GIS	B.A., Anthropology M.S., Geography	19
Bobby Taylor	GIS	B.A., Geography	8

Table 6.3-4 Third Party EIS Preparers – Subcontractors

Contributor	Project Role	Qualifications	Years of Experience
Derek Risso Ecosystem Sciences	Fish Resources and Fish Habitat, Stream Restoration, Fisheries, Water Rights and Resources	B.A. Environmental Studies M.S. Fisheries and Wildlife Science	24
Zach Herzfeld Ecosystem Sciences	Fish Resources and Fish Habitat	B.A. International Business/Spanish M.S. Geography	12
Tim Maguire Ecosystem Sciences	Fish Resources and Fish Habitat	B.A. Environmental Studies M.S. Geography	25
Kristi Schaff Nexus Environmental Consultants	NEPA documentation	B.S., Land Rehabilitation with a minor in Soils	18

6.4 Mailing List

A complete mailing list is in the Administrative Record.

6.4.1 Federal Agencies

- Acquisition and Serials Branch
- Forest Service, Boise National Forest
- Forest Service, Cascade Ranger District
- Forest Service, Intermountain Regional Office
- Forest Service, Payette National Forest
- Forest Service, Salmon-Challis National Forest
- National Oceanic Atmospheric Administration, National Marine Fisheries Service
- Office of Environmental Policy and Compliance
- United States Army Corps of Engineers
- United States Bureau of Reclamation
- United States Department of Justice
- United States Environmental Protection Agency
- United States Fish and Wildlife Services

6.4.2 State Agencies

- Idaho Congressional Representatives
- Idaho Department of Commerce
- Idaho Department of Environmental Quality
- Idaho Department of Fish and Game
- Idaho Department of Labor
- Idaho Department of Lands
- Idaho Department of Water Resources
- Idaho Governor’s Office of Energy and Mineral Resources (OEMR)

- Idaho House of Representatives
- Idaho State Historic Preservation Office
- Idaho State Historical Society
- Idaho State Senate
- Office of Governor Brad Little

6.4.3 Tribes

- Nez Perce Tribe
- Shoshone-Bannock Tribes
- Shoshone-Paiute Tribes

6.4.4 Local Government

- Ada County Commissioners
- Adams County Commissioners
- Boise County Commissioners
- Cascade Chamber of Commerce
- Cascade School District #422
- City of Cascade
- City of Donnelly
- City of McCall
- City of Riggins
- Valley County Board of County Commissioners

6.4.5 Organizations and Businesses

- 8th Street Marketplace
- Academy Mortgage
- Advocates for the West
- Alliance for the Wild Rockies
- American Exploration & Mining Association
- Ameriben
- Amerigas Propane
- Backcountry Recreation Club
- Blue Ribbon Coalition
- Bob Bate Ford
- Boise Valley Fly Fisherman
- Cascade Medical Center
- Center for Biological Diversity
- Columbia River Inter-Tribal Fish Commission
- Deadwood Outfitters
- Donnelly Rural Fire Protection District
- Earthworks
- Elk Springs Outfitters

- Fly Fishers of Idaho
- Formation Capital Team
- Golden Eagle Audubon
- Golden Predator
- Granite Excavation, Inc.
- Greater Garden Valley Areas Chamber of Commerce
- Hecla Mining Company
- Idaho Association of Commerce & Industry
- Idaho ATV Association
- Idaho Chapter, United Women Entrepreneurs
- Idaho Conservation League
- Idaho First Bank
- Idaho Junior Steelheads
- Idaho Mining Association
- Idaho Outfitters and Guides
- Idaho Power Company
- Idaho Recreation Council
- Idaho Rivers United
- Idaho Snowmobile Association
- Idaho State Bowhunters
- Idaho State Snowmobile Association
- Idaho Whitewater Association
- Idaho Wildlife Federation
- IDAK Consulting Inc.
- Intermountain Forest Association
- Ivy Minerals, Inc.
- Jerry's Auto Parts
- JJO LLC
- J.R. Simplot Company
- Juniper Mountain Outfitters
- Kniefel Insurance
- Leavitt & Associates Engineers Inc.
- May Security
- McCall Area Snowmobile Club
- Midas Gold Idaho, Inc.
- Mile High Power Sports
- Mining Minnesota
- Mink Geohydro Inc.
- Monsanto
- Norell Ranch
- Northwest Whitewater
- Outsider Club

- Pistol Creek Outfitters
- Press in the Pines
- Rocky Mountain Elk Foundation
- Rocky Mountain Signs
- ROSE Advocates
- Sierra Club – Idaho Chapter
- Sulphur Creek Ranch Outfitters
- Teck America Incorporated
- The Cascade Store Employees and Owners
- The Lilypad, LLC
- The McCall Candy Company LLC
- The McCall Store LLC
- The Nature Conservancy
- The Wilderness Society
- Treasure Valley Backcountry Horsemen
- Treasure Valley Trail Machine Association
- Trout Unlimited
- Valley Soil & Water Conservation District
- Wapiti Meadows Ranch
- Warm Lake Users Association
- West Mountain Snowmobile Club
- Western Lands Project
- Western State Equipment Company
- Winter Wildlands Alliance
- Women's Mining Coalition
- Yellow Pine Fire Protection District
- Yellow Pine General Store
- Zena Creek Ranch

6.4.6 Individuals

Over 26,968 individuals and groups are currently on the existing mailing list.

7.0 REFERENCES, ACRONYMS, GLOSSARY, AND INDEX

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7.2 Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
µg/L	micrograms per liter
µg/m^2-yr	micrograms per square meter per year
µg/m^3	micrograms per cubic meter
2021 MMP	2021 Modified Mine Plan
AA	assessment area
AAC	acceptable ambient non-carcinogenic concentration
AACC	acceptable ambient carcinogenic concentration
AADT	annual average daily traffic
AASHTO	American Association of State Highway and Transportation Officials
ABA	Acid-base accounting
AC	Alternating Current
ACHP	Advisory Council on Historic Preservation
AECOM	AECOM Technical Services, Inc.

AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AHI	Avalanche Hazard Index
amsl	above mean sea level
ANFO	ammonium nitrate and fuel oil
AOC	Administrative Order on Consent
AoD	areas of previous disturbance
AP	Acidification Potential
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
AQRV	Air Quality Related Value
ASAOC	Administrative Settlement Agreement and Order of Consent
ASQ	Allowable Sale Quantity
AST	aboveground storage tank
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	All-terrain vehicle
B.P.	years before present
BA	biological assessment
BCY	bank cubic yards
BGEPA	Bald and Golden Eagle Protection Act
BGMU	Big Game Management Units
bgs	below ground surface
BLM	Bureau of Land Management
BM	ball mill
BMC	Bradley Mining Company
BMP	Best Management Practice
BNF	Boise National Forest
Boise Forest Plan	Boise National Forest Land and Resource Management Plan
BOR	U.S. Bureau of Reclamation
BT	bull trout
bTC	boulder typic cryorthents
Ca	calcium
CAA	Clean Air Act
$CaCO_3$	calcium carbonate
CASTNET	Clean Air Status and Trends Network
CCC	criterion continuous concentration
CCD	Census County Subdivision
CE	categorical exclusion
CEA	cumulative effects analysis area
Census	U.S. Census Bureau
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System

CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
CIL	carbon in-leach
CIP	carbon in-pulp
CL	cultural landscape
Cl-	chloride
CMC	criterion maximum concentration
CMP	Compensatory Mitigation Plan
CO	carbon monoxide
CO_2	carbon dioxide
CO_2eq	carbon dioxide equivalent
COLD	cold water aquatic life
CR	County Road
CRMO	Craters of the Moon National Monument
CS	Chinook Salmon
CTB	Centennial Tectonic Belt
cTH	typic halsoparists
CUP	Conditional Use Permit
CWA	Clean Water Act
DA	Department of the Army
DAC	Dynamic Avalanche Consulting
DAT	Deposition Analysis Thresholds
dB	decibels
dBA	decibels on the A-weighted scale
DD	detrimental soil disturbance
DEIS	Draft Environmental Impact Statement
DFRM	Nez Perce Tribe Department of Fisheries Resource Management
dm	decimeter
DMEA	Defense Minerals Exploration Administration
DPS	distinct population segment
DRSF	Development Rock Storage Facility
DSHA	deterministic seismic hazard analysis
DWS	drinking/domestic water supply
EA	Environmental Assessment
East Fork SFSR	East Fork South Fork Salmon River
EDFs	Environmental Design Features
eDNA	environmental DNA
EFH	essential fish habitat
EFMC	East Fork Meadow Creek
EIS	Environmental Impact Statement
EMF	electromagnetic field
EMMP	Environmental Monitoring and Management Plan
EO	Executive Order

EOY	end of mine year
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
ESA	Endangered Species Act
ESS	Ecosystem Sciences, LLC
FA	functioning appropriately
FAA	Federal Aviation Administration
FCRNRW	Frank Church River of No Return Wilderness
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
fOD	frigid oxyaquic dystrocryepts
FOMP	Fishway Operations and Management Plan
Forest Service	U.S. Department of Agriculture Forest Service
FR	Functioning at Risk
FR	Forest Road
FRTA	Forest Roads and Trails Act
FSH	Forest Service Handbook
FSM	Forest Service Manual
FTA	Federal Transit Administration
fTH	frigid typic haplosaprists
FUR	Functioning at Unacceptable Risk
g/ha-yr	grams per hectare-year
GCL	geosynthetic clay liner
GDE	groundwater dependent ecosystem
GHG	greenhouse gas
GIS	Geographic Information System
GM	growth material
GMM	ground motion models
GMS	growth media stockpile
GMU	game management unit
GOSPEL	Gospel Hump
gpd	gallons per day
gpm	gallons per minute
GPS	global positioning system
H:V	horizontal to vertical
H+	free acidity
H_2SO_4	sulfuric acid mist
HAC	hot arsenic cure
HAP	Hazardous Air Pollutant
HCN	hydrogen cyanide
HCT	humidity cell test
HDPE	high-density polyethylene
HDR	HDR Engineering, Inc.

HECA	Hells Canyon Wilderness
Hecla	Hecla Mining Company
HEMBLD	Hemingway-Boulders
HFC	hydrofluorocarbon
Hg	mercury
HNO_3	nitric acid
HPMP	Historic Properties Management Plan
HPTP	Historic Properties Treatment Plan
HRV	historical range of variability
HUC	Hydrologic Unit Code
HV	Heavy Vehicle
ICCNAC	Idaho Centennial Commission Native Americans Committee
ICMC	International Cyanide Management Code
ICT	Idaho Centennial Trail
ICTRT	Interior Columbia Technical Recovery Team
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDHW	Idaho Department of Health and Welfare
IDL	Idaho Department of Lands
IDWR	Idaho Department of Water Resources
IMPLAN	A company that specializes in economic impact data and analytical software
IMPROVE	Interagency Monitoring of Protected Visual Environments
IOGLB	Idaho Outfitters and Guides Licensing Board
IP	Intrinsic Potential
IPCC	Intergovernmental Panel on Climate Change
IPCo	Idaho Power Company
IPDES	Idaho Pollutant Discharge Elimination System
ips	inches per second
IRA	Inventoried Roadless Area
IRMA	Initiative for Responsible Mining Assurance
ISDA	Idaho State Department of Agriculture
ISO	International Organization for Standardization
ITD	Idaho Transportation Department
K	potassium
kg	kilogram
kg/ha-yr	kilograms per hectare per year
km	kilometer
kPa	kilopascal
KOP	key observation point
kV	kilovolt
LANDFIRE	Landscape Fire and Resource Management Planning Tools Project
LAU	Lynx Analysis Unit
lbs/ft^2	pounds per square foot

LCAS	Lynx Conservation Assessment and Strategy
L_{DN}	day-night noise level
L_{EQ}	Equivalent sound level
L_{EQ1h}	Average hourly noise level
LOM	Life-of-Mine
LS	limestone
LV	light vehicle
m^3	cubic meter
MA	Management Area
Ma	million years ago
MBF	thousand board feet
MBR	membrane bioreactor
MBTA	Migratory Bird Treaty Act
MCE	Maximum Credible Earthquake
MCFZ	Meadow Creek Fault Zone
MCL	maximum contaminant level
mCP	typic cryopsamments
MDN	Mercury Deposition Network
MeHg	methylmercury
Mg	Magnesium
mg	milligram
mg/kg	milligrams per kilograms
mg/L	milligrams per liter
Midas Gold	Midas Gold Idaho, Inc.
Mining Law	General Mining Law of 1872
MIS	Management Indicator Species
ML	Maintenance Level
MMBtu	Million British thermal units
MMP	modified mine plan
MMT	million metric ton
ModPRO	revised Plan of Restoration and Operations
ModPRO2	modified Plan of Restoration and Operations
MPC	management prescription category
MPG	major population group
mph	miles per hour
MRR	Mandatory Reporting of Greenhouse Gas Rule
MRS	Minimum Road System
MSGP	Multi-Sector General Permit
MSHA	Mine Safety and Health Administration
MT	metric ton
mTC	mixed typic cryorthents
MW	megawatt
MWAM	Montana Wetland Assessment Method
MWh	megawatt hour

MWMP	Meteoric Water Mobility Procedure
N	Nitrogen
N/A or NA	not available/applicable
N_2O	nitrous oxide
Na	sodium
NAAQS	National Ambient Air Quality Standards
NADP	National Atmospheric Deposition Program
NAG	Net Acid Generation
NAGPRA	Native American Graves Protection and Repatriation Act
ND	no data
NDSP	National Dam Safety Program
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFMA	National Forest Management Act of 1976
NFS	National Forest System
NFST	National Forest System Trail
ng/L	nanograms per liter
NH_4	ammonium
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NIDGS	Northern Idaho ground squirrel
NMFS	National Marine Fisheries Service
NNP	Net Neutralizing Potential
NO_2	nitrogen dioxide
NO_3	nitrate
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NO_X	nitrogen oxides
NP	Neutralizing Potential
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPR	neutralizing potential ratio
NPS	National Park Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NRM	Natural Resource Manager
NSHM	National Seismic Hazards Map
NSPS	New Source Performance Standards
NSR	Noise Sensitive Receiver
NTCRA	Non-Time Critical Removal Action
NTN	National Trends Network
NTU	Nephelometric Turbidity Unit
NWPS	National Wilderness Preservation System

NWS	National Weather Service
O&M	operations and management
O_3	ozone
OEMR	Idaho Governor's Office of Energy and Mineral Resources
OHV	off-highway vehicle
OHWM	ordinary high-water mark
OM	occupancy modeling
ORV	Outstandingly Remarkable Value
OSHA	Occupational Safety and Health Administration
OSV	over-snow vehicle
P.L.	Public Law
PA	Programmatic Agreement
PAB	palustrine aquatic bed
PAG	potentially acid generating
Payette Forest Plan	Payette National Forest Land and Resource Management Plan
Pb	lead
PCR	primary contact recreation
PEM	palustrine emergent marsh
Perpetua	Perpetua Resources Ltd.
PFC	perfluorocarbon
PFO	palustrine forested
PGA	peak ground acceleration
PGM	photochemical grid modeling
PHABSIM	Physical Habitat Simulation System
PIBO	PACFISH/INFISH Biological Assessment
PIF	Partners in Flight
Pioneer	Pioneer Metals Corporation
Plan	modified Plan of Restoration and Operations
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 microns or less
PMU	Population Management Unit
PNF	Payette National Forest
POD	Plan of Development
POI	probability of instability
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PRISM	Parameter-Elevation Regressions on Independent Slopes Model
Project	Stibnite Gold Project
PRSB	Payette River Scenic Byway
PSD	Prevention of Significant Deterioration
PSHA	probabilistic seismic hazard analysis
PSS	palustrine scrub-shrub

PTC	Permit to Construct
PVG	Potential Vegetation Group
RAMP	Restoration and Access Management Plan
RCA	Riparian Conservation Area
RCM	reclamation cover material
RCNM	Roadway Construction Noise Model
RCP	Representative Concentration Pathways
RCRA	Resource Conservation and Recovery Act
RFAI	Request for Additional Information
RFFA	Reasonably Foreseeable Future Action
Rio ASE	Rio Applied Science and Engineering
RNA	Research Natural Area
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	right-of-way
S45+	sandy-skeletal/loamy-skeletal, mixed typic cryorthents
S	Sulfur
SAG	semi-autogenous grinding
SAWT	Sawtooth Wilderness
SBM	seed bank material
SCR	secondary contact recreation
SDEIS	Supplemental Draft Environmental Impact Statement
SELW	Selway-Bitterroot Wilderness
SF_6	sulfur hexafluoride
SFSR	South Fork Salmon River
SGCN	Species of Greatest Conservation Need
SGLF	Stibnite Gold Logistics Facility
SGP	Stibnite Gold Project
SH	State Highway
SHA	seismic hazard analysis
SHPO	State Historic Preservation Office
SIL	Significant Impact Level
SIP	State Implementation Plan
SMU	Soil map unit
SNOTEL	Snow Telemetry
SO_2	sulfur dioxide
SO_4	sulfate
SODA	Spent Ore Disposal Area
SOPA	Schedule of Proposed Actions
SPCC	Spill Prevention, Control and Countermeasure
SPLNT	Stream and Pit Lake Network Temperature
SRK	SRK Consulting
SS	salmonid spawning
ST	Steelhead/Redband/Rainbow Trout

Stantec	Stantec Consulting Services Inc.
sTC	stoney typic cryorthents
STRATA	Strata, Inc.
SULA	Sula Peak, Selway-Bitterroot Wilderness
SUP	Special Use Permit
Superior	Superior Oil Company
SWPPP	stormwater pollution prevention plan
T-RACT	Toxic Reasonably Available Control Technology
TCP	traditional cultural properties
TCRA	Time Critical Removal Action
TDS	total dissolved solids
TEPC	Threatened, Endangered, Proposed or Candidate
Tierra Group	Tierra Group International Ltd.
tpd	tons per day
tpy	tons per year
TSF	Tailings Storage Facility
TSP	total suspended particulate
TSPQ	Total Sale Program Quantity
TSRC	Total Soil Resource Commitment
TSS	total suspended solids
U.S.	United States
URS	URS Corporation
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
UTV	utility task vehicle
VAV	Visual, Auditory, and Vibratory
VCMQI	Vegetation Classification Mapping and Quantitative Inventory
VHF	very high frequency
VISCREEN	EPA visibility impairment screening model
VMS	Visual Management System
VOC	volatile organic compounds
vpd	vehicles per day
VQO	Visual Quality Objective
WAD	weak acid dissociable
WCI	Watershed Condition Indicators
WCS	Wildlife Conservation Strategy
WEFZ	West End Fault Zone
WHTCLD	Cecil D. Andrus—White Clouds
WOTUS	waters of the United States

WQBEL	Water Quality Based Effluent Limitation
WRCC	Western Regional Climate Center
WSC	westslope cutthroat trout
WSR	Wild and Scenic River
WTP	Water Treatment Plant
WUA	Weighted Useable Area
YPP	Yellow Pine Pit
YWAM	Youth with a Mission

7.3 Glossary

A-run fish – Snake River steelhead that return to a stream after one year in the ocean.

Abiotic – Physical rather than biological; not derived from living organisms.

Acid rock drainage – The outflow of acidic water from metal mines (or coal mines) derived from the oxidation of sulfide minerals in rock.

Activity area – The region of NFS lands within a watershed that is used to evaluate total soil resource commitment and detrimental disturbance.

Adaptive Management – A type of natural resource management in which decisions are made as part of an ongoing process. Adaptive management involves testing, monitoring, evaluation, and incorporating new knowledge into management approaches based on scientific findings and the needs of society (Forest Service 2003).

Adit – A horizontal or near horizontal passage leading into an underground mine for the purposes of access or draining.

Alaskite – A granitic rock composed of quartz and alkali feldspars.

Alkalinity – A chemical measurement of a water's ability to neutralize acids.

Alluvial/Alluvium – A deposit of clay, silt, sand, and gravel left by flowing streams in a river valley.

Antimony – Natural element with the symbol Sb and atomic number 51; a lustrous gray metalloid in native form; used in batteries, munitions, fire retardants, and ball bearings, among others.

Aquifer – A water-bearing layer of rock, sand, or gravel.

Aquifer cross-flow – Vertical groundwater flow from one part of a body of rock to another.

Arsenic - Natural element with the symbol As and atomic number 33; a metallic element with a steel - grey appearance in native form.

Arterial Road – An NFS road that provides service to large land areas and usually connects with other arterials roads or public highways.

Autoclave – A vessel used to carry out industrial processes requiring elevated temperature and pressure relative to ambient air temperature and pressure.

B-run fish – Snake River steelhead that return to a stream after two to four years in the ocean.

Backfill – Material used to fill a void created by mining.

Ball Mill – A type of mechanical fine grinder that uses a horizontal rotating cylinder partially filled with balls, usually metal, which grinds material to a specified particle size by friction and impact with the tumbling balls.

Bankfull – The water level at which a stream, river or lake is at the top of its banks and any further rise would result in water overtopping a bank and moving into the flood plain.

Bedrock – Solid rock underlying unconsolidated surface materials, such as gravel, soil, or alluvium.

Bench – In open pit mines and quarries, the ledge which forms a single level of operation where ore and/or development rock is excavated.

Benthic – Pertaining to the bottom of a body of water.

Bentonite – A soft, plastic, light-colored clay formed by chemical alteration or volcanic ash.

Berm – An artificial ridge or embankment constructed of soil or rock to limit the movement of people or equipment across a certain line or border.

Biota – Living material. The flora and fauna of an area (Forest Service 2003).

Boreal – Northern, cold habitat areas with conifer trees.

Borrow material – Rock, gravel and sand, typically excavated from one area to be used as fill material in another area (especially road construction).

Burntlog Route – The proposed mine access route for operations and reclamation under the 2021 MMP. Burntlog Route would start at Landmark on Burnt Log Road (FR 447) and continue on Burnt Log Road until it ends. Approximately 15 miles of new road would be constructed to connect the existing Burnt Log Road to Meadow Creek Lookout Road (FR 51290) and then new road to connect to Thunder Mountain Road (FR 50375) and into the Operations Area Boundary past the proposed worker housing facility.

Calc-silicate – A metamorphic rock consisting mainly of calcium-bearing silicate minerals such as diopside and wollastonite; formed by metamorphism of impure limestone or dolomite.

Candidate species – Plant and animal species being considered for listing as endangered or threatened, in the opinion of the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS). Category 1 candidate species are groups for which the FWS or NMFS has sufficient information to support listing proposals; category 2 candidate species are those for which available information indicates a possible problem, but that need further study to determine the need for listing (Forest Service 2003).

Canopy cover – Total non-overlapping cover of all trees in a vegetative unit excluding the seedling size class. Trees in the seedling size class are used to estimate canopy cover only when they represent the only structural layer on the site (Forest Service 2003).

Cessation – Temporary or complete stopping.

Cherry Stem Roads – Roads that extend into an Inventoried Roadless Area or wilderness area are called cherry stemmed roads because the boundary resembles a cherry stem.

Cirque – A bowl-shaped valley produced by glacial action in high mountains.

Closure - The processes undertaken during construction and operations (concurrent closure), during temporary cessation of operations (interim closure), and when the operational stage of a mine has ended (final closure) to decommission operational activities and rehabilitate the ground surface to its intended post-mining land use, usually in conformity with a predetermined Land Management Plan or government approved plan or permit.

Collar – The surface at the top of a shaft or decline; or the start of a drill hole.

Collector Road – An NFS road that serves smaller areas than an arterial road and that usually connects arterial roads to local roads or terminal facilities.

Colluvium – Unconsolidated sediments that have been deposited at the base of hillslopes by either rainwash, sheetwash, slow continuous downslope creep, or a combination of these processes.

Concentrate – The valuable fraction of ore that is left after non-economic rock material is removed in processing. This material is what is sent for further processing, usually to a refinery or smelter.

Concurrent closure – Closure completed during the active construction and operations stages of a mining project.

Concurrent reclamation – Reclamation completed during active construction and operations.

Confined Aquifer – An aquifer below the land surface that is saturated with water. Layers of impermeable material are both above and below the aquifer.

Conifer – Trees with needle-like foliage and seeds borne in cones.

Contact Water – Water that has come in contact with disturbed and/or mining materials and could pick up pollutants and have a potential to carry these pollutants to groundwater or surface water.

Contouring – Reshaping ground material into a final landform.

Conveyor – Mechanical infrastructure, generally electrically driven, which extends from a receiving point to a discharge point and conveys, transports, or transfers material between those points.

Core – Cylindrical samples of rock removed from a drill hole for analysis.

Cultural Landscape - A geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes (Forest Service 2015; NPS 2020).

Culturally Modified Tree - Trees that have been modified or scarred by humans either prehistorically or historically (Reiser and Huckaby No Date). Modifications can include bark/cambium removal, trail blazes, territorial or boundary markers, deliberately bent limbs or trunks, delimbing, and use of a living tree as a structural element. Additionally, culturally modified trees can include arborglyphs or tree carvings often made historically by sheepherders and others passing through the area.

Cumulative effects – Impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (Forest Service 2003).

Cyanide – A naturally occurring organic compound composed of carbon and nitrogen (CN). The solid chemical compound, sodium cyanide (NaCN), is dissolved in water to form a solution suitable for the extraction of gold and silver from ore by using a leaching process.

Cyanidation – A type of ore processing facility where prepared ore is exposed to aqueous cyanide under a set of specific, controlled conditions to extract gold and silver.

dBa – Noise measurement scale (decibels) that is A-weighted (i.e., decibel values of sounds at low frequencies are reduced, compared with unweighted decibels, in which no correction is made for audio frequency).

Debris flow –A mass of soil and/or fragmented rock in slurry of water that moves downslope under the influence of gravity and forms muddy deposits in valley floors.

Decant – To draw off a liquid so as not to disturb the sediment, with the goal being to separate water from sediment and fines.

Decline – A sloped passageway from the surface to where a mineral deposit is located, large enough to allow workers and equipment to access the mineral.

Degrade – To measurable change a resource condition for the worse within and identified scale and time frame. Where existing conditions are within the range of desired conditions, "degrade" means to move the existing condition outside of the desired range. Where existing conditions are already outside the range of desired conditions, "degrade" means to change the existing condition to anything measurably worse. The term "degrade" can apply to any condition or condition indicator at any scale of size or time, but those scales need to be identified. This definition of "degrade" is not intended to define degradation for the State of Idaho as it applies to their Antidegradation Policy (IDAPA 58.01.02) (Forest Service 2003).

Delineate – To mark the outlines of and/or to describe, portray, or set forth with accuracy or in detail.

Denning habitat or sites – Habitat and locations used by mammals during reproduction and rearing of their young, when the young are highly dependent on adults for survival (Forest Service 2003).

Deposit – An accumulation of natural resources, such as gold and silver, other minerals, metals, coal, oil, gas, etc. that may be pursued for its intrinsic value; e.g., a gold and silver deposit.

Deposition – Physical mechanisms, which can be either wet or dry, that convey airborne pollutants to soil and surface water.

Design feature – Is an impact-reducing action or design that Perpetua has committed to in their Plan of Restoration and Operations and supporting documents.

Desired Condition (DC/DFC) – Also called Desired Future Condition (DFC), a portrayal of the land, resource, or social and economic conditions that are expected in 50- 100 years if management goals and objectives are achieved. A vision of the long-term conditions of the land (Forest Service 2003).

Detrimental Disturbance (DD) – Disturbance of a soil that effects its productivity, hydrologic function, or environmental health.

Development Rock – The rock that must be removed and disposed of to gain access to and excavate ore. Development rock typically contains no commercial antimony, gold or silver values. See also: waste rock.

Discharge – The volume of water flowing past a point per unit time; commonly expressed as cubic feet per second (cfs) or gallons per minute (gpm).

Dissolved oxygen – The amount of free oxygen dissolved in water, expressed in milligrams per liter (mg/L), parts per million (ppm), or in percent of saturation, i.e., with saturation reported relative to the maximum amount of oxygen that can theoretically be dissolved in water at a particular altitude and temperature.

Drainage basin – An extent or an area of land from which surface water runoff from rain and melting snow or ice converges to a single point, usually the exit of the basin, where the waters join another waterbody, such as a river, lake, reservoir, estuary, wetland, sea, or ocean.

Drill hole – A cylindrical hole advanced into the subsurface to retrieve and examine/analyze material for the purpose of mineral exploration, geotechnical characterization, or to construct a well.

Drill jumbo – A drilling jumbo consists of one, two or three rock drill carriages, sometimes a platform, which the miner stands on to load the holes with explosives that clears the face of the tunnel.

Drilling fluid – Water and biodegradable, synthetic polymer mud products used to suspend and remove cuttings, maintain hole stability, minimize formation damage, and cool and lubricate the drilling bit and assembly during drilling.

Drill pad – A leveled location from which a drilling rig may advance one or more drill holes.

Drill rig – A diesel-powered machine used to cut the drill holes and retrieve samples and may be used to construct a well in the drill hole.

Doré – A metal alloy bar with gold content that ranges from 60 to 95 percent of gold. Doré would be produced at the mine site and then shipped offsite for further refining.

Embankment – A linear structure, usually constructed of earth or rock, extending above the natural ground surface to retain water or tailings.

Energy Dissipaters – Structures, usually built of rock or concrete, to disrupt and steady the flow of water; frequently constructed in stream channels, drainage ditches, or spillways.

Enhancement – The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area (CWA Section 404).

Environmental Justice – Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EO 12898 states, "Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands."

Ephemeral stream – A stream or portion of a stream that flows only in direct response to precipitation or run-off events, and that receives little or no continuous water from springs, snow, or other sources. Unlike intermittent streams, an ephemeral usually does not have a defined stream channel or banks, and its channel is at all times above the water table (Forest Service 2003).

Equalization tanks – Holding tanks that allow for provision of steadier outflow with variable inflow.

Erosion – The wearing away of the land surface by running water, wind, ice or other geologic processes.

Escape Raise – A raise refers to a vertical or inclined excavation that leads from one level of the underground mine to another underground. An escape raise is a method of exit from underground workings which people can access safely in an emergency such as a fire, spill, underground instability, or similar emergency.

Evapotranspiration – The process by which water is transferred from the land to the atmosphere by evaporation from waterbodies, soil, and other surfaces and by transpiration from plants.

Exploration – The search for deposits of valuable minerals using a variety of methods that can include drilling, sampling, remote sensing, and mining.

Factor of safety – The safety margin and is calculated by the strength of the resisting forces divided by the strength of the stress imparted to the feature/structure (in this case, the TSF dam).

Fault – A geologic term for a fracture in the Earth's crust, which has experienced movement.

Fault gouge – finely crushed and ground-up rock produced by the friction of movement between two sides of a fault.

Fauna – Animals characteristic of a region, period, or special environment.

Fill Material - Soil or rock fragments used to raise the surface of low - lying land.

Filtrate – The liquid that has passed through a filter.

Final Closure – The process undertaken when the operational stage of a mine has ended, and the final decommissioning and mine rehabilitation is underway.

Final Reclamation – The rehabilitation of the post-mining landscape to its intended post-mining land use, usually in conformity with a predetermined Land Management Plan or government approved plan or permit.

Final Closure and Reclamation – The final process and activities that facilitate cessation of operations and return of disturbed land to its intended post-mining land use, usually in conformity with a predetermined Land Management Plan or government approved plan or permit.

Financial Guarantee – A financial instrument that guarantees repair of surface resource disturbance, equipment removal, waste disposal, and similar actions. Where more than one agency, federal and/or state, has jurisdiction over a mineral operation, the role of each agency should be defined in a cooperative agreement (FSM 2846). May be secured with cash as a last resort, but preferably credit/debit cards or electronic check processing, corporate surety, deposited securities, an irrevocable letter of credit, or assignment of savings account or certificate of deposit. Individual sureties are unacceptable as reclamation bonds; however, individual sureties can be used for post-reclamation long term work. The penal sum of the instrument must at least equal the cost estimated by the Forest Service to complete reclamation.

Fishway – A group of facilities, structures, devices, measures, and project operations that together constitute, and are essential to the success of, an upstream or downstream fish passage system.

Flash Vessel – A vessel used to contain evaporation (flash) that occurs by passing a liquid stream through a pressure reduction device, known as a throttling device, at the entrance to the vessel.

Flocculent – A substance that promotes the clumping of particles to facilitate separation or settling of solids from a liquid.

Flora – Plant or bacterial life characteristic of a region, period, or special environment.

Flotation – The process of separating small particles of various materials by treatment with chemicals in water in order to make some particles adhere to air bubbles and rise to the surface for removal while others remain in the water.

Fluvial – Of, relating to, or inhabiting a river or stream.

Footwall –A block of rock that lies on the underside of an inclined fault or of a mineral deposit.

Forbs – Broadleaf ground vegetation with little or no woody material (Forest Service 2003).

Forest Road or Trail – A road or trail wholly or partly within or adjacent to and serving the NFS that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources.

Formation – A body of rock strata (layers) that consists of a certain lithology (physical characteristic of rock) or combination of lithologies.

Fracture – A subplanar discontinuity in a rock or soil formed by mechanical stresses. A fracture is visible to the naked eye and is open (i.e., not filled with minerals).

Freeboard – A factor of safety added in channel and dam design, usually expressed in additional feet of water carrying capacity or storage above a design storm event.

Fry – Young or newly hatched fish.

Fugitive Dust – Dust particles suspended randomly in the air, usually from road travel, excavation, and rock loading operations.

Geochemistry – The study of the distribution and amounts of chemical elements in minerals, ores, rocks, soils, water and the atmosphere and the study of the circulation and transformations of these elements in nature.

Geographic Information System (GIS) – A computer system that stores and uses spatial (mappable) data (Forest Service 2003).

Geomorphic – Characteristics, configuration and evolution of rocks and landforms.

Geotechnical – Concerned with the engineering design aspects of slope stability, settlement, Earth pressures, bearing capacity, seepage control and erosion.

Glacial till – Unsorted to poorly sorted sands, gravel, cobbles, and boulders deposited as lateral, ground, and end moraines.

Grade – A measure of the potential value of ore, based on the degree of purity of the minerals and the relative percentages of the minerals contained in the rock.

Groundwater – Water beneath the land surface in the zone of saturation below the water table.

Grout – Bentonite- or cement-based material used to create a water-tight seal.

Growth Media – Materials capable of establishing and sustaining an effective and permanent vegetation cover used in reclamation as cover material for mine facilities.

Growth Media Additive – Composted organic material that can be added to growth media to increase the volume of the growth media such as cleared and chipped vegetation, grubbed organics, and food wastes.

Grubbed Organics – Vegetative roots and other organic material that lies near and just below the ground surface and is removed as part of preparation of a site for construction.

Habitat – A place that provides seasonal or year-round food, water, shelter, and other environmental conditions for an organism, community, or population of plants or animals (Forest Service 2003).

Haul Road – A road used by large (typically off-road) trucks to relocate material (development rock or ore) for deposition or processing.

Heap leach – An industrial mining process to extract precious metals from ore. Typically, crushed ore is heaped where it can be irrigated with a weak acid and/or cyanide leach solution to dissolve the valuable metals into a solution that is collected and further refined.

Heap leach pad – The impermeable plastic, asphalt, and/or clay-lined pad upon which mined ore is deposited to be leached.

Heritage Resource - An object or definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence. Heritage resources include prehistoric, historic, archaeological, or architectural sites, structures, places, or objects and traditional cultural properties (Forest Service 2008).

Highwall – The unexcavated face of exposed overburden and/or ore in an open pit mine.

Historic Property - Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the NRHP criteria (36 Code of Federal Regulations [CFR] 800.16).

Home range – The area used by an animal for foraging, mating, and rearing offspring.

Horizon (soil) – A layer parallel to the soil surface, whose physical characteristics differ from the layers above and beneath.

Hydraulic – Dealing with the mechanical properties of liquids.

Hydro-cyclone – A device to classify, separate or sort particles in a liquid suspension based on the ratio of their centripetal force to fluid resistance.

Hydrologic – Refers to the properties, distribution, and effects of water. "Hydrology" is the study of water; its occurrence, circulation, distribution, properties, and reactions with the environment.

Highway-Legal Vehicle – Any motor vehicle that is licensed or certified under state law for general operation on all public roads in the state. Operators of highway-legal vehicles are subject to state traffic law, including requirements for operator licensing.

Idaho Roadless Area – Areas designated pursuant to 36 CFR Part 294 and identified in a set of maps maintained at the national headquarters office of the Forest Service.

Infiltration – The movement of water or other fluid into the soil (or other medium) through pores or other openings.

Infrastructure – The facilities, utilities, and transportation systems needed to meet public and administrative needs.

Interim closure – Temporary or provisional cessation of the operation of a mining or processing activity, in part or in whole, as a result of a planned or unplanned activity. While operational activities temporarily cease under interim closure, facility maintenance, environmental protection measures, and site monitoring requirements typically remain active.

Interim reclamation – Temporary stabilization of land surfaces during operations.

Intermittent stream – A stream or portion of a stream that flows only in direct response to precipitation or seasonal runoff, and that receives little or no water from springs or other permanent sources. Unlike ephemeral streams, an intermittent has a well-defined channel and banks, and it may seasonally be below the water table (Forest Service 2003).

Johnson Creek Route – The mine access route during the initial construction period for the 2021 MMP and the mine access route throughout construction, operations and reclamation under the Johnson Creek Route Alternative. From Warm Lake the Johnson Creek Route would be via Johnson Creek Road (County Road 10-413) to the village of Yellow Pine, and from Yellow Pine to the mine site via the East Fork Road (NFS Road 50412, also known as Stibnite Road) to Thunder Mountain Road.

Land and Resource Management Plan (LRMP) – LRMPs guide natural resource management activities on lands administered by the Payette and Boise National Forests. They describe management goals and objectives, resource protection methods, desired resource conditions, and the availability and suitability of lands for resource management. They provide management direction to ensure sustainable ecosystems and resilient watersheds capable of providing a sustainable flow of beneficial goods and services to the public.

Leach – To remove (nutritive, valuable, or harmful elements) from soil, rock, or ore by percolation.

Leachate – The solution obtained by leaching.

Leaching – The process of applying a chemical agent to bond preferentially with and dissolve materials such as gold and silver.

Lift – A layer of development rock placed in approximately the same time with one outslope. Each lift in the development rock storage facility is followed by a setback from the outslope to create a bench and then construction of the next lift.

Liner – Low permeability material (clay or synthetic) used to create a barrier, such as between tailings or water and the underlying ground surface.

Live handled – Reclamation cover material that is utilized immediately rather than stockpiled. Live-handling soil material reduces issues with compaction, soil structure, loss or oxidation of organic matter and microbial populations, and reduces the loss of viable propagules and seeds (Strohmayer 1999).

Loam – Soil composed of a relatively even distribution of sand, silt and clay. Loamy soils are typically well-drained and ideal for supporting vegetation.

Local Road – An NFS road that connects a terminal facility with collector roads, arterial roads, or public highways and that usually serves a single purpose involving intermittent use.

Macro-invertebrate – An animal without vertebrae (i.e., backbone) that is large enough to be seen without use of a microscope.

Magnitude – A number that characterizes the relative size of an earthquake. Magnitude is based on measurement of the maximum motion recorded by a seismograph. Several scales have been defined, but all magnitude scales should yield approximately the same value for any given earthquake.

Maintenance Level – A Forest Service defined level of service provided by, and maintenance required for, a specific road.

Make-up Water – The amount of water which is added to compensate for water losses in a process. In the case of ore processing, water losses can occur through evaporation or through entrainment with the ore particles in the tailings discharge.

Management area – A land area with similar management goals and a common prescription, as described in the Forest Plan (Forest Service 2003).

Management indicator species (MIS) – Representative species whose habitat conditions or population changes are used to assess the impacts of management activities on similar species in a particular area. MIS are generally presumed to be sensitive to habitat changes (Forest Service 2003).

Management Prescription Category (MPC) – Management prescriptions are defined as, "Management practices and intensity selected and scheduled for application on a specific area to attain multiple use and other goals and objectives" (36 CFR 219.3). MPCs are broad categories of management prescriptions that indicate the general management emphasis prescribed for a given area. They are based on Forest Service definitions developed at the national level, and represent management emphasis themes, ranging from Wilderness (1.0) to Concentrated Development (8.0). The national MPCs have been customized during Forest Plan revision to better fit the needs and issues of the Southwest Idaho Ecogroup Forests (Forest Service 2003).

Matrix – In landscape ecology, a matrix is usually the most extensive and connected element present in a landscape. Patches and corridors are often imbedded in the matrix. The matrix may play a dominant role in the functioning of the landscape without being the most extensive landscape element. Determining the matrix in a landscape depends either on connectivity, dominance, or function. Each landscape should be evaluated individually (Forest Service 2003).

Maximum credible earthquake (MCE) – The largest earthquake that reasonably appears capable of occurring under the conditions of the presently known geological environment (IDAPA 37.03.06). The MCE represents the most severe ground shaking that could be expected at the site (return period from 2,500 years up to that of the MCE) for which structures must be designed to resist collapse and uncontrolled release.

Maximum design earthquake – An earthquake that would produce the maximum level of ground motion (shaking) for which a structure (e.g., TSF dam) is to be designed or evaluated.

Merchantable – Logs exceeding a minimum size and a minimum usable value that are suitable for sale (Stokes et al. 1989).

Metabolic – A complex of physical and chemical events of photosynthesis, respiration, and the synthesis and degradation of organic compounds (in plants).

Meteoric Water – Water derived from precipitation (snow and rain).

Mine – An opening or excavation in the ground for the purpose of extracting minerals.

Mine life – The period in which the ore reserves will be extracted.

Mineralization – The process by which a mineral or minerals are introduced to rock, resulting in a valuable or potentially valuable deposit; a zone of ore.

Mining Act of 1872 – A United States federal law that authorizes and governs prospecting and mining for economic minerals, such as gold, platinum, and silver, on federal lands.

Mitigate – To avoid, minimize, reduce, eliminate, rectify, or compensate for impacts or degradation that might otherwise result from management actions (Forest Service 2003).

Mitigation measure – Modifications of actions that: 1) avoid impacts by not taking a certain action or parts of an action in a given area of concern; 2) minimize impacts by limiting the degree or magnitude of the actions and its implementation; 3) rectify impacts by repairing, rehabilitating, or restoring the affected environment; 4) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action; or 5) compensate for impacts by replacing or providing substitute resources or environments (Forest Service 2003).

Mosaic – A varying pattern of vegetation types.

Motorized Mixed Use – Designation of an NFS road for use by both highway-legal and non-highway-legal motor vehicles.

Multi-storied – Tree stands with trees of multiple heights.

National Forest System (NFS) Road/Trail – A forest road/trail other than a road/trail which has been authorized a legally documented right-of-way held by a state, county, or local public road authority.

Neutralization – A chemical reaction in which an acid and a base react quantitatively with each other. In a reaction in water neutralization results in there being no excess of hydrogen or hydroxide ions present in solution. The pH of the neutralized solution depends on the acid strength of the reactants.

No Action Alternative – The most likely condition expected to exist if current management practices continue unchanged. The analysis of this alternative is required for federal actions under NEPA (Forest Service 2003).

Nocturnal – Relating to or occurring at night.

Non-Contact Water – Water that has not come in contact with mining disturbance and/or mining materials.

Non-forested – Having grass, shrub, forb or non-vegetation cover.

Non-serotinous – Not exhibiting the characteristics of being serotinous (see definition of serotinous).

Noxious weed – A state -designated plant species that causes negative ecological and economic impacts to both agricultural and other lands within the state (Forest Service 2003).

Off-Highway Vehicle (OHV) – Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain.

Open-pit mining – A type of surface mining that involves excavation of the ore and development rock by above ground techniques. The result of such an operation is known as an “open pit.”

Ordinary high-water mark (OHWM) –The mark on all watercourses that will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and continuous in ordinary years as to mark upon the soil a character distinct from that of the abutting upland (Boise Forest Plan).

Operations Area Boundary – Defined as the ambient air boundary that encompasses 14,221 acres, of which 13,441 acres are NFS lands and 780 acres of private lands. The Operations Area Boundary is where hazardous activities would occur, such as explosives handling, blasting, drilling, and heavy equipment operation which require strict safety protocols and controlled access.

Ore – A deposit of rock from which valuable material or minerals can be economically mined.

Ore Processing Facility – A facility where the valuable constituent (e.g., gold, silver, antimony) is separated from the undesirable or non-economic constituent of the ore material.

Outfall – The outlet of a body of water. The location of the mouth of the stream or the outlet of the lake; or the vent or end of a drainpipe, tube, ditch, canal that carries water or tailings slurry.

Outslope – The angle of the outside slope face of a constructed facility such as a development rock storage facility (DRSF) or tailings storage facility (TSF).

Overburden – Materials overlying an ore or mineral body that are displaced during mining without being processed. Also known as "waste" or "spoil." It is typically not contaminated with toxic components.

Over-Snow Vehicle (OSV) – A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or ski or skis, while in use over snow.

Palustrine – Relating to a system of inland, non-tidal wetlands characterized by the presence of trees, shrubs, and emergent vegetation (vegetation that is rooted below water but grows above the surface).

Parameter – A variable as a part of a set of comparable variables or limits, boundaries or guidelines.

Partial retention (PR) – A category of Visual Quality Objective (VQO) where human activities may be evident to the casual Forest visitor but must remain subordinate to the characteristic landscape (Forest Service 2003).

Patented Claim – Land granted by the U.S. government to a private party based on mineral value and meeting other requirements under the federal mining laws. It is private property whereby the owner has title to the surface and mineral resources.

Perennial stream – A stream that typically maintains year-round surface flow, except possibly during extreme periods of drought. A perennial stream receives its water from springs or other permanent sources, and the water table usually stands at a higher level than the floor of the stream (Forest Service 2003).

Permanent closure – Those activities that result in neutralization, material stabilization, and decontamination of cyanidation facilities or other facilities' final reclamation (IDAPA 20.03.02.010.15).

Permanent Closure Plan – A document that describes how a mining operation will neutralize, stabilize material, and decontaminate cyanidation facilities in order to meet permeant closure requirements (IDAPA 20.03.02.071).

Permeability – The ease with which a porous medium can transmit water or other fluids.

pH – A measure of the acidity or basicity of an aqueous solution.

Piezometer – A device placed in a borehole to measure the underground pressure of groundwater – effectively measuring the level to which the groundwater would rise without a confining (e.g., clay, silt) layer.

Plasticity (of soil) – The property by which it undergoes deformation without cracking or fracturing. In general, soils with low plasticity are more geotechnically stable than soils with high plasticity.

Point source – A single, identifiable source of measurable discharge or emissions, usually referring to water or air.

Porous media – A material containing void spaces, some interconnected, in a matrix of solid material.

Portal – Entrance to an underground mine.

Practicable (or feasible) – Capable of being reasonably done under practical conditions, including economic and technical factors.

Presumptive – Based on presumption or probability; affording reasonable ground for belief in the absence of further information.

Private Road – A road under private ownership authorized by an easement granted to a private party or a road that provides access pursuant to a reserved or outstanding right.

Probable Maximum Precipitation – The theoretically greatest depth of precipitation for a given duration that is physically possible over a particular drainage area at a certain time of year; in practice, this is derived over flat terrain by storm transposition and moisture adjustment to observed storm patterns.

Probable Mineral Reserve –The economically mineable part of the measured mineral resource.

Public Road – A road under the jurisdiction of and maintained by a public road authority and open to public travel.

Raise – Underground opening driven upward from one level to a higher level or to the surface; a raise may be either vertical or inclined. Also, a stage of embankment construction.

Reasonably foreseeable future actions - Those Federal or non-Federal activities not yet undertaken, for which there are existing decisions, funding, or identified proposals (36 CFR 220.3).

Recessive weathering –The surrounding rock (in this case the rock on either side of a fault) is more resistant to weathering than the fault gouge material.

Recharge – The process by which water enters the groundwater system (zone of saturation below the water table).

Reclamation (mine facilities) – The decommission and removal of mining structures and equipment used during operations followed by the stabilization of the facilities and rehabilitation of the ground surface to its intended post-mining land use, usually in conformity with a predetermined Land Management Plan or government approved plan or permit. Further, IDAPA 20.03.02.010.20 adds that reclamation is the process of restoring an area affected by mining operations or cyanidation facility to its original or another beneficial use, considering previous uses, possible future uses, and surrounding topography. The objective is to re-establish a diverse, self-perpetuating plant community, and to minimize erosion, remove hazards, and maintain water quality.

Reclamation bond – Bonds guarantee repair of surface resource disturbance, equipment removal, waste disposal, and similar actions. Reclamation bonds are a type of financial assurance to cover the estimated reclamation costs for prospecting, mining, and other mineral operations on National Forest System lands. (FSM 6500 – Finance and Accounting, Chapter 6560 – Bonding Administration, 6561.4). At the SGP, the federal government and State of Idaho share jurisdiction over the mineral operation.

Reclamation cost estimate – An estimate of the direct and indirect costs to the government to complete reclamation of a mineral operation.

Reclamation Cover Material (RCM) – General term for non-toxic, non-acidic-generating materials placed over mine facilities during closure for the purpose of reclaiming the surface of the facilities. This may include coarse angular rock, glacial till, growth media, seed bank material, mineral soil, and/or organic soil which have physical and chemical properties that are not limiting to plant growth.

Recommended wilderness areas – Areas (generally identified during the preparation or revision of Forest Plans) that the Forest Service recommends to Congress as candidates for designation as Wilderness. Only Congress can designate wilderness.

Redd – A spawning nest built by fish (such as salmon and steelhead) in the gravel of streams or the shoreline of lakes for the deposition and fertilization of eggs.

Re-establishment – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions (CWA Section 404).

Regolith – A general term used in reference to unconsolidated rock, alluvium or soil material on top of the bedrock. Regolith may be formed in place or transported in from adjacent lands.

Rehabilitation – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function but does not result in a gain in aquatic resource area (CWA Section 404).

Remote sensing – The scanning of the Earth by satellite or high-flying aircraft in order to obtain information about the Earth.

Restoration – Management actions or decisions taken to restore the desired conditions of habitats, communities, ecosystems, resources, or watersheds. For soil, water, riparian, or aquatic resources, restoration may include any one or a combination of active, passive, or conservation management strategies or approaches (Forest Service 2003).

Return period (or recurrence interval) – The estimated average time between earthquake events.

Right-of-way – A strip of land or corridor over which a powerline, access road, maintenance road, or other road can pass.

Riparian areas or zones – Terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated with high water tables, and soils that exhibit some wetness characteristics (Forest Service 2003).

Road decommissioning – Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1, FSM 7705) (Forest Service 2003).

Roof pendant – A mass of original rock that remains after being intruded by igneous rock and projects downward into the intrusive rock (in this case, the batholith).

Root zone material – Material used as part of soil covers for reclaimed mine facilities that underlies surficial growth media and seed bank material into which re-established vegetation roots would extend for moisture and anchoring.

Runoff – Precipitation or snowmelt that is not retained on the site where it falls and is not absorbed by the soil; the natural drainage away from an area.

SAG mill – SAG is an acronym for semi-autogenous grinding (defined below). SAG mills are essentially autogenous mills that uses grinding balls like a ball mill.

Salmonid – Any of the family (Salmonidae), which are elongate bony fishes that have the last three vertebrae upturned, including salmon, trout, chars, freshwater whitefishes and graylings.

Sediment – Earth material transported, suspended and deposited by air, water or ice; also, the same material once it has been deposited.

Sedimentation – The action or process of forming and depositing sediments. Stream sedimentation occurs when water velocity cannot transport the bed load and suspended matter is deposited by gravity along the streambed (Forest Service 2003).

Seed Bank Material (SBM) – Soil dominated by or containing a high content of organic matter and an established wetland seed bank. Generally, organic soil material from the O and A horizons of a hydric soil solum.

Seep – A spot where water trickles out of the ground to form a pool.

Semi-autogenous Grinding – A size reduction process for ore which uses a large rotating drum to throw ore and steel balls in a cascading fashion to reduce the ore size by impact and compressive grinding with other ore rock, the steel balls and the walls of the drum.

Sensitive species – A Forest Service or BLM designation, sensitive plant and animal species are selected by the Regional Forester or the BLM State Director because population viability may be a concern, as evidenced by a current or predicted downward trend in population numbers or density, or a current or predicted downward trend in habitat capability that would reduce a species' existing distribution. Sensitive species are not addressed in or covered by the ESA (Forest Service 2003).

Seral-stage – A Sere is a sequence of plant communities that successively follow one another in the same habitation from the pioneer stage to a mesic climax, and seral-stage refers to the community stage a stand occupies at a given time within a sere (Burns et al. 1990).

Serotinous – Remaining closed on the tree with seed dissemination delayed or occurring gradually. In the case of lodgepole pines in the western portions of the Forests, fire is required to open cones for seed dispersal.

Silt fence – A temporary sediment control device consisting of a piece of synthetic filter fabric stretched between a series of wooden or metal fence stakes.

Sinuosity – State of having curving or bending shape, as in a stream course.

Silviculture – The care and tending of stands of trees to meet specific objectives (Forest Service 2003).

Slump – as defined for the EIS: Geohazard assessment reports (STRATA 2013, 2014a, 2016) use the term "slough" and "slump" interchangeably to refer to "small landslides" of less than 0.1 acre. For purposes of consistency, this EIS uses the term "slump" in the text. However, figures originating from the referenced geohazard assessment report may still retain the use of "slough."

Slurry - A highly fluid mixture of water and fine material; either naturally occurring such as a muddy lake - bottom deposit, or human - made like the ground rock (tailings) and water remaining after mineral extraction.

Smelter – An industrial facility that uses heat and a chemical reducing agent to decompose ore, driving off other elements as gasses or slag and leaving the metal behind.

Smelting – A process to extract metals from ore involving heating and melting.

Soil – The superficial layer of unconsolidated earth that supports vegetation and soil organisms.

Soil nail walls – A technique to construct an earth-retaining system involving installation of grouted-in sub-horizontal drilled rows of nails to form a composite mass.

Soundscape – Refers to both the natural acoustic environment, including animal vocalizations and the sounds of weather and other natural elements; and environmental sounds created by human activity, including conversation, work, and sounds of mechanical origin resulting from use of industrial technology.

Standard – As Forest Plan management, a binding limitation placed on management actions. It must be within the authority and ability of the Forest Service to enforce. A project or action that varies from a relevant standard may not be authorized unless the Forest Plan is amended to modify, remove, or waive application of the standard (Forest Service 2003).

Steelhead – A rainbow trout that migrates to the sea before returning to freshwater to spawn.

Stibnite - A sulfide mineral with the formula Sb2S3. A lead - gray mineral with a brilliant metallic luster. It is the principal ore of antimony. Also name of a historic mining town in central Idaho.

Stratum – One of a series of layers, levels, or gradations in an ordered system, such as a sequence of sedimentary rocks.

Stockpile – Material piled for future use.

Stope – An area of rock excavated in an underground mine, usually by blasting the rock and letting it fall into previously mined open areas below the stope.

Stormwater – The runoff that reaches human-made channel structures or natural stream channels immediately after rainfall or snowmelt.

Suitable soil – Soil that meets suitability criteria for use in reclaiming mine facilities as determined by the Reclamation and Closure Plan and Forest Service requirements for reclamation and revegetation.

Sulfide – A mineral compound characterized by the bonding of the element of sulfur (S), typically with a metal or metals.

Sub-alpine environment – Of, relating to, or inhabiting high upland slopes and especially the zone just below the timberline. It is the biotic zone (caused by living organisms) immediately below tree line.

Sump – A small, excavated pit for water supply and storage.

Surface water channels – Constructed pathways that change the flow of water from its natural course; mostly by means of a ditch.

Supernatant – The liquid that remains in a surface pool after the solid tailings settle in the tailings storage facility.

Supernatant Pool – In a tailings impoundment, the water that gathers above the settled tailings material.

Synthetic liner - A protective layer comprised of man‐made materials installed along the bottom, sides and/or of a waste disposal area, leach pad, or pond to reduce fluid migration into or out of that disposal area, pad or pond, or to facilitate the collection of mineral-rich leachate.

Tailings – The non‐economic, ground rock material that remains after the valuable minerals have been removed from the ore by milling and subsequent mineral recovery circuits.

Tailings Storage Facility (TSF) – The TSF embankment and all associated infrastructure needed to safely, efficiently and successfully manage and store tailings.

Temporary road – Roads authorized by contract, permit, lease, other written authorization, or emergency operation, that are not intended to be part of the forest transportation system, and that are not necessary for long-term resource management (Forest Service 2003).

Terrestrial – Organisms occurring on land.

Threatened species – Designated by the USFWS or NMFS; a plant or animal species given federal protection because it is likely to become endangered throughout all or a specific portion of its range within the foreseeable future (Forest Service 2003).

Topographic quadrangle map – A type of map characterized by large-scale detail and quantitative representation of relief, typical scale is 1:24,000, where 1-inch equals 2,000 actual feet.

Topsoil – The upper, outermost layer of soil, usually the top 2 inches (5.1 cm) to 8 inches (20 cm). It has the highest concentration of organic matter and microorganisms and is where most of the Earth's biological soil activity occurs.

Total maximum daily load (TMDL) – TMDL is the sum of waste load allocations for point sources, non-point sources, natural background, and a margin of safety. A TMDL specifies the amount of a pollutant that needs to be reduced to meet water quality standards set by the state. TMDL is used in a process to attain water quality standards that (1) identifies water quality problems and contributing pollutant sources, (2) allocates pollution control responsibilities among sources in the watershed, and (3) provides a basis for taking actions needed to restore a water body (Forest Service 2003).

Total organic carbon – The amount of carbon bound in an organic compound, which may refer to the amount of organic carbon in a water or soil sample.

Total Soil Resource Commitment (TSRC) – The area of soil disturbance within an activity area (i.e., an area of NFS lands within a watershed where soil resources are present).

Traditional Cultural Property - A "traditional cultural property" is a property or place that is eligible for inclusion on the National Register of Historic Places because of its association with cultural practices and beliefs that are (1) rooted in the history of a community, and (2) are important to maintaining the continuity of that community's traditional beliefs and practices.

Tributary – A river or stream flowing into a larger river or lake.

Turbidity – Thick or opaque with, or as if with, stirred up sediment.

Underground Mining – A mining method consisting of an adit decline or shaft access where ore is mined using various methods and hauled to the surface.

Understory – Vegetation, usually shrubs, forbs, and grasses growing beneath taller trees.

Unconfined aquifer – The upper surface of the aquifer is the water table. Unconfined aquifers are directly overlain by an unsaturated zone or a surface waterbody.

Unconsolidated – Loosely arranged.

Underflow – The flow of groundwater in alluvial materials beneath and immediately adjacent to a stream and flowing in the same general direction as the stream.

Viscosity – The property of resistance to flow in a fluid or semi-fluid.

Waste Rock – The rock that must be removed and disposed of to gain access to and excavate ore. Also referred to as "development rock."

Waters of the U.S. – A jurisdictional term from the Clean Water Act (CWA) and implementing regulations referring to wetlands, streams, and other waterbodies within the scope of fill permitting requirements under the CWA.

Watershed – Region or area drained by surface and groundwater flow in rivers, streams, or other surface channels. A smaller watershed can be wholly contained within a larger one, as watersheds are hierarchal in structure.

Water table – A surface at or near the top of the zone of saturation where the fluid pressure is equal to atmospheric pressure. In the field, the water table is defined by the level of water in wells that penetrate the saturated zone.

Weak acid dissociable cyanide – A method of conservatively estimating cyanide toxicity through measurement of both free cyanide and weakly bonded cyanide species that are released when subjected to a weak acid solution.

Wetlands – Land areas that are wet at least for part of the year, are poorly drained, and are characterized by hydrophytic vegetation, hydric soils, and wetland hydrology. Examples of wetlands include swamps, marshes, and bogs (Forest Service 2003).

Wilderness areas – Areas that are without developed and maintained roads, and that are substantially natural, and that Congress has designated as part of the National Wilderness Preservation System (Forest Service 2003).

Wildland/urban interface – The line, area, or zone where structures and other human developments meet or intermingle with wildland or vegetative fuel. Interface is further delineated into the following types:

(a) wildland/urban interface—developed areas with residential structures where many structures border wildland on a broad front.

(b) wildland/rural interface—developed areas with private residential structures where developments are few in number scattered over a large area surrounded by wildland (Forest Service 2003).

Windrow – A long line of material such as topsoil or vegetation.

7.4 Index

Appendix A

Payette National Forest and Boise National Forest Land and Resource Management Plans Consistency Review and Amendments

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1.0 FOREST PLAN CONSISTENCY

The Payette National Forest (PNF) and the Boise National Forest (BNF) are managed under separate Land and Resource Management Plans: The Payette National Forest Land and Resource Management Plan (Payette Forest Plan) (U.S. Forest Service [Forest Service] 2003), and the Boise National Forest Land and Resource Management Plan (Boise Forest Plan) (Forest Service 2010). Both Forest Plans were revised in 2003, and the Boise Forest Plan was amended in 2010, under the 1982 planning rule.

The National Forest Management Act (NFMA) requires that proposed projects on National Forest System (NFS) lands, including third-party proposals subject to permits, be consistent with the Forest Plan. The Forest Plans for the PNF and BNF were revised prior to the 2012 Planning Rule. As such, consistency requirements derive from previous planning rules as described at 76 FR 8480, 8501 (February 14, 2011; see also FSH 1909.12 Chapter 20, section 21.33). Accordingly, consistency need only be demonstrated for Forest Plan standards and guidelines. For Forest Plan standards, "a project or action that varies from a relevant standard may not be authorized unless the Forest Plan is amended to modify, remove, or waive application of the standard." (Boise and Payette Forest Plans p. III-3). For Forest Plan guidelines, "deviation from compliance does not require a Forest Plan amendment (as with a standard), but rationale for deviation must be documented in the project decision document." (Boise and Payette Forest Plans p. III-3). However, the full context of Forest Plan desired conditions, goals, objectives, standards, and guidelines is taken into consideration in making a decision on this proposal (see Draft Record of Decision).

As stated in Chapter 1 of the EIS, locatable minerals operations are governed by the Forest Service Locatable Minerals regulations at 36 Code of Federal Regulations (CFR) 228 Subpart A, and the United States Mining Laws (30 U.S.C. 2154). The Forest Service received the original SGP Plan in 2016, (Midas Gold Idaho, Inc. [Midas Gold] 2016) for review and approval in accordance with 36 CFR 228 Subpart A. A revised Plan, also known as ModPRO[1], was submitted to the Forest Service in 2019 (Brown and Caldwell 2019). A further modified Plan, also known as ModPRO2[2], was initially submitted in December 2020 with a revised submittal in October of 2021 (Perpetua 2021). Midas Gold changed their name to Perpetua Resources Ltd (Perpetua) in February 2021[3].

Most areas of the PNF and BNF are open to mineral activities, including the SGP area. The desired condition for mineral projects is that operating plans include appropriate mitigation measures and contain bonding requirements commensurate with the costs of anticipated site reclamation. Where practicable, sites are returned to a condition consistent with management emphasis and objectives. (Payette Forest Plan, p. III-48; Boise Forest Plan, p. III-50)

As Forest Plan management direction, a standard is a binding limitation placed on management actions and must be within the authority and ability of the Forest Service to enforce. The Forest Plans clarify that

[1] Associated project documents may reference the Revised Plan as the ModPRO.

[2] Associated project documents may reference the Modified Plan as the ModPRO2.

[3] Documents provided by Perpetua prior to the February 2021 name change will still be cited and referenced as Midas Gold.

a project or action that varies from the relevant standard may not be authorized unless the Forest Plan is amended to modify, remove, or except application of the standard. See PNF and BNF Forest Plans, p. III-3 for a full definition of Forest Plan standards. When a project is not consistent with Forest Plan standards applicable to the location of a project and/or the types of activities proposed, the Forest Service has the following options:

(1) modify the proposed project to make it consistent with the Forest Plan; (2) reject the proposal; (3) amend the Forest Plan so that the project would be consistent with the Forest Plan as amended (i.e. a "programmatic" amendment); or (4) amend the Forest Plan contemporaneously with the approval of the project so the project would be consistent with the Forest Plan as amended (i.e., project-specific Forest Plan amendment). The fourth option is limited to apply only to the project (36 CFR 219.15(c)).

Additional information on the consideration of Forest Plan consistency, including guidelines, is contained in the Project Record. The following subsection describes those aspects of the Forest Plans where the proposed activities under the SGP were found to be inconsistent with relevant standards, and for which project-specific Forest Plan amendments are proposed.

2.0 LAND AND RESOURCE MANAGEMENT PLAN AMENDMENTS

The purpose of the amendments is to ensure consistency between the SGP and the Forest Plans. The need for the amendments is that the project activities are inconsistent with the plan direction regarding the management of certain resources as detailed below. The 2012 Planning Rule (36 CFR 219) requires the decision document to explain how the responsible official for the amendment determined the scope and scale of the Forest Plan amendment and which specific substantive provisions of the 2012 Planning Rule within Sections 219.8 through 219.11 apply to the amendment and how they were applied. Because the Forest Plan amendments are project-specific, the scope of the amendments would only be for the SGP. The scale of the amendments is the area directly, indirectly, and cumulatively affected by the SGP.

2.1 General Management Actions Project-Specific Amendment

Forest: Payette and Boise National Forest

Alternatives: 2021 MMP and Johnson Creek Route Alternatives

2.1.1 Plan Component

PNF: Standard 1301 (MA 13, MPC 3.1); Standard 1306 (MA 13, MPC 3.2)

BNF: Standard 2010 (MA 20, MPC 3.2); Standard 2113 (MA 21, MPC 3.2); Standard 1919 (MA 19, MPC 3.2); Standard 2005 (MA 20, MPC 3.1)

Management actions, including salvage harvest, may only degrade aquatic, terrestrial, and watershed resource conditions in the temporary time period (up to 3 years), and must be designed to avoid resource degradation in the short term (3-15 years) and long term (greater than 15 years).

2.1.2 Proposed Amendment

The project specific amendment excepts the following plan components in the portions of MA 13 (PNF) and MA 19, 20, and 21 (BNF) that are affected by the proposed SGP through the duration of project implementation.

PNF: Standard 1301 (MA 13, MPC 3.1); Standard 1306 (MA 13, MPC 3.2)

BNF: Standard 2010 (MA 20, MPC 3.2); Standard 2113 (MA 21, MPC 3.2); Standard 1919 (MA 19, MPC 3.2); Standard 2005 (MA 20, MPC 3.1)

The exception of the above standards meets the following purpose and need for the SGP:

- The Forest Service's purpose is to consider approval of Perpetua's proposed use of the surface of NFS lands in connection with operations authorized by the U.S. mining law as first described in the Plan submitted September 2016, then refined in 2019 (Brown and Caldwell 2019), and further modified in 2021 as the 2021 MMP (Perpetua 2021), to mine and process gold, silver, and antimony from deposits at the mine site in central Idaho for commercial sale. The purpose of the SGP is consistent with Congress' declaration in the Mining and Mineral Policy Act of 1970 (Public Law 91-631 as amended through Public Law 106-193).

- The Forest Service's need for action is to ensure that the proposed occupancy and use of NFS lands is consistent with statutory and regulatory requirements. For purposes of this environmental analysis, the agency is assuming the proposed uses would be able to be authorized under existing regulatory authorities. However, a final determination regarding Forest Service authorizations for the proposed uses will not be made until the Record of Decision.

The SGP has a proposed timeline of construction being approximately 3 years, operations approximately 15 years, and closure and reclamation approximately 5 years with additional post-closure monitoring and water treatment requirements that extend for a predicted total of approximately 40 years. Due to the nature of proposed SGP activities, impacts to aquatic, terrestrial, and watershed resource conditions would be expected to occur for the length of the proposed SGP. Therefore, an exception to the plan timing component is needed. Impacts to aquatic resources are analyzed in **Sections 4.8.2** (Surface and Groundwater Quantity), **4.9.2** (Surface and Groundwater Quality), and **4.12.2** (Fish Resources and Fish Habitat); terrestrial resources in **Sections 4.10.2** (Vegetation) and **4.13.2** (Wildlife and Wildlife Habitat); and watershed resource conditions are analyzed in **Sections 4.5.2** (Soils and Reclamation Cover Materials) and **4.11.2** (Wetlands and Riparian Resources). These sections analyze impacts to the specific resources during construction, operations, and closure and reclamation. During construction and operations, design features and mitigation measures are included to reduce impacts to various resources (**Section 2.4.9**). In addition, compensatory mitigation will be required as part of the Clean Water Act 404 permit administered by the U.S. Army Corps of Engineers to offset losses in wetland functionality. The compensatory mitigation will also include activities on the BNF and on private lands to offset the

temporal loss of that functionality. Reclamation actions are described in the SGP Reclamation and Closure Plan (Tetra Tech 2021) and impacts to the various resources are described in the sections listed above.

Table 1 provides documentation for the review of substantive requirements of planning regulations for the SGP project-specific amendment to except the timeframe period within the proposed SGP area. This amendment is proposed to take effect for the life of the SGP and would expire when project activities have been completed.

Table 1 General Management Actions Project Specific Plan Amendment Review

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.8 Sustainability	(a) Ecological Sustainability	(1) Ecosystem Integrity	The plans as amended meet the purpose of ecosystem integrity. Some of the impact to various resources would extend for the length of the activities (including reclamation) associated with the proposed SGP (e.g., impacts to individual wildlife [**Section 4.13.2**]), while other impacts could extend further into the future (e.g., total soil resource commitment [**Sections 4.5.2.2** and **4.5.2.3**]). Post-closure, surface water and groundwater quantity would return to similar baseline flow patterns (**Section 4.8.2**) and water quality (with treatment) would meet standards for surface waters and groundwater, improving on existing conditions except for areas under the Tailings Storage Facility (TSF)/TSF Buttress and in the vicinity of backfilled open pits where some metal concentrations are predicted to exceed baseline concentrations that were previously above water quality standards in their existing condition (**Section 4.9.2.2**). Habitat for listed fish species in upper Meadow Creek would be blocked due to the TSF/TSF Buttress while other habitat would be made available by the removal of fish-passage barriers below the TSF/TSF Buttress on Meadow Creek (**Section 4.12.2.2**). Impacts to wetland and riparian areas are expected to be offset by reclamation activities and compensatory mitigation (**Section 4.11.3**). The mitigation measures, compensatory mitigation on the Boise NF, and reclamation actions developed for each resource are created to maintain and restore ecosystem integrity.
		(2) Air, Soil, and Water	The plans as amended meet the purpose of ecological sustainability as related to air, soil and water. Development of the SGP and associated infrastructure would result in complete removal of native soil horizons in specific locations. The ecological sustainability of soils throughout the forests would be maintained. The plan amendment excepts the time frame for the impacts but retains the plan components to maintain or restore these resources (**Sections 4.3.2**, **4.5.2**, **4.8.2**, and **4.9.2**).

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		3) Riparian Areas	The plans as amended meet the purpose of ecological sustainability as related to riparian areas. .The plan amendment excepts the time frame for the impacts but retains the plan components (i.e., **PNF:** Standard 1301 (MA 13, MPC 3.1); Standard 1306 (MA 13, MPC 3.2), **BNF:** Standard 2010 (MA 20, MPC 3.2); Standard 2113 (MA 21, MPC 3.2); Standard 1919 (MA 19, MPC 3.2); Standard 2005 (MA 20, MPC 3.1)) to maintain or restore these resources. Impacts to riparian areas are expected to be offset by reclamation activities and compensatory mitigation (**Section 4.11.3**).
		(4) Best Management Practices for Water Quality	The plans as amended meet the purpose of ecological sustainability as related to best management practices for water quality. The plan amendment excepts the time frame for the impacts but retains the plan components requiring implementation of water quality best management practices/design features and mitigation measures s (**Section 4.9.2**). Post-closure, surface water and groundwater quantity would return to similar baseline flow patterns post-reclamation (**Section 4.8.2.2**), and water quality (with treatment) would meet standards for surface waters and groundwater, improving on existing conditions except for areas under the TSF/TSF Buttress and in the vicinity of backfilled open pits where some metal concentrations are predicted to exceed baseline concentrations that were previously above water quality standards in their existing condition (**Section 4.9.2.2**).
	(b) Social and Economical Sustainability	(1) Social, cultural, and economic conditions	This requirement is not directly related to this project-specific amendment.
		(2) Sustainable recreation, including recreation settings, opportunities, and access; and scenic character.	This requirement is not directly related to this project-specific amendment.
		(3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner	This requirement is not directly related to this project-specific amendment.
		(4) Ecosystem services	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
	(b) Social and Economical Sustainability	(5) Cultural and historic resources and uses	This requirement is not directly related to this project-specific amendment.
		(6) Opportunities to connect people with nature	This requirement is not directly related to this project-specific amendment.
219.9 Diversity of plant and animal communities	(a) Ecosystem plan components	(1) Ecosystem integrity	The plans as amended meet the purpose of ecosystem integrity as related to diversity of plant and animal communities. The proposed amendment would not result in substantial adverse impacts to plant and animal communities within the project area, including to those species of conservation concern. Nor would the proposed amendment substantially lessen protection for any plant and animal species. All amendment exceptions support the persistence of native species in the project area. As a result, this plan amendment is consistent with the diversity of plant and animal communities as required by 36 CFR 219.9. The SGP would not result in a trend towards listing for ESA proposed species (**Sections 4.13.2.2** and **4.13.2.3**). Short-term impacts to wildlife species would persist long enough to potentially affect the long-term productivity for some sensitive wildlife species or those with limited habitat. It is possible that some species would not return to the area after being displaced, but most species would relocate (and Wildlife **Sections 4.13.2.2** and **4.13.2.3**). The design features for the SGP meet the intent of the Forest Plans (**Section 2.4.9**). Construction and operation of the proposed mine would result in short-term impacts to fish and associated habitat (Fisheries and Aquatic Habitat **Sections 4.12.2.2** and **4.12.2.3**). During construction and operations, some sections of aquatic habitat would be removed from the footprint of the proposed mine site. Changes to aquatic habitat include diverting the East Fork SFSR around Yellow Pine pit and subsequently backfilling and constructing a stream channel atop the pit at closure. In the long-term restoring fish passage upstream of the Yellow Pine pit would result in an increase in available habitat for anadromous and resident fish in the analysis area. Habitat for listed fish species in upper Meadow Creek would be blocked due to the TSF/TSF Buttress under the 2021 MMP and Johnson Creek Route Alternative, while other fish habitat on Meadow Creek would made available by the removal of fish-passage barriers (**Section 4.12.2**)., Construction would require removal of known whitebark pine individuals. Direct impacts to whitebark pine individuals would occur during the construction and operation phases. Based on the implementation of

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
			required and proposed protection measures presented in **Section 2.4.9**, particularly those related to sensitive plant species and whitebark pine impacts to sensitive plant species and their habitat would be reduced.
		(2) Ecosystem diversity	The plans as amended meet the purpose of ecosystem diversity as related to diversity of plant and animal communities. The plan amendment excepts the time frame for the impacts but retains the plan components requiring maintenance or restoration of key characteristics associated with terrestrial and aquatic resources (**Sections 4.9.2** – Surface Water and Groundwater Quality, **4.12.2** – Fish Resources and Fish Habitat, and **4.13.2** – Wildlife and Wildlife Habitat); rare aquatic and terrestrial plant and animal communities (Vegetation **Section 4.10.2**; Fish **Section 4.12.2**; and Wildlife **Section 4.13.2**); and the diversity of native tree species (**Section 4.10.2**).
	(b) Additional species-specific plan components	(1) and (2) components to provide the ecological conditions necessary to contribute to the recovery of federally listed or proposed species *(and viable species of conservation concern)* beyond those required at part (a) of this section	The plans as amended meet the purpose of providing the ecological conditions necessary to contribute to the recovery of federally listed or proposed species. The mitigation measures and reclamation actions are developed to minimize impacts to fish and wildlife and maintain and/or restore terrestrial and aquatic habitat. There would be impacts to individual Endangered Species Act (ESA)-listed wildlife and fish species and habitat, but the implementation of the SGP would not result in jeopardy (pending Section 7 consultation) (Fisheries and Aquatic Habitat **Sections 4.12.2.2** and **4.12.2.3**, and Wildlife **Sections 4.13.2.2** and **4.13.2.3**). The SGP would not result in a trend towards listing for ESA proposed species (**Sections 4.13.2.2** and **4.13.2.3**). A biological assessment was completed to support Endangered Species Act Section 7 consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service regarding potential effects on the federally listed species. These species include Snake River spring/summer Chinook salmon and their designated critical habitat (DCH), Snake River Basin steelhead and their DCH, Columbia River bull trout and their DCH, Southern Resident killer whale, Canada lynx, NIDGS, wolverine, and whitebark pine. The monarch butterfly is a federal candidate species that is also included.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
	(c) Species of conservation concern		The project analysis includes consideration of the adverse impacts to sensitive, forest watch, and other plant and animal species that may occur as a result of the amendment. There are no species known to occur within the proposed SGP area with a substantial concern about the species capability to persist over the long-term in the Forest Plan area (Vegetation **Sections 4.10.2.2** and **4.10.2.3**; Fish **Section 4.12.2**; and Wildlife **Sections 4.13.2.2** and **4.13.2.3**). Accordingly, this substantive requirement is not directly related to this project-specific amendment.
219.10 Multiple Use	(a) Integrated resource management for multiple use	(1) Aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses.	The plans as amended meet the purpose of providing for these resources and values. The effects of the proposed SGP, as well as environmental design features, mitigation measures, and reclamation actions developed to reduce impacts of the proposed SGP, are analyzed in the EIS for the duration of the proposed SGP (approximately 20 years) (**Sections 4.3** - Air Quality; **4.5** – Soils and Reclamation Cover Materials; **4.8** - Surface Water and Groundwater Quantity; **4.9** Surface Water and Groundwater Quality; **4.10**- Vegetation; **4.11**- Wetland and Riparian Resources; **4.12** - Fish Resources and Fish Habitat; **4.13** - Wildlife and Wildlife Habitat; **4.14** – Timber Resources; **4.17** - Heritage Resources; **4.19** - Recreation; **4.20** - Scenic Resources; **4.23** - Special Designations).
		(2) Renewable and nonrenewable energy and mineral resources.	The plans as amended meet the purpose of providing for these resources. The proposed plan amendment allows for the implementation of the proposed SGP, which is mining of mineral resources.
		(3) Appropriate placement and sustainable management of infrastructure, such as recreational facilities and transportation and utility corridors.	This requirement is not directly related to this project-specific amendment.
		(4) Opportunities to coordinate with neighboring landowners to link open spaces and take into account joint management objectives where feasible and appropriate.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(5) Habitat conditions, subject to the requirements of § 219.9, for wildlife, fish, and plants commonly enjoyed and used by the public; for hunting, fishing, trapping, gathering, observing, subsistence, and other activities (in collaboration with federally recognized Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments).	The plans as amended meet the purpose of providing for habitat conditions for wildlife, fish and plants used for hunting, gathering and other uses in this subpart. The mitigation measures and reclamation actions are developed to minimize impacts to fish and wildlife and maintain and restore terrestrial and aquatic habitat. Impacts over the life of the proposed SGP to traditional resource collection sites (**Section 4.24.2**), big game species (**Section 4.13.2**), and fish (**Section 4.12.2**) are disclosed in the EIS.
		(6) Land status and ownership, use, and access patterns relevant to the plan area.	This requirement is not directly related to this project-specific amendment.
		(7) Reasonably foreseeable risks to ecological, social, and economic sustainability.	The plans as amended meet the purpose of addressing reasonably foreseeable risks to ecological, social, and economic sustainability. The effects of the proposed SGP, as well as mitigation measures and reclamation actions developed to reduce impacts and risks of the proposed SGP, are analyzed in the EIS for the duration of the proposed SGP (approximately 20 years) (**Sections 4.5** – Soils and Reclamation Cover Materials; **4.8** - Surface Water and Groundwater Quantity; **4.9** Surface Water and Groundwater Quality; **4.10** - Vegetation; **4.11**- Wetland and Riparian Resources; **4.12** - Fish and Fish Habitat; **4.13** - Wildlife and Wildlife Habitat; **4.14** – Timber Resources; **4.18** – Public Health and Safety; **4.19** - Recreation; **4.21**- Social and Economic Conditions; and **4.22** - Environmental Justice).
		(8) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of the terrestrial and aquatic ecosystems on the plan area to adapt to change (§ 219.8);	The plans as amended meet the purpose of addressing system drivers. The effects of climate change in relation to the proposed SGP and impacts to other resources (e.g., water quality, fish, wildlife) (Section 4.4.2) and the potential for the expansion of invasive species (Section 4.10.2) are analyzed in the EIS.
		(9) Public water supplies and associated water quality.	This requirement is not directly related to this project-specific amendment.
		(10) Opportunities to connect people with nature.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.11 Timber requirements based on the NFMA	(a) Lands not suited for timber production		This requirement is not directly related to this project-specific amendment.
	(b) Timber harvest for purposes of timber production.		This requirement is not directly related to this project-specific amendment.
	(c) Timber harvest for purposes other than timber production.		This requirement is not directly related to this project-specific amendment.
		(1) No timber harvest for the purposes of timber production may occur on lands not suited for timber production.	This requirement is not directly related to this project-specific amendment.
	(d) Limitations on timber harvest	(2) Timber harvest would occur only where soil, slope, or other watershed conditions would not be irreversibly damaged.	This requirement is not directly related to this project-specific amendment.
		(3) Timber harvest would be carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(4) Where plan components will allow clearcutting, seed tree cutting, shelterwood cutting, or other cuts designed to regenerate an even-aged stand of timber, the plan must include standards limiting the maximize size for openings that may be cut in one harvest operation, according to geographic areas, forest types, or other suitable classifications.	This requirement is not directly related to this project-specific amendment.
		(5) Timber will be harvested from NFS lands only where such harvest would comply with the resource protections set out in sections 6(g)(3)(E) and (F) of the NFMA (16 U.S.C. 1604(g)(3)(E) and (F)).	This requirement is not directly related to this project-specific amendment.
		(6) The quantity of timber that may be sold from the national forest is limited to an amount equal to or less than that which can be removed from such forest annually in perpetuity on a sustained yield basis.	This requirement is not directly related to this project-specific amendment.
		(7) The regeneration harvest of even-aged stands of trees is limited to stands that generally have reached the culmination of mean annual increment of growth.	This requirement is not directly related to this project-specific amendment.

2.2 Total Soil Resource Commitment Project Specific Amendment

Forest: Payette National Forest

Alternatives: 2021 MMP and Johnson Creek Route Alternative

2.2.1 Plan Component

PNF: Standard SWST03

Management activities that may affect Total Soil Resource Commitment (TSRC) shall meet the following requirements:

- In an activity area where existing conditions of TSRC are below 5 percent of the area, management activities shall leave the area in a condition of 5 percent or less TSRC following completion of the activities.

- In an activity area where existing conditions of TSRC exceed 5 percent of the area, management activities shall include mitigation and restoration so that TSRC levels are moved back toward 5 percent or less following completion of activities.

- To estimate TSRC it is essential that the glossary definitions for "activity area, detrimental soil disturbance and total soil resource commitment" are clearly understood.

2.2.2 Proposed Amendment

PNF: Standard SWST03

- In the PNF Activity Area for the SGP, which is comprised of the PNF portion of the Headwaters East Fork South Fork Salmon River, Sugar Creek, and No Man's Creek- East Fork South Fork Salmon River subwatersheds where existing conditions of TSRC are below 5 percent of the area, except the requirement that management activities shall leave the area in a condition of 5 percent or less TSRC following completion of the activities.

The amendment of this standard meets the following purpose and need for the SGP:

- The Forest Service's purpose is to consider approval of Perpetua's proposed use of the surface of NFS lands in connection with operations authorized by the U.S. mining law as first described in the Plan submitted September 2016, then refined in 2019 (Brown and Caldwell 2019), and further modified in 2021 as the 2021 MMP (Perpetua 2021), to mine and process gold, silver, and antimony from deposits at the mine site in central Idaho for commercial sale. The purpose of the proposed SGP is consistent with Congress' declaration in the Mining and Mineral Policy Act of 1970 (Public Law 91-631 as amended through Public Law 106-193).

- The Forest Service's need for action is to ensure that the proposed occupancy and use of NFS lands is consistent with statutory and regulatory requirements. For purposes of this environmental

analysis, the agency is assuming the proposed uses would be able to be authorized under existing regulatory authorities. However, a final determination regarding Forest Service authorizations for the proposed uses will not be made until the Record of Decision.

The definition of TSRC in the Payette Forest Plan is "TSRC is the conversion of a productive site to an essentially non-productive site for a period of more than 50 years. Examples include classified or unclassified roads, inadequately restored haul roads, designated skid roads, landing areas, parking lots, mining dumps or excavations, dedicated trails (skid trails also), developed campgrounds, other dedicated facilities, and some stock driveways. Productivity on those areas ranges from 0 to 40 percent of natural (Payette Forest Plan GL-37 and 38).

The majority of construction, mining production, and closure activities would involve excavation, grading, and/or filling of the existing soils that would reduce or eliminate soil productivity.

Currently, there is 3 percent existing TSRC within the PNF Activity Area, which is comprised of the PNF portion of the Headwaters East Fork South Fork Salmon River, Sugar Creek, and No Man's Creek-East Fork South Fork Salmon River subwatersheds. TSRC under the 2021 MMP and Johnson Creek Alternatives within the PNF Activity Area would be 17 percent at the end of the operating period.

All the SGP-related disturbance at the mine site would be subject to reclamation activities, with the exception of approximately 278 acres associated with the Hangar Flats high walls, the West End pit lake and high walls, the Midnight pit lake, and Yellow Pine pit high walls (Tetra Tech 2021). The stated goal of the SGP Reclamation and Closure Plan (RCP) (Tetra Tech 2021) is to stabilize and reclaim areas of proposed exploration, mining, and processing activities (which would include areas within the footprint of disturbance that have been impacted by historical mining activities) "to productive conditions that sustain long-term, post-SGP wildlife, fisheries, land, and water resources." "Productive conditions" are not further defined in the RCP, and there is no direct correlation with moving TSRC towards 5 percent or less in the activity area (i.e., a greater than 40 percent recovery of natural background soil productivity within 50 years of disturbance). The RCP proposes reclamation strategies to return a site to a stable condition that would not require ongoing maintenance or inputs over the long term and would not contribute to erosion or sedimentation that would adversely impact post-mining uses or downstream resources. Many of the reclamation activities proposed relate to achieving soil and slope stability through management and best management practices (BMPs) of surface and groundwater; grading and slope configurations; and establishing persistent vegetation cover.

Planting prescriptions are primarily intended to provide fast-growing native ground cover that would initiate the long-term process of succession towards native forest communities.

Performance monitoring would be tied to slope and soil stability, sediment, and vegetation cover.

Achieving persistent vegetation cover and slope stabilization also would benefit soil amelioration processes. However, the rate of conversion to a productive soil would vary greatly based on the quantity and quality of the reclamation cover materials, and site characteristics including slope position, shape and gradient, aspect; elevation, parent materials, seed and propagule sources, and other considerations. As a general rule, the processes responsible for restoration of soil productivity occur over a very long

timeframe (centuries) and do not directly correlate to successful reclamation, which is mainly oriented to short-term objectives. The short target timeframe for achievable reclamation measures (e.g., 5 to 10 years) would not be sufficient to establish trends in soil resources and productivity that would take many centuries and up to millennia to develop within the conditions that pertain to the activity area, especially with respect to the short growing season and harsh winters (**Section 4.5.2.2**, Total Soil Resource Commitment – Payette National Forest).

A full analysis of the impacts of TSRC is provided in **Section 4.5** (Soils and Reclamation Cover Materials) in the EIS. It would not be appropriate to conduct a programmatic amendment because the project level assessment of TSRC identified changed conditions only in the PNF Activity Area where this project-specific amendment is proposed. This project-specific amendment to except the exceedance of 5 percent TSRC would only apply to the area disclosed in the EIS.

Table 2 provides documentation for the review of substantive requirements of planning regulations for the SGP project-specific amendment to except the TSRC threshold within the proposed SGP PNF Activity Area.

Table 2 TSRC Project Specific Plan Amendment Review

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.8 Sustainability	(a) Ecological Sustainability	(1) Ecosystem Integrity	The plan as amended meets the purpose of ecosystem integrity. The Reclamation and Closure Plan (RCP) does not address soil productivity which would not move the PNF Activity Area to a condition of 5 percent or less TSRC. However, the reclamation plan is designed to achieve soil and slope stability through management and BMPs of surface water and groundwater; grading and slope configurations; and establishing persistent vegetation cover (**Section 4.5.2.2**). Reclamation would occur on all areas of SGP-attributed TSRC except for where pit lakes and pit highwalls occur on NFS lands. The restoration of soil productivity could take an extremely long period of time, but reclamation would benefit soil improvement processes in the area.
		(2) Air, Soil, and Water	The plan as amended meets the purpose of ecological sustainability as related to air, soil, and water. The RCP does not address soil productivity which would not move the PNF Activity Area to a condition of 5 percent or less TSRC. However, the reclamation plan is designed to achieve soil and slope stability through management and BMPs of surface water and groundwater; grading and slope configurations; and establishing persistent vegetation cover. Leaving the PNF Activity Area in a condition of 5 percent or less TSRC following completion of the activities (as stated in the Payette Forest Plan) is not feasible due to the nature of the mining activities (**Section 4.5.2.2**).
		(3) Riparian Areas	This requirement is not directly related to this project-specific amendment.
		(4) Best Management Practices for Water Quality	This requirement is not directly related to this project-specific amendment.
	(b) Social and Economical Sustainability	(1) Social, cultural, and economic conditions	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(2) Sustainable recreation, including recreation settings, opportunities, and access; and scenic character	This requirement is not directly related to this project-specific amendment.
		(3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner	This requirement is not directly related to this project-specific amendment.
		(4) Ecosystem services	This requirement is not directly related to this project-specific amendment.
		(5) Cultural and historic resources and uses	This requirement is not directly related to this project-specific amendment.
		(6) Opportunities to connect people with nature	This requirement is not directly related to this project-specific amendment.
219.9 Diversity of plant and animal communities	(a) Ecosystem plan components	(1) Ecosystem integrity	The plan as amended meets the purpose of ecosystem integrity. The RCP does not address soil productivity which would not move the PNF Activity Area to a condition of 5 percent or less TSRC. However, the reclamation plan is designed to achieve soil and slope stability through management and BMPs of surface water and groundwater; grading and slope configurations; and establishing persistent vegetation cover (**Section 4.5.2.2**). Reclamation would occur on all areas of SGP-attributed TSRC except for where pit lakes and pit highwalls occur on NFS lands. The restoration of soil productivity would take an extremely long period of time, but reclamation could benefit soil improvement processes in the area.
		(2) Ecosystem diversity	This requirement is not directly related to this project-specific amendment.
	(b) Additional species-specific plan components	(1) and (2) components to provide the ecological conditions necessary to contribute to the recovery of federally listed or proposed species *(and viable species of conservation concern)* beyond those required at part (a) of this section	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
	(c) Species of conservation concern		This requirement is not directly related to this project-specific amendment.
219.10 Multiple Use	(a) Integrated resource management for multiple use	(1) Aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses.	The plan as amended meets the purpose of providing for these resources and values. The RCP does not address soil productivity which would not move the PNF Activity Area to a condition of 5 percent or less TSRC. However, the reclamation plan is designed to achieve soil and slope stability through management and BMPs of surface water and groundwater; grading and slope configurations; and establishing persistent vegetation cover. Leaving the PNF Activity Area in a condition of 5 percent or less TSRC following completion of the activities (as stated in the Payette Forest Plan) is not feasible due to the nature of the mining activities (**Section 4.5.2.2**).
		(2) Renewable and nonrenewable energy and mineral resources.	The proposed plan amendment allows for the implementation of the proposed SGP, which is mining of mineral resources. Requiring mitigation and reclamation post-project activities allows for the extraction of mineral resources while returning the site to a stable condition that would not require ongoing maintenance or inputs over the long term and would not contribute to erosion or sedimentation that would adversely impact post-mining uses or downstream resources (**Section 4.5.2.2**).
		(3) Appropriate placement and sustainable management of infrastructure, such as recreational facilities and transportation and utility corridors.	This requirement is not directly related to this project-specific amendment.
		(4) Opportunities to coordinate with neighboring landowners to link open spaces and take into account joint management objectives where feasible and appropriate.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(5) Habitat conditions, subject to the requirements of § 219.9, for wildlife, fish, and plants commonly enjoyed and used by the public; for hunting, fishing, trapping, gathering, observing, subsistence, and other activities (in collaboration with federally recognized Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments).	This requirement is not directly related to this project-specific amendment.
		(6) Land status and ownership, use, and access patterns relevant to the plan area.	This requirement is not directly related to this project-specific amendment.
		(7) Reasonably foreseeable risks to ecological, social, and economic sustainability.	This requirement is not directly related to this project-specific amendment.
		(8) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of the terrestrial and aquatic ecosystems on the plan area to adapt to change (§ 219.8).	This requirement is not directly related to this project-specific amendment.
		(9) Public water supplies and associated water quality.	This requirement is not directly related to this project-specific amendment.
		(10) Opportunities to connect people with nature.	This requirement is not directly related to this project-specific amendment.
219.11 Timber requirements based on the NFMA	(a) Lands not suited for timber production		This requirement is not directly related to this project-specific amendment.
	(b) Timber harvest for purposes of timber production.		This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
	(c) Timber harvest for purposes other than timber production.		This requirement is not directly related to this project-specific amendment.
	(d) Limitations on timber harvest	(1) No timber harvest for the purposes of timber production may occur on lands not suited for timber production.	This requirement is not directly related to this project-specific amendment.
		(2) Timber harvest would occur only where soil, slope, or other watershed conditions would not be irreversibly damaged.	This requirement is not directly related to this project-specific amendment.
		(3) Timber harvest would be carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources.	This requirement is not directly related to this project-specific amendment.
		(4) Where plan components will allow clearcutting, seed tree cutting, shelterwood cutting, or other cuts designed to regenerate an even-aged stand of timber, the plan must include standards limiting the maximize size for openings that may be cut in one harvest operation, according to geographic areas, forest types, or other suitable classifications.	This requirement is not directly related to this project-specific amendment.
		(5) Timber will be harvested from NFS lands only where such harvest would comply with the resource protections set out in sections 6(g)(3)(E) and (F) of the NFMA (16 U.S.C. 1604(g)(3)(E) and (F)).	This requirement is not directly related to this project-specific amendment.
		(6) The quantity of timber that may be sold from the national forest is limited to an amount equal to or less than that which can be removed from such forest annually in perpetuity on a sustained yield basis.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(7) The regeneration harvest of even-aged stands of trees is limited to stands that generally have reached the culmination of mean annual increment of growth.	This requirement is not directly related to this project-specific amendment.

2.3 Visual Quality Objectives Project Specific Amendments

Forest: Boise and Payette National Forest

Alternatives: 2021 MMP and Johnson Creek Route Alternative

2.3.1 Plan Components

PNF and BNF: Standard SCST01

All projects shall be designed to meet the adopted Visual Quality Objectives (VQOs) as identified in Management Area direction and represented on the Forest VQO map.

BNF: Standard 1767 (MA 17)

Meet the visual quality objectives as represented on the Forest VQO Map, and where indicated in the table below as viewed from the following areas/corridors: FH 22.

BNF: Standard 1983 (MA 19)

Meet the visual quality objectives as represented on the Forest VQO Map, and where indicated in the table below as viewed from the following areas/corridors: FH 22 and FR 467.

BNF: Standard 2052 (MA 20)

Meet the visual quality objectives as represented on the Forest VQO Map, and where indicated in the table below as viewed from the following areas/corridors: FR 413.

BNF: Standard 2155 (MA 21)

Meet the visual quality objectives as represented on the Forest VQO Map, and where indicated in the table below as viewed from the following areas/corridors: FR 413, FR 416 W to Hennessey Meadow, and FR 440.

2.3.2 Proposed Amendments

The project specific amendments are applicable in the portions of MA 13 (PNF) and MA 17, 19, 20, and 21 (BNF) that are affected by components of the proposed SGP.

PNF and BNF: Standard SCST01

Except the requirement to meet adopted Visual Quality Objectives (VQOs) as identified in Management Area direction and represented on the Forest VQO map for sections along the new and upgraded transmission lines (2021 MMP and Johnson Creek Route Alternatives); sections along the Burntlog Route (2021 MMP Alternative); and the mine site (2021 MMP and Johnson Creek Route Alternative).

BNF: Standard 1767 (MA 17)

Except the requirement to meet visual quality objectives as represented on the Forest VQO Map, and where indicated in the table below as viewed from the following areas/corridors: FH 22.

BNF: Standard 1983 (MA 19)

Except the requirement to meet visual quality objectives as represented on the Forest VQO Map, and where indicated in the table below as viewed from the following areas/corridors: FH 22 and FR 467.

BNF: Standard 2052 (MA 20)

Except the requirement to meet visual quality as represented on the Forest VQO Map, and where indicated in the table below as viewed from the following areas/corridors: FR 413.

BNF: Standard 2155 (MA 21)

Except the requirement to meet visual quality objectives as represented on the Forest VQO Map, and where indicated in the table below as viewed from the following areas/corridors: FR 413, FR 416 W to Hennessey Meadow, and FR 440.

The suspension or modifications of these standards meet the following purpose and need for the SGP:

- The Forest Service's purpose is to consider approval of Perpetua's proposed use of the surface of NFS lands in connection with operations authorized by the U.S. mining law as first described in the Plan submitted September 2016, then refined in 2019 (Brown and Caldwell 2019), and further modified in 2021 as the 2021 MMP (Perpetua 2021), to mine and process gold, silver, and antimony from deposits at the mine site in central Idaho, for commercial sale. The purpose of the proposed SGP is consistent with Congress' declaration in the Mining and Mineral Policy Act of 1970 (Public Law 91-631 as amended through Public Law 106-193).

- The Forest Service's need for action is established by the agency's responsibilities under the Locatable Minerals regulations at 36 CFR 228 Subpart A, which were promulgated under authority granted by the Mining Law of 1872 (Mining Law) (30 USC 22 et seq.) and the Organic Administration Act of 1897 (16 USC 478, 482, and 551). These regulations require that all locatable mineral prospecting, exploration, development, mining and processing operations, and associated means of access, shall be conducted in a manner that minimizes adverse environmental effects on NFS surface resources.

Generally, new and upgraded transmission lines would not meet the Preservation, Retention, or Partial Retention VQO. The line, color, form, and texture of the right of way (ROW) would visually dominate the landscape but would not be out of scale with the natural surroundings.

The footprint of the mine site would be within areas managed as a VQO of Retention or Partial Retention. The mine site would not meet either of these VQOs as the mine site components would introduce form, line, color, and texture found infrequently, or not at all, in the characteristic landscape, and to a degree

that would dominate the characteristic landscape. New construction associated with the Burntlog Route would cross areas managed as Retention and Partial Retention VQOs. Except for the soil nail walls, access roads would generally conform to the Partial Retention VQO. Although new and upgraded portions of the Burntlog Route could introduce strong visual contrast in some areas, it typically would be limited to the immediate foreground as viewed from the road/trail introducing the contrast, although it also may be visible from some trails and by individuals participating in dispersed recreation. New access roads would not be consistent with the Retention VQO as they would introduce new lines, colors, and textures that would be evident.

A full analysis of the impacts on VQOs is provided in **Section 4.20** (Scenic Resources) in the EIS. It would not be appropriate to conduct a programmatic amendment because the project level assessment of changed VQOs is within the SGP area, where these project-specific amendments are proposed.

Table 3 provides documentation for the review of substantive requirements of planning regulations for the SGP project-specific amendment to waive the requirement to meet VQOs within portions of the proposed SGP area.

Table 3 Visual Quality Objectives Project Specific Plan Amendment Review

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.8 Sustainability	(a) Ecological Sustainability	(1) Ecosystem Integrity	This requirement is not directly related to this project-specific amendment.
		(2) Air, Soil, and Water	This requirement is not directly related to this project-specific amendment.
		(3) Riparian Areas	This requirement is not directly related to this project-specific amendment.
		(4) Best Management Practices for Water Quality	This requirement is not directly related to this project-specific amendment.
	(b) Social and Economical Sustainability	(1) Social, cultural, and economic conditions	This requirement is not directly related to this project-specific amendment.
		(2) Sustainable recreation, including recreation settings, opportunities, and access; and scenic character.	The plans as amended meet the purpose of providing for sustainable recreation, including scenic character. These amendments would allow for deviation from the mapped Preservation, Retention, or Partial Retention VQOs. This affects the landscape character and scenic quality of the area. The visual impacts would last throughout the life of the SGP. Some visual impacts would be reduced after reclamation activities occur; after Burnt Log Road and the Burntlog Route were reclaimed, permanent visual contrast to the characteristic landscape generally would be minimal to moderate, although the soil nail walls would retain strong visual contrast in very localized areas (**Section 4.20.2.2**). The mine site would have a moderate-high visual contrast to the characteristic landscape, which would be visible from two key observation points (**Sections 4.20.2.2** and **4.20.2.3**). The upgrades to the existing transmission line would result in moderate to high visual contrast and the new transmission line would result in strong visual contrast (**Sections 4.20.2.2** and **4.20.2.3**). The line, color, form, and texture of the ROW would visually dominate the landscape but would not be out of scale with the natural surroundings.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner	This requirement is not directly related to this project-specific amendment.
		(4) Ecosystem services	This requirement is not directly related to this project-specific amendment.
		(5) Cultural and historic resources and uses	This requirement is not directly related to this project-specific amendment.
		(6) Opportunities to connect people with nature	The plans as amended meet the purpose of providing for opportunities to connect people with nature. These amendments would allow for deviation from the mapped Preservation, Retention, or Partial Retention VQOs. This affects the landscape character and scenic quality of the area, which could impact some people's enjoyment of the naturalness of the area (**Sections 4.20.2.2** and **4.20.2.3**).
219.9 Diversity of plant and animal communities	(a) Ecosystem plan components	(1) Ecosystem integrity	This requirement is not directly related to this project-specific amendment.
		(2) Ecosystem diversity	This requirement is not directly related to this project-specific amendment.
	(b) Additional species-specific plan components	(1) and (2) components to provide the ecological conditions necessary to contribute to the recovery of federally listed or proposed species *(and viable species of conservation concern)* beyond those required at part (a) of this section	This requirement is not directly related to this project-specific amendment.
	(c) Species of conservation concern		This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.10 Multiple Use	(a) Integrated resource management for multiple use	(1) Aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses.	The plans as amended meet the purpose of providing for the resources and values in this subpart. The proposed amendment would not result in substantial adverse effects associated with the multiple use requirement nor would the proposed amendment substantially lessen protection for a specific resource or use associated with multiple use. These amendments would allow for deviation from the mapped Preservation, Retention, or Partial Retention VQOs. This affects the landscape character and scenic quality of the area. The full amount of visual impacts would last throughout the life of the proposed SGP. Some visual impacts would be reduced after reclamation activities occur; after Burnt Log Road and the Burntlog Route were reclaimed, permanent visual contrast to the characteristic landscape generally would be minimal to moderate, although the soil nail walls would retain strong visual contrast; albeit in localized areas (**Section 4.20.2.2**). The mine site would have a moderate- high visual contrast to the characteristic landscape, which would be visible from two key observation points (**Sections 4.20.2.2** and **4.20.2.3**). The upgraded existing transmission line would result in moderate to high visual contrast and the new transmission line would result in strong visual contrast (**Sections 4.20.2.2** and **4.20.2.3**). The line, color, form, and texture of the ROW would visually dominate the landscape but would not be out of scale with the natural surroundings.
		(2) Renewable and nonrenewable energy and mineral resources.	These amendments would allow for development of nonrenewable mineral resources.
		(3) Appropriate placement and sustainable management of infrastructure, such as recreational facilities and transportation and utility corridors.	The upgraded transmission line occurs within existing ROW corridors.
		(4) Opportunities to coordinate with neighboring landowners to link open spaces and take into account joint management objectives where feasible and appropriate.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(5) Habitat conditions, subject to the requirements of § 219.9, for wildlife, fish, and plants commonly enjoyed and used by the public; for hunting, fishing, trapping, gathering, observing, subsistence, and other activities (in collaboration with federally recognized Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments).	This requirement is not directly related to this project-specific amendment.
		(6) Land status and ownership, use, and access patterns relevant to the plan area.	This requirement is not directly related to this project-specific amendment.
		(7) Reasonably foreseeable risks to ecological, social, and economic sustainability.	This requirement is not directly related to this project-specific amendment.
		(8) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of the terrestrial and aquatic ecosystems on the plan area to adapt to change (§ 219.8).	This requirement is not directly related to this project-specific amendment.
		(9) Public water supplies and associated water quality.	This requirement is not directly related to this project-specific amendment.
		(10) Opportunities to connect people with nature.	This requirement is not directly related to this project-specific amendment.
219.11 Timber requirements based on the NFMA	(a) Lands not suited for timber production		This requirement is not directly related to this project-specific amendment.
	(b) Timber harvest for purposes of timber production.		This requirement is not directly related to this project-specific amendment.
	(c) Timber harvest for purposes other than timber production.		This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
	(d) Limitations on timber harvest	(1) No timber harvest for the purposes of timber production may occur on lands not suited for timber production.	This requirement is not directly related to this project-specific amendment.
		(2) Timber harvest would occur only where soil, slope, or other watershed conditions would not be irreversibly damaged.	This requirement is not directly related to this project-specific amendment.
		(3) Timber harvest would be carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources.	This requirement is not directly related to this project-specific amendment.
		(4) Where plan components will allow clearcutting, seed tree cutting, shelterwood cutting, or other cuts designed to regenerate an even-aged stand of timber, the plan must include standards limiting the maximize size for openings that may be cut in one harvest operation, according to geographic areas, forest types, or other suitable classifications.	This requirement is not directly related to this project-specific amendment.
		(5) Timber will be harvested from NFS lands only where such harvest would comply with the resource protections set out in sections 6(g)(3)(E) and (F) of the NFMA (16 U.S.C. 1604(g)(3)(E) and (F)).	This requirement is not directly related to this project-specific amendment.
		(6) The quantity of timber that may be sold from the national forest is limited to an amount equal to or less than that which can be removed from such forest annually in perpetuity on a sustained yield basis.	This requirement is not directly related to this project-specific amendment.
		(7) The regeneration harvest of even- aged stands of trees is limited to stands that generally have reached the culmination of mean annual increment of growth.	This requirement is not directly related to this project-specific amendment.

2.4 Fish Passage Diversion Project Specific Amendment

Forest: Payette National Forest

Alternatives: 2021 MMP and Johnson Creek Route Alternative

2.4.1 Plan Components

PNF: Standard SWST09

In fish-bearing waters, do not authorize new surface diversions unless they provide upstream and downstream fish passage and, if needed, include either fish screens or other means to prevent fish entrapment/entrainment.

2.4.2 Proposed Amendment

The project specific amendment is applicable in the portions of MA 13 (PNF) that are affected by components of the proposed SGP.

PNF: Standard SWST09

Except the requirement of new surface diversions to provide upstream and downstream fish passage within the footprint of mining operations.

The suspension or modifications of these standards meet the following purpose and need for the SGP:

- The Forest Service's purpose is to consider approval of Perpetua's proposed use of the surface of NFS lands in connection with operations authorized by the U.S. mining law as first described in the Plan submitted September 2016, then refined in 2019 (Brown and Caldwell 2019), and further modified in 2021 as the 2021 MMP (Perpetua 2021), to mine and process gold, silver, and antimony from deposits at the mine site in central Idaho, for commercial sale. The purpose of the proposed SGP is consistent with Congress' declaration in the Mining and Mineral Policy Act of 1970 (Public Law 91-631 as amended through Public Law 106-193).

- The Forest Service's need for action is to ensure that the proposed occupancy and use of NFS lands is consistent with statutory and regulatory requirements. For purposes of this environmental analysis, the agency is assuming the proposed uses would be able to be authorized under existing regulatory authorities. However, a final determination regarding Forest Service authorizations for the proposed uses will not be made until the Record of Decision.

For the 2021 MMP and Johnson Creek Route Alternative, Meadow Creek would be diverted around the TSF and TSF Buttress in surface water diversions with the main channel on one side and a smaller channel on the other side. The routing of Meadow Creek into two diversion channels would create a fish passage barrier due to the steep gradient necessary for the transition from the valley bottom to the location of the main diversion channel (**Section 4.12.2.2**). These diversions would be upstream of an existing barrier formed by the Yellow Pine Pit that would be removed during the construction period. In addition, compensatory mitigation will be required as part of the Clean Water Act 404 permit administered by the

U.S. Army Corps of Engineers to offset losses in wetland functionality. The compensatory mitigation would also include activities on the BNF and on private lands to offset the temporal loss of the functionality.

A full analysis of the impacts of diversions that do not allow for fish passage within the footprint of the mine site is provided in **Section 4.12.2** (Fish Resources and Fish Habitat) in the EIS. It would not be appropriate to conduct a programmatic amendment because the project level assessment of diversions that do not allow for fish passage is within the SGP area where these project-specific amendments are proposed.

Table 4 provides documentation for the review of substantive requirements of planning regulations for the SGP project-specific amendment to suspend the requirement to provide fish passage in surface diversions within portions of the proposed SGP area.

Table 4 Fish Passage Diversion Project Specific Plan Amendment Review

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.8 Sustainability	(a) Ecological Sustainability	(1) Ecosystem Integrity	Under the 2021 MMP and Johnson Creek Route Alternatives, the Meadow Creek diversion that would not allow for fish passage would be in place for 10 to 17 years. After that time, habitat for listed fish species in upper Meadow would be permanently block due to the TSF/TSF Buttress, while other habitat would be made available by the removal of fish-passage barriers below the TSF/TSF Buttress on Meadow Creek (**Section 4.12.2.2**). The SGP design features and mitigation measures developed for fish habitat are developed to maintain and restore ecosystem integrity (**Section 2.4.9**).
		(2) Air, Soil, and Water	This requirement is not directly related to this project-specific amendment.
		(3) Riparian Areas	Under the 2021 MMP and Johnson Creek Route Alternatives, the Meadow Creek diversion that would not allow for fish passage would be in place for 10 to 17 years. After that time, habitat for listed fish species in upper Meadow would be permanently block due to the TSF/TSF Buttress, while other habitat would be made available by the removal of fish-passage barriers below the TSF/TSF Buttress on Meadow Creek (**Section 4.12.2.2**). The SGP design features and mitigation measures developed for fish habitat are developed to maintain and restore ecosystem integrity (**Section 2.4.9**).
		(4) Best Management Practices for Water Quality	This requirement is not directly related to this project-specific amendment.
	(b) Social and Economical Sustainability	(1) Social, cultural, and economic conditions	This requirement is not directly related to this project-specific amendment.
		(2) Sustainable recreation, including recreation settings, opportunities, and access; and scenic character.	This requirement is not directly related to this project-specific amendment.
		(3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(4) Ecosystem services	This requirement is not directly related to this project-specific amendment.
		(5) Cultural and historic resources and uses	This requirement is not directly related to this project-specific amendment.
		(6) Opportunities to connect people with nature	This requirement is not directly related to this project-specific amendment.
219.9 Diversity of plant and animal communities	(a) Ecosystem plan components	(1) Ecosystem integrity	Under the 2021 MMP and Johnson Creek Route Alternatives, the Meadow Creek diversion that would not allow for fish passage would be in place for 10 to 17 years. After that time, habitat for listed fish species in upper Meadow Creek would be permanently blocked due to the TSF/TSF Buttress, while other habitat would be made available by the removal of fish-passage barriers below the TSF/TSF Buttress on Meadow Creek (**Section 4.12.2.2**). The environmental design features and mitigation measures developed for fish habitat are developed to maintain and restore ecosystem integrity (**Section 2.4.9**).
		(2) Ecosystem diversity	This requirement is not directly related to this project-specific amendment.
	(b) Additional species-specific plan components	(1) and (2) components to provide the ecological conditions necessary to contribute to the recovery of federally listed or proposed species *(and viable species of conservation concern)* beyond those required at part (a) of this section	The environmental design features and mitigation measures developed for fish habitat are developed to maintain and restore ecosystem integrity (**Section 2.4.9**). Section 7 ESA consultation will be conducted for the preferred alternative.
	(c) Species of conservation concern		There are no species known to occur within the proposed SGP area with a substantial concern about the species capability to persist over the long-term in the plan area (**Section 4.12.2**).

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.10 Multiple Use	(a) Integrated resource management for multiple use(a) Integrated resource management for multiple use	(1) Aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses.	The proposed plan amendment allows for the implementation of the proposed SGP. The effects of the surface diversions that do not allow for fish passage, as well as mitigation measures and reclamation actions developed to reduce impacts of the proposed SGP, are analyzed in the EIS (**Section 4.12.2**).
		(2) Renewable and nonrenewable energy and mineral resources.	This amendment would allow for development of nonrenewable mineral resources.
		(3) Appropriate placement and sustainable management of infrastructure, such as recreational facilities and transportation and utility corridors.	This requirement is not directly related to this project-specific amendment.
		(4) Opportunities to coordinate with neighboring landowners to link open spaces and take into account joint management objectives where feasible and appropriate.	This requirement is not directly related to this project-specific amendment.
		(5) Habitat conditions, subject to the requirements of § 219.9, for wildlife, fish, and plants commonly enjoyed and used by the public; for hunting, fishing, trapping, gathering, observing, subsistence, and other activities (in collaboration with federally recognized Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments).	The proposed plan amendment allows for the implementation of the proposed SGP. The effects of the surface diversions that do not allow for fish passage, as well as mitigation measures and reclamation actions developed to reduce impacts of the proposed SGP, are analyzed in the EIS (**Section 4.12.2**). The plans as amended meet the purpose of providing for habitat conditions for wildlife, fish, and plants used for hunting, gathering, and other uses in this subpart throughout the forest.
		(6) Land status and ownership, use, and access patterns relevant to the plan area.	This requirement is not directly related to this project-specific amendment.
		(7) Reasonably foreseeable risks to ecological, social, and economic sustainability.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(8) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of the terrestrial and aquatic ecosystems on the plan area to adapt to change (§ 219.8).	This requirement is not directly related to this project-specific amendment.
		(9) Public water supplies and associated water quality.	This requirement is not directly related to this project-specific amendment.
		(10) Opportunities to connect people with nature.	This requirement is not directly related to this project-specific amendment.
219.11 Timber requirements based on the NFMA	(a) Lands not suited for timber production		This requirement is not directly related to this project-specific amendment.
	(b) Timber harvest for purposes of timber production.		This requirement is not directly related to this project-specific amendment.
	(c) Timber harvest for purposes other than timber production.		This requirement is not directly related to this project-specific amendment.
	(d) Limitations on timber harvest	(1) No timber harvest for the purposes of timber production may occur on lands not suited for timber production.	This requirement is not directly related to this project-specific amendment.
		(2) Timber harvest would occur only where soil, slope, or other watershed conditions would not be irreversibly damaged.	This requirement is not directly related to this project-specific amendment.
		(3) Timber harvest would be carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(4) Where plan components will allow clearcutting, seed tree cutting, shelterwood cutting, or other cuts designed to regenerate an even-aged stand of timber, the plan must include standards limiting the maximize size for openings that may be cut in one harvest operation, according to geographic areas, forest types, or other suitable classifications.	This requirement is not directly related to this project-specific amendment.
		(5) Timber will be harvested from NFS lands only where such harvest would comply with the resource protections set out in sections 6(g)(3)(E) and (F) of the NFMA (16 U.S.C. 1604(g)(3)(E) and (F)).	This requirement is not directly related to this project-specific amendment.
		(6) The quantity of timber that may be sold from the national forest is limited to an amount equal to or less than that which can be removed from such forest annually in perpetuity on a sustained yield basis.	This requirement is not directly related to this project-specific amendment.
		(7) The regeneration harvest of even- aged stands of trees is limited to stands that generally have reached the culmination of mean annual increment of growth.	This requirement is not directly related to this project-specific amendment.

2.5 Whitebark Pine Individuals and Occupied Habitat Avoidance Project Specific Amendments

The whitebark pine was listed as a threatened species on January 17, 2023 , subsequent to publication of the Supplemental Draft EIS for this project. The listing itself did not result in changes to the design of the proposed action or the effects analysis of the EIS because the proposed action was already designed to avoid or minimize adverse effects to whitebark pine to the extent feasible, and effects analyzed in the Supplemental Draft EIS. Accordingly, no additional supplement was needed before completing a Final EIS based on this listing. However, a project-specific Forest Plan amendment is proposed regarding this listing as described below.

Forest: Payette and Boise National Forest

Alternatives: 2021 MMP and Johnson Creek Route Alternative

2.5.1 Plan Component

PNF: Standard TEST28

BNF: Standard TEST28

Avoid adverse effects from locatable mineral operations to Threatened, Endangered, Proposed, and Candidate (TEPC) plant species and occupied habitat.

PNF: Standard TEST31

BNF: Standard TEST31

Adverse effects from new facilities to occupied TEPC plant habitat shall be avoided.

2.5.2 Proposed Amendments

PNF: Standard TEST28

BNF: Standard TEST28

Except the requirement that locatable mineral operations avoid adverse effects to TEPC plant species and occupied habitat.

PNF: Standard TEST31

BNF: Standard TEST31

Except the requirement that new facilities avoid adverse effects on occupied TEPC plant habitat.

The waiving of the above standards meets the following purpose and need for the SGP:

- The Forest Service's purpose is to consider approval of Perpetua's proposed use of the surface of NFS lands in connection with operations authorized by the U.S. mining law as first described in the Plan submitted September 2016, then refined in 2019 (Brown and Caldwell 2019), and further modified in 2021 as the 2021 MMP (Perpetua 2021), to mine and process gold, silver, and antimony from deposits at the mine site in central Idaho for commercial sale. The purpose of the SGP is consistent with Congress' declaration in the Mining and Mineral Policy Act of 1970 (Public Law 91-631 as amended through Public Law 106-193).

- The Forest Service's need for action is to ensure that the proposed occupancy and use of NFS lands is consistent with statutory and regulatory requirements. For purposes of this environmental analysis, the agency is assuming the proposed uses would be able to be authorized under existing regulatory authorities. However, a final determination regarding Forest Service authorizations for the proposed uses will not be made until the Record of Decision.

For the 2021 MMP and Johnson Creek Route Alternatives, ground disturbance associated with mine facilities would necessitate adverse effects on whitebark pine individuals and occupied habitat. Also, for the 2021 MMP Alternative, ground disturbance associated with constructing new segments of an access route would necessitate adverse effects on whitebark pine individuals and occupied habitat.

A full analysis of the impacts to whitebark pine individuals and occupied habitat is provided in **Section 4.10.2** (Vegetation) in the EIS. It would not be appropriate to conduct a programmatic amendment because the project level assessment of ground disturbance that would affect whitebark pine individuals and occupied habitat is within the SGP area where these project-specific amendments are proposed.

Table 5 provides documentation for the review of substantive requirements of planning regulations for the SGP project-specific amendments to suspend the requirement to avoid effects on whitebark pine individuals and occupied habitat within portions of the proposed SGP area.

Table 5 Whitebark Pine Individuals and Occupied Habitat Avoidance Project Specific Amendment Review

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.8 Sustainability	(a) Ecological Sustainability	(1) Ecosystem Integrity	Under the 2021 MMP and Johnson Creek Route Alternatives, the ground disturbance that would affect whitebark pine individuals and occupied habitat would be in place for 10 to 25 years until site facilities and the newly construction portions of the Burntlog Route could be reclaimed. The SGP design features and mitigation measures developed for whitebark pine habitat are developed to maintain and restore ecosystem integrity.
		(2) Air, Soil, and Water	This requirement is not directly related to this project-specific amendment.
		(3) Riparian Areas	This requirement is not directly related to this project-specific amendment.
		(4) Best Management Practices for Water Quality	This requirement is not directly related to this project-specific amendment.
	(b) Social and Economical Sustainability	(1) Social, cultural, and economic conditions	This requirement is not directly related to this project-specific amendment.
		(2) Sustainable recreation, including recreation settings, opportunities, and access; and scenic character.	This requirement is not directly related to this project-specific amendment.
		(3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner	This requirement is not directly related to this project-specific amendment.
		(4) Ecosystem services	This requirement is not directly related to this project-specific amendment.
		(5) Cultural and historic resources and uses	This requirement is not directly related to this project-specific amendment.
		(6) Opportunities to connect people with nature	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.9 Diversity of plant and animal communities	(a) Ecosystem plan components	(1) Ecosystem integrity	Under the 2021 MMP and Johnson Creek Route Alternatives, the ground disturbance that would affect whitebark pine individuals and occupied habitat would be in place for 10 to 25 years until site facilities and the newly construction portions of the Burntlog Route could be reclaimed. The SGP design features and whitebark pine specific mitigation measures developed for whitebark pine individuals and occupied habitat are developed to maintain and restore ecosystem integrity.
		(2) Ecosystem diversity	This requirement is not directly related to this project-specific amendment.
	(b) Additional species-specific plan components	(1) and (2) components to provide the ecological conditions necessary to contribute to the recovery of federally listed or proposed species *(and viable species of conservation concern)* beyond those required at part (a) of this section	The mitigation measures developed for whitebark pine individuals and occupied habitat are developed to maintain and restore ecosystem integrity.
	(c) Species of conservation concern		There are no species known to occur within the proposed SGP area with a substantial concern about the species capability to persist over the long- term in the plan area (**Section 4.10.2**).
		(1) Aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses.	The proposed plan amendments allow for the implementation of the proposed SGP. The effects of the ground disturbance effects on whitebark pine individuals and occupied habitat, as well as whitebark pine specific mitigation measures and reclamation actions developed to reduce impacts of the proposed SGP, are analyzed in the EIS (**Section 4.10.2**).
		(2) Renewable and nonrenewable energy and mineral resources.	These amendments would allow for development of nonrenewable mineral resources.
		(3) Appropriate placement and sustainable management of infrastructure, such as recreational facilities and transportation and utility corridors.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(4) Opportunities to coordinate with neighboring landowners to link open spaces and take into account joint management objectives where feasible and appropriate.	This requirement is not directly related to this project-specific amendment.
		(5) Habitat conditions, subject to the requirements of § 219.9, for wildlife, fish, and plants commonly enjoyed and used by the public; for hunting, fishing, trapping, gathering, observing, subsistence, and other activities (in collaboration with federally recognized Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments).	This requirement is not directly related to this project-specific amendment.
219.10 Multiple Use	(a) Integrated resource management for multiple use	(6) Land status and ownership, use, and access patterns relevant to the plan area.	This requirement is not directly related to this project-specific amendment.
		(7) Reasonably foreseeable risks to ecological, social, and economic sustainability.	This requirement is not directly related to this project-specific amendment.
		(8) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of the terrestrial and aquatic ecosystems on the plan area to adapt to change (§ 219.8).	This requirement is not directly related to this project-specific amendment.
		(9) Public water supplies and associated water quality.	This requirement is not directly related to this project-specific amendment.
		(10) Opportunities to connect people with nature.	This requirement is not directly related to this project-specific amendment.
219.11 Timber requirements based on the NFMA	(a) Lands not suited for timber production		This requirement is not directly related to this project-specific amendment.
	(b) Timber harvest for purposes of timber production.		This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
	(c) Timber harvest for purposes other than timber production.		This requirement is not directly related to this project-specific amendment.
		(1) No timber harvest for the purposes of timber production may occur on lands not suited for timber production.	This requirement is not directly related to this project-specific amendment.
		(2) Timber harvest would occur only where soil, slope, or other watershed conditions would not be irreversibly damaged.	This requirement is not directly related to this project-specific amendment.
		(3) Timber harvest would be carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources.	This requirement is not directly related to this project-specific amendment.
	(d) Limitations on timber harvest	(4) Where plan components will allow clearcutting, seed tree cutting, shelterwood cutting, or other cuts designed to regenerate an even-aged stand of timber, the plan must include standards limiting the maximize size for openings that may be cut in one harvest operation, according to geographic areas, forest types, or other suitable classifications.	This requirement is not directly related to this project-specific amendment.
		(5) Timber will be harvested from NFS lands only where such harvest would comply with the resource protections set out in sections 6(g)(3)(E) and (F) of the NFMA (16 U.S.C. 1604(g)(3)(E) and (F)).	This requirement is not directly related to this project-specific amendment.
		(6) The quantity of timber that may be sold from the national forest is limited to an amount equal to or less than that which can be removed from such forest annually in perpetuity on a sustained yield basis.	This requirement is not directly related to this project-specific amendment.
		(7) The regeneration harvest of even- aged stands of trees is limited to stands that generally have reached the culmination of mean annual increment of growth.	This requirement is not directly related to this project-specific amendment.

2.6 Groomed OSV Routes in LAU Project Specific Amendment

Forest: Boise National Forest

Alternatives: 2021 MMP and Johnson Creek Route Alternatives

2.6.1 Plan Component

BNF: Standard TEST34

Allow no net increase in groomed or designated over-the-snow routes or play areas, outside of baseline areas of consistent snow compaction, by LAU or in combination with immediately adjacent LAUs unless the Biological Assessment demonstrates the grooming or designation serves to consolidate use and improve lynx habitat. This does not apply within permitted ski area boundaries, to winter logging, and access to private holdings. Permits, authorizations, or agreements could expand baseline routes of existing snow compaction, and grooming could expand to routes of existing snow compaction and routes that have been designated but not groomed in the past and still comply with the standard.

2.6.2 Proposed Amendment

BNF: Standard TEST34

Except the requirement for no net increase in groomed or designated over-the-snow, outside of baseline areas of consistent snow compaction, by LAU or in combination with immediately adjacent LAUs.

The exception of the above standards meets the following purpose and needs for the SGP:

- The Forest Service's purpose is to consider a proposed OSV trail relocation during construction, operation, and closure of the SGP that would mitigate recreational and socioeconomic impacts associated with Perpetua's proposed use of the surface of NFS lands. This particular route is a component of popular OSV trails heavily utilized by recreationists in the winter, as it is the principal means for accessing Landmark and its snowmobile trails from Warm Lake. This recreational use supports local businesses that cater to residents and visitors that utilize the trails.

- The Forest Service's need for action is to ensure that the proposed occupancy and use of NFS lands is consistent with statutory and regulatory requirements. For purposes of this environmental analysis, the Forest Service is assuming the proposed uses would be able to be authorized under existing regulatory authorities. However, the Forest Service will need to evaluate the eventual applications for rights of way to make a final determination.

For the 2021 MMP and Johnson Creek Route Alternatives, the existing Warm Lake area to Landmark OSV trail (8.49 miles) would be temporarily relocated to the Cabin Creek Road OSV trail, Cabin Creek to Johnson Creek OSV trail connector, and Warm Lake area OSV connector (12.03 miles total) for the period comprising SGP construction, operations, and reclamation. The temporarily relocated OSV trails are located with the Warm Lake and Burntlog LAUs.

A full analysis of the impacts to LAUs is provided in **Section 4.13.2** (Wildlife) in the EIS relative to lynx habitat and observations which are provided in **Section 3.13.4.2**.

Table 6 provides documentation for the review of substantive requirements of planning regulations for the SGP project-specific amendment to suspend the requirement to avoid effects on LAUs within portions of the proposed SGP area.

Table 6 Groomed OSV Routes in LAU Project-Specific Amendment Review

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.8 Sustainability	(a) Ecological Sustainability	(1) Ecosystem Integrity	Under the 2021 MMP and Johnson Creek Route Alternatives, the existing 8.49 miles of the Warm Lake area to Landmark OSV trail would be relocated using 12.03 miles of new OSV trail along the Cabin Creek Road during the life of the SGP in the Warm Lake and Burntlog LAUs. SGP design features developed for wildlife including lynx are developed to maintain and restore ecosystem integrity.
		(2) Air, Soil, and Water	This requirement is not directly related to this project-specific amendment.
		(3) Riparian Areas	This requirement is not directly related to this project-specific amendment.
		(4) Best Management Practices for Water Quality	This requirement is not directly related to this project-specific amendment.
	(b) Social and Economical Sustainability	(1) Social, cultural, and economic conditions	This requirement is not directly related to this project-specific amendment.
		(2) Sustainable recreation, including recreation settings, opportunities, and access; and scenic character.	Under the 2021 MMP and Johnson Creek Route Alternatives, the existing 8.49 miles of the Warm Lake area to Landmark OSV trail would be relocated using 12.03 miles of new OSV trail along the Cabin Creek Road during the life of the SGP in the Warm Lake and Burntlog LAUs. SGP design features and mitigation measures developed for recreation are developed to maintain recreational use and access.
		(3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner	Under the 2021 MMP and Johnson Creek Route Alternatives, the existing 8.49 miles of the Warm Lake area to Landmark OSV trail would be relocated using 12.03 miles of new OSV trail along the Cabin Creek Road during the life of the SGP in the Warm Lake and Burntlog LAUs. SGP design features and mitigation measures developed for socioeconomics are developed to maintain recreational use and access that contribute to the local economy.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(4) Ecosystem services	This requirement is not directly related to this project-specific amendment.
		(5) Cultural and historic resources and uses	This requirement is not directly related to this project-specific amendment.
		(6) Opportunities to connect people with nature	The alternative OSV route would be a replacement of an existing route. The replacement would allow opportunities to connect people with nature.
219.9 Diversity of plant and animal communities	(a) Ecosystem plan components	(1) Ecosystem integrity	Under the 2021 MMP and Johnson Creek Route Alternatives, the existing 8.49 miles of the Warm Lake area to Landmark OSV trail would be relocated using 12.03 miles of new OSV trail along the Cabin Creek Road during the life of the SGP in the Warm Lake and Burntlog LAUs. SGP design features and mitigation measures developed for wildlife including lynx are developed to maintain and restore ecosystem integrity.
		(2) Ecosystem diversity	This requirement is not directly related to this project-specific amendment.
	(b) Additional species-specific plan components	(1) and (2) components to provide the ecological conditions necessary to contribute to the recovery of federally listed or proposed species *(and viable species of conservation concern)* beyond those required at part (a) of this section	The mitigation measures developed for lynx habitat are developed to maintain and restore ecosystem integrity.
	(c) Species of conservation concern		There are no species known to occur within the proposed SGP area with a substantial concern about the species capability to persist over the long- term in the plan area (**Section 4.13.2**).
219.10 Multiple Use	(a) Integrated resource management for multiple use	(1) Aesthetic values, air quality, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands, habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, wilderness, and other relevant resources and uses.	The proposed plan amendment allows for maintaining recreation opportunities under the implementation of the proposed SGP. The effects of the OSV route relocation on LAUs, as well as mitigation and reclamation actions developed to reduce impacts of the proposed SGP, are analyzed in the EIS (**Section 4.13.2**).

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(2) Renewable and nonrenewable energy and mineral resources.	This amendment would allow for maintaining recreation opportunities under development of nonrenewable mineral resources.
		(3) Appropriate placement and sustainable management of infrastructure, such as recreational facilities and transportation and utility corridors.	This requirement is not directly related to this project-specific amendment.
		(4) Opportunities to coordinate with neighboring landowners to link open spaces and take into account joint management objectives where feasible and appropriate.	This requirement is not directly related to this project-specific amendment.
		(5) Habitat conditions, subject to the requirements of § 219.9, for wildlife, fish, and plants commonly enjoyed and used by the public; for hunting, fishing, trapping, gathering, observing, subsistence, and other activities (in collaboration with federally recognized Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments).	This requirement is not directly related to this project-specific amendment.
		(6) Land status and ownership, use, and access patterns relevant to the plan area.	This requirement is not directly related to this project-specific amendment.
		(7) Reasonably foreseeable risks to ecological, social, and economic sustainability.	This requirement is not directly related to this project-specific amendment.
		(8) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of the terrestrial and aquatic ecosystems on the plan area to adapt to change (§ 219.8).	This requirement is not directly related to this project-specific amendment.
		(9) Public water supplies and associated water quality.	This requirement is not directly related to this project-specific amendment.
		(10) Opportunities to connect people with nature.	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
219.11 Timber requirements based on the NFMA	(a) Lands not suited for timber production		This requirement is not directly related to this project-specific amendment.
	(b) Timber harvest for purposes of timber production.		This requirement is not directly related to this project-specific amendment.
	(c) Timber harvest for purposes other than timber production.		This requirement is not directly related to this project-specific amendment.
	(d) Limitations on timber harvest	(1) No timber harvest for the purposes of timber production may occur on lands not suited for timber production.	This requirement is not directly related to this project-specific amendment.
		(2) Timber harvest would occur only where soil, slope, or other watershed conditions would not be irreversibly damaged.	This requirement is not directly related to this project-specific amendment.
		(3) Timber harvest would be carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources.	This requirement is not directly related to this project-specific amendment.
		(4) Where plan components will allow clearcutting, seed tree cutting, shelterwood cutting, or other cuts designed to regenerate an even-aged stand of timber, the plan must include standards limiting the maximize size for openings that may be cut in one harvest operation, according to geographic areas, forest types, or other suitable classifications.	This requirement is not directly related to this project-specific amendment.
		(5) Timber will be harvested from NFS lands only where such harvest would comply with the resource protections set out in sections 6(g)(3)(E) and (F) of the NFMA (16 U.S.C. 1604(g)(3)(E) and (F)).	This requirement is not directly related to this project-specific amendment.

Planning Regulation Section	Part	Subpart	Does the plan amendment meet this planning rule requirement? (Add rationale if Yes or No and cite EIS/EA)
		(6) The quantity of timber that may be sold from the national forest is limited to an amount equal to or less than that which can be removed from such forest annually in perpetuity on a sustained yield basis.	This requirement is not directly related to this project-specific amendment.
		(7) The regeneration harvest of even- aged stands of trees is limited to stands that generally have reached the culmination of mean annual increment of growth.	This requirement is not directly related to this project-specific amendment.

3.0 REFERENCES

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