Stibnite Gold Project

Access and Transportation Specialist Report

Prepared by:
USDA Forest Service
Payette National Forest

for:
Payette and Boise National Forests

August 2022

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Table of Contents

List of Tables

List of Figures

List of Acronyms

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Trips
ASAOC	Administrative Settlement Agreement and Order on Consent
BNF	Boise National Forest
CFR	Code of Federal Regulations
CR	County Road
DOT	Department of Transportation
East Fork SFSR	East Fork South Fork Salmon River
FCRNRW	Frank Church-River of No Return Wilderness
Forest Service	United States Forest Service
FR	Forest Road
FRTA	Forest Road and Trail Act
FSH	Forest Service Handbook
FSM	Forest Service Manual
GPS	Global Position System
HAZWOPER	Hazardous Waste Operations and Emergency Response
HL	Highway loading
IPCo	Idaho Power Company
IRA	Idaho Roadless Area
ISO	International Organization for Standardization
ITD	Idaho Transportation Department
kV	kilovolt
MMP	Modified Mine Plan
mph	miles per hour
MSHA	Mine Safety and Health Administration
NEPA	National Environmental Policy Act
NFS	National Forest System
NFST	National Forest System Trail
OHV	Off-highway vehicle

OSHA	Occupational Safety and Health Administration
OSV	Over-snow vehicle
Perpetua	Perpetua Resources Idaho Inc.
PNF	Payette National Forest
RAMP	Restoration and Access Management Plan
ROW	right-of-way
SGLF	Stibnite Gold Logistics Facility
SGP	Stibnite Gold Project
SH	State Highway
SPCC Plan	Spill Prevention, Containment, and Countermeasures Plan
SSD	Stopping site distance
TSF	tailings storage facility
U.S.	United States
USC	United States Code
USDA	U.S. Department of Agriculture
WB	Wheelbase

1.0 Introduction

The United States (U.S.) Department of Agriculture Forest Service (Forest Service) received the Stibnite Gold Project (SGP) Plan of Restoration and Operations, (Midas Gold Idaho, Inc. 2016) for review and approval in accordance with regulations at 36 Code of Federal Regulations (CFR) 228 Subpart A for the proposed SGP in central Idaho. 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 then submitted in October of 2021 (Perpetua 2021a). Midas Gold changed their name to Perpetua Resources Idaho Inc. (Perpetua[3]) in February 2021.

The SGP would consist of mining operations, including an open pit hard rock mine and associated processing facilities, located within Valley County in central Idaho on federal, state, and private lands (**Figure 1-1**). The SGP would produce gold and silver doré, and antimony concentrate, for commercial sale by Perpetua. The SGP would have a life (construction, operation, closure, and reclamation), not including post-reclamation monitoring, of approximately 20 years, with active mining and ore processing occurring over approximately 15 years.

This specialist report describes the affected environment for access and transportation under the Proposed Action. This report describes the existing conditions for access and transportation systems that currently serve the SGP area and also includes a summary of the relevant laws, regulations, policies, and plans.

2.0 Alternatives, Including the Proposed Action

The SGP 2021 Modified Mine Plan (MMP) Alternatives Report (Forest Service 2022a) contains the details of the alternatives that are being considered and fully analyzed in this report. For reader usability, the alternatives are briefly summarized here.

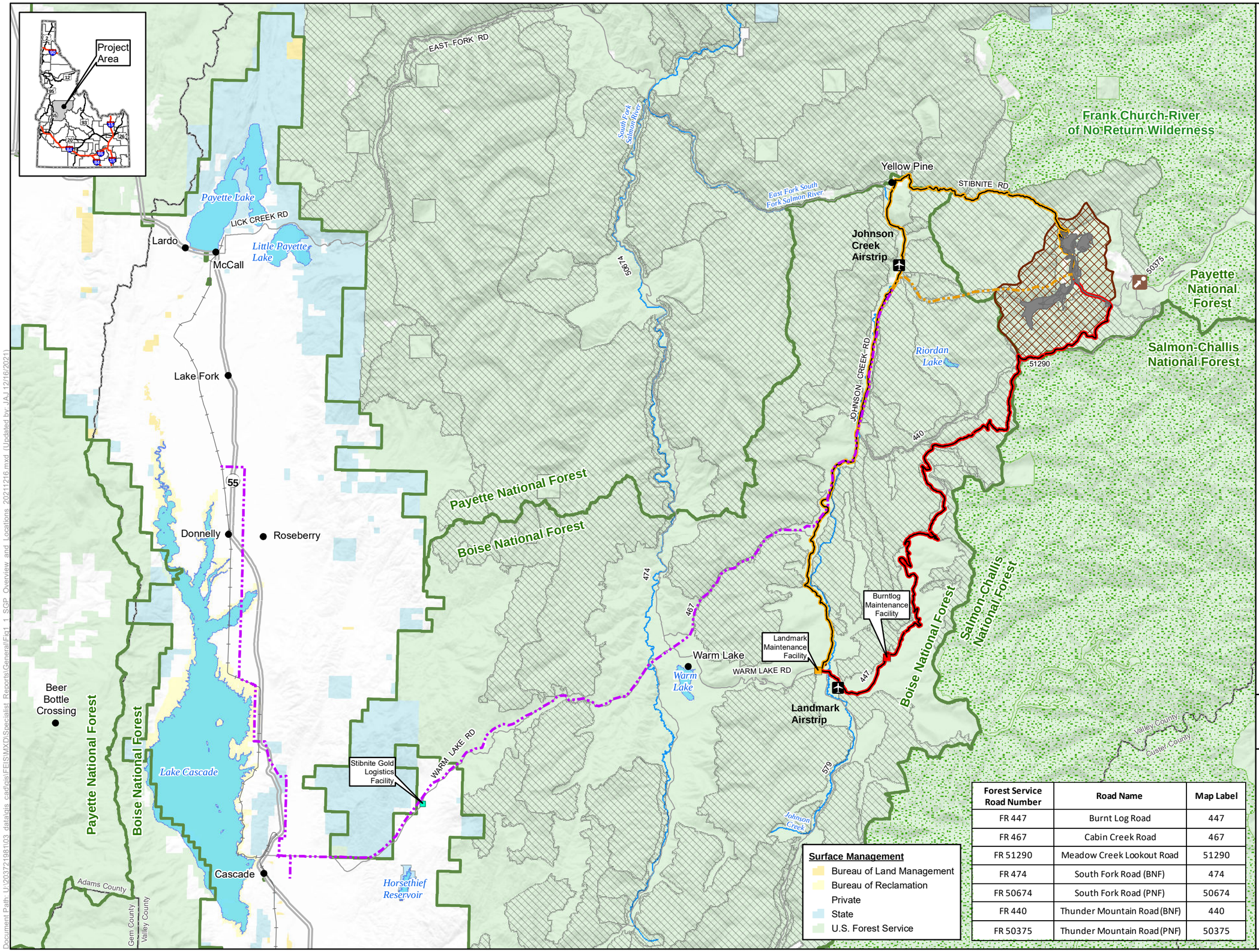
2.1 No Action Alternative

The No Action Alternative provides an environmental baseline for comparison of the action alternatives. Under the No Action Alternative, the mining, ore processing, and related activities under the 2021 MMP or the Johnson Creek Route Alternative would not take place. In addition, certain legacy and existing mining impacts would be addressed as directed in the 2021 Administrative Settlement Agreement and Order on Consent (ASAOC), including installation of stream diversion ditches designed to avoid contact of water with sources of contamination and removal of development rock and tailings currently impacting water quality. However, existing and approved activities (i.e., approved exploration activities and associated reclamation obligations) would continue and Perpetua would not be precluded from subsequently submitting another plan of operations pursuant to the General Mining Law of 1872.

[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.



LEGEND

Project Components
- SGP Features
- Operations Area Boundary

Access Roads and Trail System
- Burntlog Route *
- Johnson Creek Route

Utilities
- Upgraded Transmission Line
- New Transmission Line

Offsite Facilities
- Burntlog Maintenance Facility *
- Landmark Maintenance Facility **
- Stibnite Gold Logistics Facility

Other Features
- U.S. Forest Service
- Wilderness
- IRA and/or Forest Plan Special Area
- County
- City/Town
- Monumental Summit
- Airport/Landing Strip
- Railroad
- Highway
- Road
- Stream/River
- Lake/Reservoir

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

Forest Service Road Number	Road Name	Map Label
FR 447	Burnt Log Road	447
FR 467	Cabin Creek Road	467
FR 51290	Meadow Creek Lookout Road	51290
FR 474	South Fork Road (BNF)	474
FR 50674	South Fork Road (PNF)	50674
FR 440	Thunder Mountain Road (BNF)	440
FR 50375	Thunder Mountain Road (PNF)	50375

* Associated with 2021 MMP only
** Associated with Johnson Creek Route Alternative only
Note:
The McCall – Stibnite Road (CR 50-412) consists of Lick Creek Road, East Fork South Fork Salmon River Road (East Fork Road) and Stibnite Road.

0 2 4 Miles
1 inch = 4 miles when printed at 11x17

Figure 1-1
SGP Overview and Location
Stibnite Gold Project
Stibnite, ID

Base Layer:
Other Data Sources: Perpetua; State of Idaho Geospatial Gateway (INSIDE Idaho); Boise National Forest; Payette National Forest

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2.2 2021 MMP

The 2021 MMP is based upon Perpetua's Revised Plan (ModPRO2) and is considered the Proposed Action. The description of this alternative has been updated per the Revised Plan submitted in 2021 (Perpetua 2021a). The SGP operations footprint has been modified but would still be within the previously identified Operations Area Boundary (**Figure 2-1**).

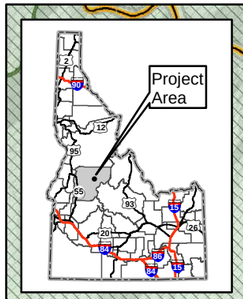
The following mine components would be common to the action alternatives:

- Mine pit locations, areal extents, and mining and backfilling methods
- Transportation management on existing and proposed roads
- Pit dewatering, surface water management, and water treatment
- Ore processing
- Lime generation
- Tailing storage facility (TSF) construction and operation methods
- TSF Buttress construction methods
- Water supply needs and uses
- Management of mine impacted water and stormwater runoff
- Stibnite Gold Logistics Facility (SGLF)
- A road maintenance facility
- Surface and underground exploration
- Stibnite Gold Project worker housing facility

For access, the 2021 MMP would utilize Warm Lake Road, Johnson Creek Road, and Stibnite Road during construction of the Burntlog Route; then once constructed, the Burntlog Route would be utilized during operations and reclamation. Development of the Burntlog Route would include 340.9 acres of new cut and fill activity, including borrow sources, along existing and newly constructed roadways.

Perpetua would require supply truck drivers to check in at the SGLF and then direct them to either proceed to the mine site or unload at the warehouse for temporary storage and consolidation of their load. A truck scale would be located at the SGLF to verify loads going into or out of the warehouse area. The check-in process would include general safety and road readiness inspection of incoming trucks and equipment being transported to mine site. Heavy equipment transport vehicles would be inspected for items such as presence of weeds, excessive dirt on earth moving equipment, safety equipment, installed and maintained engine brake muffling systems, and general safety checks of equipment.

The actions proposed under the 2021 MMP would take place over a period of approximately 20 years, not including the long-term, post-closure environmental monitoring or potential long-term water treatment.



Surface Land Management
- Private
- U.S. Forest Service

North Security Gate
Stibnite Lake
West End Pit
Yellow Pine Pit & Backfill
Midnight Backfill
Midnight Pond
Growth Media Stockpile
Crusher ROM Stockpile Area
Scout ROM Stockpile Area
Process Plant Area
Substation
Explosives Facility
Cell Tower
Transmission Line
Water Treatment Plant
Laydown
Hangar Flats Pit Backfill, & Stockpiles
Truck Shop Area
TSF Embankment
TSF Buttress
TSF Impoundment
SODA Pond
Radio Communications Tower
Main Gate
Growth Media Stockpile
Worker Housing Facility
Radio Communications Tower

East Fork South Fork Salmon River
Sugar Creek
West End Creek
Midnight Creek
Hennessy Creek
Fiddle Creek
Garnet Creek
Robbin Creek
Blowout Creek
Meadow Creek
STIBNITE RD

T19NR09E
T18NR09E
T19NR10E
T18NR10E

Frank Church-River of No Return Wilderness
Boise National Forest
Payette National Forest
Payette National Forest
Salmon-Challis National Forest

LEGEND

Project Components *

SGP Features
- Pit Backfill
- Growth Media Stockpile
- Mining Pit
- Laydown
- Plant Site
- TSF Buttress
- TSF Liner
- Alluvial Stockpile
- Workers Housing
- Stockpile
- Explosive Facility
- Operations Area Boundary
- Patented Claim Boundary
- Tailings Pipeline
- Clean Water Diversion **
- Clean Water Diversion - Piped **
- East Fork South Fork Salmon River Tunnel ***
- Stream ****
- Pond
- Stibnite Lake
- Light Vehicle Road
- Haul Road
- Helicopter Pad

Access Roads
- Burntlog Route
- Johnson Creek Route
- Cell Tower Access Road
- Public Access Road *****

Utilities
- Transmission Line
- Substation ******
- New Cell Tower
- Existing Communication Tower

Other Features
- U.S. Forest Service
- Wilderness
- IRA and Forest Plan Special Areas
- Monumental Summit
- Road

* Project Components are associated with all Alternatives
** Some surface clean water diversions are not discernible at this figure scale (e.g., the diversions associated with the TSF/buttress north, Fiddle culvert, Midnight Outfall, Scout ROM). Please refer to Figures 2.4-14 and 2.4-15 which provide greater detail regarding the Water Management Plan and its facility/diversion locations.
*** The East Fork South Fork Salmon River Tunnel would only be utilized as a contingency to manage high flows upon completion of the restoration of the East Fork SFSR across the backfill in the Yellow Pine Pit.
**** Perennial streams are not depicted for the entire map area. Only perennial streams within the Operations Area Boundary are depicted.
***** Public Access Road associated with 2021 MMP
****** Substation locations are approximate.

0 0.35 0.7 Miles
1 inch = 0.7 miles when printed at 11x17

Figure 2-1
Mine Site Layout
Stibnite Gold Project
Stibnite, ID

Base Layer: Hillshade derived from LiDAR supplied by Midas Gold
Other Data Sources: Perpetua; State of Idaho Geospatial Gateway (INSIDE Idaho); Boise National Forest; Payette National Forest

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2.3 Johnson Creek Route Alternative

The Johnson Creek Route Alternative was developed to evaluate potential reductions in impacts to various resources. The mining portion of this alternative would be the same as under the 2021 MMP. Therefore, the primary focus of the Johnson Creek Route Alternative would be using existing roads for mine access through operations and reclamation instead of the Burntlog Route that under the 2021 MMP requires new road construction in Inventoried Roadless Areas. The Johnson Creek Route Alternative would require extensive upgrades to both Johnson Creek Road and Stibnite Road. Development of the Johnson Creek Route would include 216.6 acres of new cut and fill activity, including borrow sources, along existing roadways that follow segments of the Johnson Creek and East Fork South Fork Salmon River (EFSFSR) to make those roadways usable or mine access during its lifespan. The construction schedule for upgrading the roads and construction of the SGP would increase from 3 years to 5 years.

The action alternatives are summarized in **Table 2-1**.

Table 2-1 Action Alternatives Summary

SGP Phase	Component/ Subcomponent	2021 MMP	Johnson Creek Route Alternative
All Phases	SGP timeline	• Construction: Approximately3 years. • Operations: Approximately 15 years. • Exploration: Approximately 17 years (during construction and operations). • Reclamation: Approximately 5 years (except for the TSF which would require an additional 9 years for tailings dewatering and consolidation). • Closure/Post-Closure Water Treatment: Approximately through Mine Year 40. • Environmental Monitoring: As long as needed.	Same as 2021 MMP except: • Construction: Approximately 5 years (upgrading the existing Johnson Creek and Stibnite Roads to provide permanent mine access).
All Phases	Access Roads	Construction/Operations: • Warm lake road from State Highway (SH) 55 to Johnson Creek Route intersection (34 miles). • Johnson Creek Route for SGP access during early construction with minor improvements within the road prism. • Burntlog Route (38 miles) for SGP access during last year of construction, mining and ore processing operations, and closure and reclamation. Includes improvements of existing segments (23 miles) and road construction for new segments (15 miles).	• Warm lake road from SH 55 to Johnson Creek Route intersection (34 miles). • Johnson Creek Route (39 miles: Johnson Creek Road 25 miles, Stibnite Road 14 miles) upgraded and used for access throughout life of mine (LOM) instead of the Burntlog Route. • Access route around the Yellow Pine pit for public access, employee access, and deliveries of supplies and equipment to the processing, warehouse, worker housing facility, and administration areas.

SGP Phase	Component/ Subcomponent	2021 MMP	Johnson Creek Route Alternative
		• Up to eight borrow areas developed along Burntlog Route for materials needed for road improvements and maintenance. • Access route around the Yellow Pine pit for public access. • Closure and Reclamation: • New sections of Burntlog Route to be reclaimed after the closure and reclamation period.	• No improvements or construction of new segments for Burntlog Route. • Up to seven borrow sources developed along the Johnson Creek Route for materials needed for road improvements and maintenance. • Closure and Reclamation: • Improved Johnson Creek and Stibnite roads would not be reclaimed to pre-existing conditions.
All Phases	Public Access	Construction: • Temporary groomed over-snow vehicle (OSV) trail on the west side of Johnson Creek from Trout Creek to Landmark while Burntlog Route is constructed (8 miles). • OSV trail on west side of Johnson Creek from Wapiti Meadows to Trout Creek campground closed during construction (9 miles). • OSV trail from Warm Lake to Landmark closed during construction through operations (8.5 miles). • Cabin Creek Road Groomed OSV trail (11 miles). • Public roads remain open through the SGP with temporary closures as needed to accommodate construction. Operations: • Groomed OSV trail moves from west side of Johnson Creek Road to Johnson Creek Road from Landmark to Wapiti Meadows (16.7 miles). • Stibnite Road (County Road [CR] 50-412) / Thunder Mountain Road (FR 50375) closed through the SGP. • Seasonal public access through the Operations Area Boundary provided by constructing new road through Yellow Pine pit and below mine haul road to link Stibnite Road (FR 50412) to	Construction and Operations: Same as 2021 MMP except: • OSV trail on the west side of Johnson Creek from Wapiti Meadows to Trout Creek campground would be closed from construction through mine closure (9 miles). • Groomed OSV trail on the west side of Johnson Creek from Trout Creek to Landmark lasting from construction through mine closure. Closure and Reclamation: Same as 2021 MMP.

SGP Phase	Component/ Subcomponent	2021 MMP	Johnson Creek Route Alternative
		Thunder Mountain Road (FR 50375). • Public access allowed on Burntlog Route to Thunder Mountain Road (FR 50375). • Closure and Reclamation: • New road constructed over the Yellow Pine Backfill (backfilled Yellow Pine pit) connecting Stibnite Road (FR 50412) to Thunder Mountain Road (FR 50375).	
Operations	Utilities – Transmission Lines	• Upgrade approximately63 miles of the existing 12.5 kilovolt (kV) and 69 kV transmission lines. • New approximate 9-mile, 138 kV line would be constructed from the Johnson Creek substation to a new substation at the mine site. • Upgrade the substations located at Oxbow Dam, Horse Flat, McCall, Lake Fork, and Warm Lake. • Reroute approximately 5.4 miles of transmission line to avoid the Thunder Mountain Estates subdivision. • Reroute approximately 0.9 miles of transmission line between Cascade and Donnelly to use an old railroad grade on private property. • Installation of approximately 3 miles of new underground distribution line along Johnson Creek Road from the Johnson Creek substation south to Wapiti Meadows.	Same as 2021 MMP.
Operations	Utilities - Communication Towers and Repeater Sites	• One cell tower located north of the Hangar Flats pit. • Locations along Burntlog Route for very high frequency (VHF) repeater sites. • Use existing access roads to repeater site locations along Burntlog Route. • Communication site at the SGLF. • Upgrades to existing communication site.	Same as 2021 MMP except: • Cell tower sites constructed and maintained using helicopter (instead of constructing access roads) for sites within IRAs managed for Backcountry/Restoration. • Locations along Johnson Creek route for repeater sites.

SGP Phase	Component/ Subcomponent	2021 MMP	Johnson Creek Route Alternative
Operations	Off-site Maintenance Facility	• SGLF located along Warm Lake Road. • Burntlog Maintenance Facility located at one of the borrow source locations 4.4 miles east of the junction of Johnson Creek Road and Warm Lake Road along the proposed Burntlog Route.	• SGLF same as 2021 MMP • Landmark Maintenance Facility located at junction of Warm Lake Road at Johnson Creek Road.
Closure and Reclamation	Access road segments	• Removal and reclamation of new road segments constructed for Burntlog Route. • Return of previously existing road segments to pre-construction width and condition.	• No removal or reclamation of pre-existing access routes.

Table Source: Perpetua 2021a

2.4 Environmental Design Features

The SGP must comply with all laws and regulations that apply to the proposed activities (Forest Service 2022a). Standards and guidelines in the Payette and Boise National Forest Land and Resource Management Plans (Forest Service 2003, 2010) that are designed to reduce or prevent undesirable impacts resulting from proposed management activities are incorporated into the action alternatives by reference. In addition, best management practices outlined in the Best Management Practices for Mining in Idaho (Idaho Department of Lands 1992) would be implemented where appropriate and applicable for operations to minimize site disturbance from mining and drilling activities.

In the design of the 2021 MMP, Perpetua has already considered many of the potential environmental impacts that might be caused by the SGP. This has led to an internal evaluation of project design features and operational characteristics that may have the effect of reducing and/or eliminating potential environmental impacts of the SGP. Such project-specific measures intended by a proponent to inherently reduce and/or avoid potential environmental impacts of a proposed action are referred to as environmental "design features".

Based on the application of permits and regulatory compliance requirements (Forest Service 2022a) to the project, regulatory requirements, standards and guidelines, best management practices, and likely permit conditions are listed in **Table 2-2**. The environmental design features that have been proposed and committed to by Perpetua are listed in **Table 2-3**. All of these environmental design measures have been assumed to be effective in conducting the environmental analysis presented in **Section 7.0**.

Table 2-2 Prominent Regulatory and Forest Plan Requirements for Access and Transportation

Description	Type	Reference
Applicable road obliteration for all roads proposed for obliteration including temporary roads and applicable sections of the Burntlog route (if selected) would be fully recontoured, including full bench constructed road segments. Road obliteration through recontouring is the reclamation of a road template through the following: 1. Deep decompaction (36") of the inside half of the road surface; 2. excavation of road fill down to the natural ground level and place on top of the decompacted inside half of the road surface on the cut slope side of road; 3. Reestablish the natural slope profile; and 4. Vegetation clump planting. Decompaction**:** All compacted road surfaces that would be covered with excavated material, for example the inside half of the road surface, shall be decompacted to a depth of 36 inches or to a restrictive layer (bedrock). This is to promote water infiltration, breakup any potential landslide slip surface between the road surface and excavated and placed fill material and allow deep root vegetation establishment. Excavation: After decompaction of the roadway, the outside road fill material shall be excavated and placed on roadbed between the top of cut and natural ground, forming a slope approximating natural contours. No ditches, water traps, or berms shall remain. Finished product should blend in with the surrounding terrain. Soil-Vegetation Plug Transplanting: Excavate soil-vegetation plugs from adjacent natural and undisturbed ground having a minimum surface area of 9 sq. ft. to a depth beyond the vegetation rooting zone (plug size is dictated by excavator bucket size). The plug transplant shall be of sufficient depth that would maintain the root system and contain adequate soil to enhance favorable growth. Soil-vegetation plug transplanting would be done at a minimum rate of 15 plantings per 100 lineal feet evenly distributed along the width and length of the recontoured surface. The plugs would be transplanted to a depth even with the surrounding recontoured ground level. This work would be accomplished with an excavator. Surface Ground Cover: Ground cover across the entire recontoured or disturbed surface (this would include all scarified ground, de-compacted roads and skid trials), by order of priority, shall be achieved using a combination of clump planting, native mulch, coarse woody debris and certified weed free agriculture straw to reach a minimum of 50 percent to the maximum 80% coverage of the recontoured surface or disturbed area. Apply native seed mix, hydromulch or organic fertilizer. This order or priority shall be given to vegetation plug planting, native mulch, coarse woody debris, and straw. When applying coarse woody debris, use various size classes at levels similar to surrounding undisturbed ground and placed at various orientations. The desired result of road obliteration through recontouring is to restore slope contours the natural slope profile, improve soil productivity, improve soil-water infiltration, and reestablish ground water flow paths and hydrologic function.	Design Feature	
To accommodate floods, including associated bedload and debris, new culverts, replacement culverts, and other stream crossings would be designed to accommodate a 100-year flood recurrence interval unless site-specific analysis using calculated risk tools or another method, determines a more appropriate recurrence interval.	Forest Plan Component	BNF and PNF: FRST02

Description	Type	Reference
Handling of road waste material (e.g., slough, rocks) would avoid or minimize delivery of waste material to streams that would result in degradation of soil, water, riparian, and aquatic resources.	Design Feature	Design Feature developed for compliance with BNF and PNF: FRST05
Commercial transport vehicles also would be inspected at Knox or Landmark by the driver prior to accessing Johnson Creek.	Design Feature	
Road clearing and maintenance activities for roads under Forest Roads and Trail Act easement agreements would be coordinated with Valley County, as necessary.	Design Feature	
Mitigate degrading effects from locatable mining operations situated within RCAs by identifying reasonable locations for access, processing, and disposal facilities outside of RCAs, wherever possible.	Forest Plan Component	BNF and PNF: MIST04, LSST07, MIST08, FRGU05
To minimize the degradation of watershed resource conditions, prior to expected water runoff, water management features would be constructed, installed, and/or maintained. Activities and features include, but are not limited to, water bars, rolling dips, seeding, grading, slump removal, barriers/berms, distribution of slash, and culvert/ditch cleaning in all applicable areas.	Design Feature	Design Feature developed for compliance with BNF and PNF: SWST01 and SWST04
To accommodate floods, including associated bedload and debris, new culverts, replacement culverts, and other stream crossings would be designed to accommodate a 100-year flood recurrence interval unless site-specific analysis using calculated risk tools or another method, determines a more appropriate recurrence interval.	Forest Plan Component	BNF and PNF: FRST02
To minimize sediment runoff from the temporary roads and roadbeds, water management features would be constructed, installed, and/or maintained on authorized temporary roads and roadbeds, on completion of use, before expected water runoff, or before seasonal shutdown. Activities and features could include, but would not be limited to, water bars, silt fencing, certified weed-free wattles, and/or weed-free straw bales, rolling dips, seeding, grading, slump removal, barriers/berms, distribution of slash, and culvert/ditch cleaning. These features would be installed in strategic downslope areas and in RCAs, where and when appropriate.	Design Feature	Design Feature developed for compliance with BNF and PNF: SWGU06
Snow removal would be accomplished in accordance with the following standards of performance: • All debris, except snow and ice, that is removed from the road surface and ditches would be deposited away from stream channels at approved locations. • During snow removal operations, banks would not be undercut, and gravel or other surfacing material would not be bladed off the roadway surface. • Ditches and culverts would be kept functioning during and following plowing. Berms left on the shoulder of the road would be removed and/or drainage openings would be created and maintained. Drainage openings would be spaced to maintain satisfactory surface drainage without discharge on erodible fills. • Dozers would be used on an as-needed basis for plowing snow. The dozer operator would maintain an adequate snow floor over the gravel road surface. • Snow would not be totally removed to the gravel road surface. Appropriate snow floor depth would be maintained to protect the roadway. • Damage of roads from, or as a result of, snow removal would be repaired in a timely manner.	Design Feature	

Description	Type	Reference
• Culverts and stream crossings would be clearly marked before snow removal begins to avoid placing berm openings in locations that would allow runoff to enter drainages directly at the culverts or stream crossings. Excessive snow would not be plowed into locations that would impact operation of the culverts or prevent positive drainage from drainage areas. Some snow is necessary around culvert openings and in the bar ditches as this would insulate the ditch and culvert and would prevent the water in the ditch and culvert from freezing. • No ice and snow removal chemicals would be used on roads. • Traction material would be 3/8-inch diameter gravel or greater.		
Road rutting from operations, outside the mine site, would be minimized by construction and maintenance of surface drainage structures, application of surfacing material, and by restricting road use when conditions are unacceptable due to moisture that is leading to the onset of rutting and concentrated turbid flow. (Note typical guidance is 'no use' if ruts deeper than 4" are created.) This design feature does not apply to the mine site.	Design Feature	Design Feature developed for compliance with BNF and PNF: SWST02 SWST03
Dust abatement chemicals would be used in accordance with applicable road maintenance biological assessment. Apply dust- abatement additives and stabilization chemicals (typically MgCl2, CaCl2, or lignin sulphonates) to avoid run-off of applied dust abatement solutions to streams. Spill containment equipment would be available during chemical dust abatement application. Where the road surface is within 25 feet (slope distance) of surface water, dust abatement would only be applied to a 10-foot swath down the centerline of the road. The rate and quantity of application would be regulated to insure all of the chemical is absorbed before leaving the road surface.	Design Feature	
Water management features would be constructed, installed, and/or maintained on authorized temporary roads on completion of use, before expected water runoff, or before seasonal shutdown. Activities and features could include water bars, rolling dips, seeding, grading, slump removal, barriers/berms, distribution of slash, and culvert/ditch cleaning.	Forest Plan Component	BNF and PNF: SWGU06

Table 2-3 Perpetua Proposed Environmental Design Features for Access and Transportation

Description
Perpetua would encourage employees to use company provided shuttle buses as transport to the SGLF from towns along SH 55.
Busing and/or vanpooling would be provided for Perpetua and contractor employees. The associated parking area would accommodate approximately 300 vehicles. To the degree practicable, Perpetua would mandate the use of busing and vans for employee and contractor transportation to the SGP and the worker housing facility.
Post reclamation, a road would be established over the backfilled Yellow Pine pit to allow public access through the reclaimed site and connect Stibnite Road (FR 50412) to Thunder Mountain Road (FR 50375).
A new 12-foot-wide gravel road would be constructed to provide public access from Stibnite Road (FR 50412) to Thunder Mountain Road (FR 50375) through the SGP. During operations, the public access road would be used to travel through the SGP and would provide seasonal use, open to all vehicles. Vehicles passing through the SGP would be required to check-in with mine personnel at the North or South SGP entry points.

Project access and transportation would also be implemented via its Transportation Management Plan which accounts for road designs, road maintenance, hazardous road conditions, accident response, spill management, avalanche risk, public safety, and other considerations (Perpetua 2021b). The plan is summarized below.

Road designs incorporate guidelines and standards from the following sources:

- Road design, construction, and operation/maintenance would consider all practicable methods to avoid and minimize potential impacts to waters of the United States (Clean Water Act Section 404, Permitting Discharges of Dredge and Fill Material) and mitigate handling of road waste material (e.g., slough, rocks) to avoid or minimize delivery of waste material to streams that would result in degradation of soil, water, riparian, and aquatic resources.
- Guidelines and standards for designing National Forest System (NFS) Roads as published in the Forest Service Handbook (FSH) 7709.56 (published in 2010 with partial amendments in 2011 and 2014) were used as the primary basis for the design criteria. The handbook incorporates design standards for two lane service roads from the American Association of State Highway and Transportation Officials (AASHTO's) Guidelines for Geometric Design of Very Low-Volume Roads (Average Daily Trips [ADT] less than 400).
- Valley County has adopted the 'Greenbook' AASHTO standards. AASHTO's Guidelines of Very Low-Volume Local Roads (ADT less than 400) provides a functional classification for Rural Resource Recovery Roads specifically for logging and mining operations.

Specific inputs into road designs include:

- ADT: 70 vehicles.
- Level of Service: Criteria 'I,' Rural Resource Recovery Road.
- Design Speed: 20-miles per hour (mph) posted (designed to 25-mph where possible and reduced to 15-mph where needed).
- Design Vehicle & Loading: wheelbase (WB)-50 (intermediate sized tractor-trailer) with AASHTO highway loading (HL)-93 loading.
- Critical design vehicle (only occurring in special situations with appropriate traffic control) is a lowboy trailer with mining equipment (similar to WB-67). Additional loading requirements may be placed on structures for the autoclave and other equipment.
- Number of Lanes & Road Width (including shoulders and recovery zone): two lanes (with the ability to reduce to one if needed under special circumstances); 21-feet wide (14-feet for single lane).
- Bridge Width: 24-feet minimum (14-feet for single lane).
- Bridge Span: Clear span 120 percent of bankfull width; bankfull defined as a peak flow event that occurs on average once every 1.5 years (Q1.5).
- Surfacing: Gravel, with asphalt 100-feet each side of bridges.
- Cross-slope & Direction: three percent to five percent, insloped typical on steep areas (more than five percent grade), crowned or outsloped on flatter areas may be considered.
- Minimum Radii: 50-foot (policy), 85-foot (15 mph), 160-foot (20 mph), 245-foot (25 mph).
- Curve Widening: 11-foot on 50-foot radius, and five-foot on 100-foot radius.

- Stopping Sight Distance (SSD): 157-foot (30 mph), (232-foot worst case, 15 mph downgradient in snow).
- Sight Distance: Exceed the SSD.
- Horizontal Clear Zone: zero to four feet.
- Vertical Grade: 10 percent max, 0.5 percent min, and five percent at switch backs (extending 100 feet).
- Vertical Curves (Sag and Crest), Minimum K and Length: 15 crest, 26 sag (75-foot length).

Road construction material would come from borrow sources that are located along the access route. Borrow site material quality assessment and construction material specifications are included in documentation supporting the Feasibility Study Access Road Design memorandum (Parametrix 2018c), which recommends targeting Forest Service standard specifications for aggregate quality.

Per Forest Service standards, bridges on NFS roads are to be designed to handle AASHTO HL-93 loading. The SGP Feasibility Study Access Road Design (Parametrix 2018c) notes that there are five existing bridges (four timber and one three-sided concrete box) along Burnt Log Road. Due to the anticipated loading that these structures would experience with the mine development and operations, each of the four timber bridges would need to be replaced. A total of six new bridges (four to replace the existing timber bridges) would be needed for the Burntlog Route alignment. There would likely be several special transports to deliver large equipment to the site. To accommodate this additional loading, steel beams would provide temporary support, pending approval by the Regional Bridge Engineer.

When in operation, all SGP, contractor, and vendor vehicles would be required to comply with the rules for long load/over-width load hauling on the permitted roads. Pilot vehicles would be required for long load/over-width load hauling and for the transport of various materials on permitted roads. Perpetua would include these rules in the safety training for all employees.

Specified maintenance practices would include:

- The debris and excess vegetation like grass and weeds should be removed from the bottom of ditches and culverts at the beginning of every fall season.
- The ditches should be graded by removing excess silt and sand sediments and reestablishing longitudinal and side slopes at the beginning of every spring and fall seasons.
- Road cross slope and shoulder slopes should be inspected and graded as required and at a minimum of the beginning of spring and fall seasons.
- Repair and/or upgrade culverts depending on storm water demand and existing culvert capacity each fall season.
- Development of covered stockpiles of coarse sand and gravel for winter sanding activities.
- Housing for road maintenance crews during periods of heavy snow removal needs and other winter maintenance activities.
- Installation of communications equipment including a tower.

- Equipment such as sanding/snowplowing trucks, snow blowers, road graders, and support equipment.
- A fuel storage area with secondary containment for maintenance equipment.
- Handling of road waste material (e.g., slough, rocks) to avoid or minimize delivery of waste material to streams that would result in degradation of soil, water, riparian, and aquatic resources.

In addition to conventional road safety risks associated with traffic and speed, project access and transportation incorporates measures to address risks associated with avalanche, landslide, washout, and hazardous weather conditions.

Avalanches occurred in 2014 and 2019, along the Stibnite Road portion of the Johnson Creek Route and again most recently in 2021. One avalanche in 2019 obliterated approximately 0.5 mile of the Stibnite Road delivering the included road material into the stream as well as entrained sediment and hundreds of trees. Reducing the potential for avalanche/roadway interaction can be accomplished by (1) appropriate design of the access road alignment that avoids placement in the bottom of avalanche paths, (2) continual monitoring of avalanche occurrences and appropriately updating the avalanche database to inform road users, and (3) mitigating catastrophic avalanches by inducing smaller, less destructive events. Current assessments of identified avalanche paths on the Burntlog and Johnson Creek access routes are described in the Snow Avalanche Hazard Assessment for Access Roads (Dynamic Avalanche Consulting 2021).

The design of access roads utilizes avalanche data to inform potential environmental protection measures with respect to avalanches, namely:

- Map locations where small-sized avalanches frequently occur and include these locations in safety plans to inform drivers of areas of potential risk.
- Periodically update the mapping before the next snow season if wildfire or any other large scale vegetation modification alter the size or frequency following the methods described in the Snow Avalanche Hazard Assessment for Access Roads (Dynamic Avalanche Consulting 2021).
- Review all paths with summer and winter imagery, review topographic contours and slope classes.
- Construct catchment areas for smaller avalanche paths on slopes on the west side of the Warm Lake Summit.
- Frequently remove snow from catchment areas/ditches or design ditches to hold most of the snow for the winter with “Jersey” barriers to increase the depth. The appropriate size of the ditch could be evaluated on a site-specific basis, which is a function of the length and incline of the slope above and the depth of the snow in a design (e.g., 10-year) winter.
- Implement an avalanche hazard management program for larger avalanches with return periods of one to ten years. This could include avalanche control and/or road closure.
- Post permanent warning signage in avalanche-prone areas of critical avalanche size.
- Monitor avalanche parameters and take appropriate actions:
  - Daily region-scale assessments

- Daily weather observations, including snowpack and avalanche observations
- Notify SGP staff when conditions are highly unstable
- Close roads during periods of elevated hazard or blocked roadways.
- Control avalanche initiation with explosives using helicopters, case charging, Avalauncher, hand charging, or remote control.

Access road design features and construction considerations would also be made to minimize risks associated with landslides, debris flow, and rock fall, namely:

- Avoidance of known occurrences of slope failures to the degree practicable,
- Incorporation of appropriate cut slopes and stabilizing features (e.g., retaining walls, soil nails) into road design to reduce the potential for slope failure.
- Road layback design to prevent the formation of steep overhangs and prevent spalling.
- Rock bolting, netting and catch benches.
- A planned Maintenance Agreement between Perpetua and Valley County would be developed defining the procedure and protocols for removing material debris from the access route.
- Dewatering or other stabilizing structural features as control measures.
- Roadway realignment if necessary.

Meteoric precipitation on roadways and surrounding roadside areas increases the risk of roadway wash outs. Elements of road design and associated culvert sizing and maintenance to reduce wash out risk include:

- Ditches would be installed on the in-sloped edge of the road, which would collect water from the gravel surfacing as well as the hillside above the road.
- For the Burntlog Route, an 18-inch-deep V-shaped ditch with 1.5H:1V slopes would be used along the roadway, as is typical of most gravel roads in mountainous areas.
- Culverts providing drainage for non-fish bearing streams would take into account the estimated drainage basin area and would be sized to accommodate a recommended peak 25-year design flow at each culvert location.
- Road crossings of fish bearing streams would be designed such that structures allow fish passage. FSH guidelines for fish-bearing streams include structures that span 120 percent of the channel's bankfull width and pass the peak 100-year design storm.
- Additional relief culverts would be placed at intervals depending upon the uphill drainage basin size and road profiles.
- The drainage system (roadside ditches and culverts) would require a reasonable amount of maintenance and inspection to ensure the system is working properly. Debris and sediment would be removed on an annual basis, in addition to any emergency situations that may arise. To

maintain culvert efficiency, Perpetua would monitor the roadways and clear debris from culvert inlets and outlets during and after significant storm events.

- During winter road maintenance, snow would be removed from the Burntlog Route, haul roads, and the temporary construction access Yellow Pine Route. Disposal of snow in riparian areas, wetlands, or areas where snowmelt could cause road damage or erosion during spring melt would be avoided.
- The planned Maintenance Agreement with Valley County would include procedures and protocols for rerouting traffic, providing temporary signage for the road closure, and any repairs required for the access roadways to return to functional operation.
- Washouts would be addressed by variable message signage and rerouting traffic until the damaged segment can be repaired.
- New culverts, replacement culverts, and other stream crossings shall be designed to accommodate a 100-year flood recurrence interval unless site-specific analysis using calculated risk tools, or another method determines a more appropriate recurrence interval.

Measures to address travel during hazardous weather conditions would include:

- Appropriate signage would be placed along SGP and public access roads to guide travelers along the roadway at night or during inclement weather.
- In areas of steep terrain and side slopes, delineators would be placed at the edge of the road to visually distinguish in shadows and snow cover.
- Delineators would be high enough to remain effective during the winter season due to the snow depth.
- Repairs to roadway signs and delineators each summer to address damage from winter maintenance activities.

In the event of roadway incidents, responses to vehicle accidents are addressed by Perpetua Vehicle Incident Emergency Response Plan (OHSF-008-L). Included are best practices for responding to accidents by or between mine employees and contractors, including situational safety assessment, reporting protocols, information to be collected/shared, and in the case of injuries, notifying emergency health care services as appropriate.

- All breakdowns involving company vehicles would be immediately reported to staff supervisors. All incidents involved public vehicles or where injuries may be present at the work site would be reported in accordance with the Accident/Incident Reporting and Investigations procedures included in Section 16 of the Site Safety and Health Plan (OHS-053) and Nonconformance and Corrective Action Procedure (IMS-012).
- Perpetua contractors, suppliers, and/or staff: Perpetua Emergency Response staff, as well as local law enforcement would be contacted and dispatched to the accident location to address any blockage to the access route and reopening the route to travel.
- Environmental hazardous materials: For vehicle accidents involving other potential hazardous materials spills (e.g., gasoline, oil, vehicle fluids, etc.), Perpetua Emergency Response staff would

be dispatched to the accident location to address any hazardous materials spills and local law enforcement would be contacted to control traffic until the route can reopen to travel.

- Local law enforcement to be contacted and dispatched to the accident location to address any blockage to the access route and reopening the route to travel.

Where possible, Perpetua employees would be allowed to assist with public traffic incidents by rendering first aid with consent to injured persons per the Perpetua Resources Personal Injury Emergency Responses Plan (OHSF-008-I).

Transportation of hazardous materials (including explosives) and emergency spill response would be conducted in compliance with Idaho Water Quality Standards, the National Oil and Hazardous Substances Pollution Contingency Plan, and Occupational Safety and Health Administration (OSHA) Hazardous Communication, Hazardous Waste Operations and Emergency Response (HAZWOPER). Anticipated quantities of materials stored at the SGP are included in the project description (Perpetua 2021b).

All transport drivers would be required to have spill response, safety, and resource awareness training. In this program, drivers would be informed of the Idaho State Emergency Medical Service, first hazardous materials responder actions, and the importance of anadromous fisheries that must be protected. Spill kits would be included on all vehicles transporting hazardous materials. In addition, each driver would participate in a SGP safe-driver training course. The course would cover the operating procedures as well as discuss causes of accidents and how to minimize risks. Chemical use volumes would be reported under the United States Environmental Protection Agency Toxic Release Inventory program, as applicable and required by Section 313 of the Emergency Planning and Community Right to Know Act of 1986.

Several of the materials that would be transported to SGP require safe handling and transport procedures. Hazardous chemicals would be transported to the mine site in United States Department of Transportation (USDOT)-certified containers and by USDOT-registered transporters, who would comply with applicable USDOT, OSHA, and Mine Safety and Health Administration (MSHA) regulations. Transportation vehicles would meet the standards of USDOT requirements and carry required markings, labels, and placards.

The following safety measures would be implemented to reduce the risk of accidents:

- Schedules would be developed for planned dates and times for transport of materials. The schedules would be communicated with staff and drivers so that timing of material transport is known, and arrangements can be made to minimize possible hazards.
- Fuel hauling would be done with single chassis units.
- Transportation of fuel and materials would be done during daylight hours.
- Spill response equipment are located along portions of the access route and in in the Perpetua Resources Spill Response trailer.
- Prior to material hauls, areas of “flat water” along the route would be communicated to appropriate hazardous materials response personnel to identify areas of potential booming in waterways adjacent to the route. These areas are identified for the Johnson Creek Route and would be established along the Burntlog Route.

- Documented annual inspections of commercial transport vehicles are required by 49 CFR 396.17-23. Inspections would be conducted by a qualified USDOT inspector. Commercial transport vehicles would also be inspected by the drivers prior to transport. Transport companies are required to document DOT annual inspections and vehicle inspections. In addition, daily inspection of transport vehicles would occur as required by MSHA requirements.
- Material transporters to the site:
  - Would be required to check in at the Logistics Facility. Safety inspections of all transport vehicles would be conducted by Perpetua personnel prior to transportation of fuel and materials.
  - Would be required to provide documentation of successfully completed training in responding in the event of spills or other releases of transported materials and would have spill cleanup kits on the vehicle at all times.
  - Would be familiarized with the transportation route prior to transportation of fuel, hazardous materials, and operational supplies.
  - Pilot vehicles would be used to escort shipments of fuel, chemicals, or reagents to, or antimony concentrate from the site. The pilot vehicles would have radio contact with the site and the transport vehicle. Pilot and emergency response vehicles would carry appropriate spill containment and first aid equipment.
  - The pilot vehicle would advise oncoming traffic to park until the convoy passes and would regulate the speed of the transporting vehicle so that it does not exceed posted speed limits and safety conditions inherent to the road.
  - Road signs would be placed at both the start and end of the route while a convoy is operating, indicating to the public that a fuel convoy is in progress and to use caution.
  - Communications with Perpetua management by using the SPOT™ Global Positioning System (GPS) Messenger, (or similar GPS vehicle tracking equipment) – signal on the road/still traveling (custom message) at least hourly, and signal checking-in/OK upon reaching the Stibnite camp and upon safely returning to Cascade.

Cyanide transportation and handling would be conducted in accordance with the International Cyanide Management Institute Cyanide Management Code that calls for transportation of solid form, dry sodium cyanide briquettes in an International Organization for Standardization (ISO) container, which eliminates the risk of fluid leaks or spills during transportation. ISO containers are heavy-duty steel containers that are air and water-tight and designed to withstand rollovers and other accidents.

For transportation of antimony concentrate, Perpetua would load the sealed super sacks containing the concentrate into a shipping container at the processing facility. Perpetua would load the concentrate by forklifts and hooked lifting racks to safely move the super sacks, which are equipped with lifting straps, to remain in the sealed super sacks and fully enclosed shipping containers for the full course of their transport from the SGP site to their final destination. The supersacks and shipping container would provide primary and secondary containment for the antimony concentrate. The Operator would own the antimony concentrate the entire time it is on Forest Service lands.

In the event of spills resulting from traffic incidents, Perpetua would respond with spill response measures described in the SGP Emergency Response Program (OHSF-008) Spill Plan (OHSF-008-K). Supporting Emergency Response Plans that provide information specific to incident response actions include:

- Emergency Call List and Contact Matrix (OHSF-008-A): Communication protocols for internal (Perpetua) contacts for emergency notification and call matrices per incident type (e.g., spill, flood, fire, avalanche, etc.) for appropriate federal, state, and county agency reporting.
- Protection Systems and Response Equipment (OHSF-008-D): Identifies the locations of emergency response equipment and includes an inventory of available emergency response equipment at each location.
- Spill Plan (OHSF-008-K): Provides emergency response protocols for employees and contractors in the event of spills. Includes directives for minor and major spill response, emergency contacts, reporting requirements for fuel spills/hazardous materials spills, contact numbers for environmental response contractor, muster points, and emergency medical services contact.
- Related plans include:
  - Critical Operations List (OHSR-008-C)
  - Evacuation Plan (OHSF-008-G)
  - HAZWOPER Program (OHSF-008-N)
  - Waste Determinations SOP (ESOP-021)
  - Herbicide Spill Response SOP (ESOP-024)
- For major spills, areas of "flat water" in adjacent waterways would be identified prior to material hauls in the event that booms need to be placed to capture major spills.

A Spill Prevention, Containment, and Countermeasures (SPCC) Plan would be maintained for material transportation, transfer, and storage operations as required by 40 CFR 112 regulations. Perpetua maintains an SPCC Plan for current fuel storage at the SGP to support site exploration and current site maintenance activities. Anticipated quantities of materials stored at the SGP are included in the project description (Perpetua 2021b). The SPCC Plan would address site-specific spill prevention measures, fuel haul guidelines, fuel unloading procedures, inspections, secondary containment of all on-site fuel storage tanks, and staff training.

- The SGP SPCC Plan (most current revision, February 2019) includes measures to avoid inadvertent release of hazardous materials into the environment, particularly streams and rivers and describes response and remediation measures to minimize effects of an inadvertent release. Spill response kit locations are located on the Johnson Creek access route and similarly spaced spill response kits would be placed along the Burntlog Route during its construction and when it is in operation.
- Per the requirements of 40 CFR 112, the SPCC Plan meets the applicable requirements for drainage, bulk storage tanks, tank car and truck loading and unloading, transfer operations (intra-facility piping), inspections and records, security, and training. Additionally, the facility must fully implement the SPCC Plan and train personnel in the execution of the SPCC Plan.

- The SPCC Plan would be updated and revised to address spill response through all phases of mine life from construction through post-closure (or as required to maintain compliance with 40 CFR 112).

3.0 Relevant Laws, Regulations, and Policy

The SGP would occupy and use land associated with both private patented mining claims and unpatented mining claims located on public land administered by the U.S. Forest Service (Forest Service). For transportation resources, the Forest Service provides federal oversight on the Forest Transportation System, including the National Forest System (NFS) roads, NFS trails, and airfields on NFS lands. Forest Service regulation 36 CFR 228.12 – Access, specifically addresses providing access across NFS lands for locatable mineral operations. The Idaho Transportation Department (ITD) provides jurisdiction for State Highway (SH) 55, the main north-south road providing access to the analysis area. Valley County provides jurisdiction for local public roads, such as Warm Lake Road. The Payette National Forest (PNF) Land and Resource Management Plan (Payette Forest Plan) (2003) and Boise National Forest (BNF) Land and Resource Management Plan (Boise Forest Plan) (2010), PNF Forest-wide Travel Analysis Report (2015a), and the BNF Forest-wide Travel Analysis Process Report (2015b), along with the Valley County Master Transportation Plan (Valley County 2008a) provide standards and guidance on how the transportation network should be managed.

3.1 Land and Resource Management Plan

Physical, social, and biological resources on NFS lands are managed to achieve a desired condition that supports a broad range of biodiversity and social and economic opportunity. National Forest Land and Resource Management Plans embody the provisions of the National Forest Management Act and guide natural resource management activities on NFS land.

In the SGP area, the Payette Forest Plan (Forest Service 2003), and the Boise Forest Plan (Forest Service 2010) provide management prescriptions designed to realize goals for achieving desired condition for access and transportation and include various objectives, guidelines, and standards for this purpose.

3.2 Federal Laws, Regulations, and Policy

3.2.1 National Forest Management Act

The National Forest Management Act of 1976 directs that roads be designed to standards appropriate for intended uses and requires the revegetation of roads within 10 years of the termination of temporary and undeveloped roads created under contract, permit, or lease unless it is later determined that the road is needed for use as part of the National Transportation System (16 United States Code [USC] 1608 [b] and [c]).

3.2.2 Forest Roads and Trail Act Easements

Section 2 of the Forest Roads (FRs) and Trails Act (FRTA) authorizes the road and trail systems for National Forests, the granting of easements across NFS lands, the construction of maximum economy roads, and the imposing of requirements on road users for maintaining and reconstructing roads (16 USC 532 et seq.). In addition, Forest Service Manual (FSM) 7703.3 states that, “Wherever possible, transfer jurisdiction over any NFS road and associated Forest transportation facilities (FSM 7705) to the appropriate public road authority when the road meets any of the following criteria: a) More than half the traffic on the road is not related to administration and use of NFS lands; b) The road is necessary for mail,

school, or other essential local governmental purposes; c) The road serves yearlong residents within or adjacent to NFS lands" (Forest Service 2016).

3.2.3 Travel Management Rule

Travel management planning is regulated by 36 CFR 212, 251, 261, and 295 – Travel Management; Designated Routes and Areas for Motor Vehicle Use; Final Rule. The final rule, effective in 2005, requires designation of roads, trails, and areas that are open to motor vehicle use by class of vehicle and applies to both summer and winter travel. The Travel Management Rule is divided into three subparts: A, B, and C, described in the following paragraphs (Forest Service 2019a).

Subpart A is the administration of the Forest Transportation System and includes the definitions for Part 212, which governs administration of the Forest Transportation System, designation of roads, trails, and areas for motor vehicle use (including off-highway vehicles [OHVs]). In compliance with 36 CFR 212.5(b), the PNF and BNF both completed a travel analysis process in September 2015 to inform future National Environmental Policy Act travel management decisions including identification of the minimum road system, identification of unneeded roads to be decommissioned or converted to other uses, and other changes to NFS roads, which include revisions to motor vehicle use designation (Forest Service 2019a, 2019b, 2019c).

Subpart B is the designation of roads, trails, and areas for motor vehicle use. The motor vehicle use map is developed under 36 CFR 212.51 (Forest Service 2019a). OHVs are any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, or other natural terrain.

Subpart C designates and regulates use specifically for over-snow vehicles (OSVs). OSVs are defined as motor vehicles designed for use over snow that run on tracks and/or a ski or skis while in use over snow (36 CFR 212.1). The USFS issued orders including maps showing the areas where OSV use is allowed, prohibited, or restricted.

3.3 State and Local Policy

3.3.1 State of Idaho Rules

The Idaho Surface Mining Act (Title 47, Chapter 15) requires the state to regulate mining activities, including but not limited to, mineral exploration, mining operations, reclamation of lands affected by exploration and mining operations. Implementing regulations under Idaho Administrative Procedure Act 20.03.02 include provisions regarding the design, construction, maintenance, and reclamation of mining roads.

3.3.2 Valley County Master Transportation Plan

Valley County adopted its 2008 Master Transportation Plan to address the impacts of growth on the existing transportation system in the western portion of the county along SH 55 (Valley County 2008a). The Master Transportation Plan accounts for future growth and changes in land uses under Valley County's jurisdiction. Valley County proposed recommendations for future improvements to the Valley County transportation network to support this anticipated growth.

3.4 Forest Service Manuals

The FSMs contain descriptions of legal authorities, objectives, policies, responsibilities, instructions, and guidance to Forest Service staff to plan and execute assigned programs and activities. FSM 2700 provides

direction for special uses management on NFS lands. Chapter 2730 covers policies, authorities, and direction for granting rights-of-way for roads and trails across NFS lands and interests in lands. FSM 5400 covers landownership and Chapter 5460 provides direction concerning right-of-way acquisition. FSM 7700 provides direction for the planning, construction, reconstruction, operation, and maintenance of the Forest Transportation System. It sets forth the authority, objectives, policy, responsibility, and definitions related to the Forest Transportation System.

4.0 Issues and Resource Indicators

4.1 Significant Issues

Construction, operation, and closure and reclamation may affect traffic volumes, types of vehicles, and patterns of use. Construction and operation of mine infrastructure may impact public access to NFS lands, travel routes, and access to reserved Tribal rights.

4.2 Resource Issues and Indicators

The analysis of effects to access and transportation includes the following issues:

Issue: The SGP may affect access to public lands during mine construction, operations, and closure and reclamation.

Indicator:

- Number, location, and description of changes in access due to new and improved roadways.

Issue: The SGP may change the miles of roads, the amount of use, and types of vehicles on each road.

Indicators:

- Miles of new road.
- Change in amount of use.
- Changes in frequency of rail, air, and water transportation.

Issue: The SGP may affect public safety on the roads used by mine vehicles during construction, operations, and closure and reclamation activities via traffic incidents and potentially associated spills.

Indicators:

- Miles of roads used by mine vehicles.
- Change in traffic volume.
- Change in emergency access.

5.0 Methodology

Access and transportation were analyzed using the Payette Forest Plan (2003), Boise Forest Plan (2010), PNF Forest-wide Travel Analysis Report (2015a), BNF Forest-wide Travel Analysis Process Final Report

(2015b), Valley County Master Transportation Plan (Valley County 2008a), geographic information system spatial analyses, and information and analysis documented in reports prepared for the SGP. Traffic management information as well as road design and maintenance details are described in the SGP Transportation Management Plan (Perpetua 2021b) as summarized in **Section 2.4**.

Traffic count data was collected in 2015 through 2017 from various sources. This resulted in the use of different types of counters and timeframes, which varied in the specificity of vehicle types recorded (i.e., full-size vehicles only or full-size and light vehicles) and consistency of data collected. The percentage of vehicles representing existing Perpetua exploration traffic on these roads is not reflected in the data collected.

A traffic management plan, which would include details for traffic management including road closures affecting public and mine traffic access, has been drafted (Perpetua 2021b). Details of traffic management for public access on the routes for construction, operations, and closure and reclamation, including through the SGP are general and would be finalized before the record of decision for the SGP is signed. The traffic management plan also describes commitments that would be made in a Road Maintenance Agreement with Valley County. These agreements would include commitments regarding snow removal and wintertime maintenance on Warm Lake Road plus safety measures including frequent removal of snow from catchment areas, designed ditches for holding snow, and installation of delineators.

Static population growth rate was used to analyze the action alternative impacts to access and transportation. Although Valley County assumes four percent population growth throughout the county in its Master Transportation Plan, Valley County is a rural county with land use designations comprised of rural cities, villages, and tourist hubs (Valley County 2008a). Although the population in the area has been growing rapidly and is predicted to continue at a substantial rate, in general, rural areas have been static, and populations are predicted to remain the same or increase at a slower rate (Forest Service 2010). Traffic volume within the analysis area can be mainly attributed to recreational activities. The quantitative analysis using a static population growth rate provides a clearer understanding of the alternatives' direct contribution in relation to existing traffic and the transportation system.

5.1 Analysis Area

The analysis area for access and transportation is presented on **Figure 5-1**.

5.1.1 Direct/Indirect Effects Boundaries

The analysis area for access and transportation encompasses the overall road system connecting Cascade, McCall, Yellow Pine, and the mine site. The analysis area is dominated by unpaved roads, one state highway, and county roads. Elements of this context include:

- SGP access would be provided via the two-lane SH 55 to other access roads located on private and public lands within Valley County, the PNF, and the BNF.
- Road maintenance activities (including dust control, removal of debris from roadwayand rights-of-way, road repair, and snow removal) for NFS roads are coordinated by the Forest Service. NFS roads on a Schedule A Cooperative Maintenance Agreement are maintained by Valley County in coordination with the Forest Service. FRTA-designated roads are also maintained by Valley County through FRTA easements.

Valley County
Adams County
Payette National Forest
Frank Church-River of No Return Wilderness
Krassel Airstrip
East Fork South Fork Salmon River
Yellow Pine
STIBNITE RD
50340
50074
EAST FORK RD
Payette Lake
LICK CREEK RD
Lardo
McCall
Little Payette Lake
McCall Airstrip
Reed Ranch Airstrip
Johnson Creek Airstrip
Stibnite Airstrip
50375
Payette National Forest
416W
51290
Salmon-Challis National Forest
Riordan Lake
JOHNSON CREEK RD
440
Lake Fork
Lake Fork Substation
Donnelly
Roseberry
55
Payette National Forest
Boise National Forest
South Fork Salmon River
Johnson Creek
474
467
Warm Lake Substation
Warm Lake
Landmark
WARM LAKE RD
447
Warm Lake
Landmark Airstrip
579
Boise National Forest
Salmon-Challis National Forest
Valley County
Custer County
Payette National Forest
Boise National Forest
Lake Cascade
WARM LAKE RD
Cascade Substation
Cascade
Cascade Airstrip
Horsethief Reservoir
Adams County
Gem County
Valley County
Frank Church-River of No Return Wilderness

Port of Lewiston
Project Area

Legend

- Existing Stream Crossing
- New Stream Crossing
- Burntlog Route Borrow Source *
- Johnson Creek Route Borrow Source **
- Analysis Area
- Operations Area Boundary

Access Roads

- Burntlog Route *
- Johnson Creek Route
- Highway
- Road

Other Modes of Transportation

- Airports/Airstrips
- Railroad

Existing Utilities

- Existing Substation ***
- Existing Communication Tower

Other Features

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

Surface Land Management

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

* Associated with 2021 MMP only
** Associated with Johnson Creek Route Alternative only
*** Substation locations are approximate
Note:
1. For the purposes of defining the analysis area, the Burntlog Route is shown on this map. The Burntlog Route includes upgrades to the existing Burnt Log Road and newly constructed Burntlog Road.
2.The Big Creek Airstrip is located approximately 13.9 miles due north of the mine site.
3.The McCall – Stibnite Road (CR 50-412) consists of Lick Creek Road, East Fork South Fork Salmon River Road (East Fork Road) and Stibnite Road.

0 2.5 5 Miles
1 inch = 4.5 miles
when printed at 11x17

Figure 5-1
Access and Transportation Area of Analysis
Stibnite Gold Project
Stibnite, ID

Base Layer: USGS Shaded Relief Service
Other Data Sources: Perpetua, State of Idaho Geospatial Gateway (INSIDE Idaho); Boise National Forest; Payette National Forest

Document Path: U:\2023\23061103_data\gis_ea\gis\FEIS\MXD\Specialist Reports\Access_Transportation\Fig5_1_Access_Transportation_Analysis_Area_20220223.mxd (Updated by: JAJ 2/23/2022)

- Portions of Valley County roads located within the analysis area are open year-round to highway legal vehicles. Valley County plows portions of Johnson Creek Road, Warm Lake Road, and McCall-Stibnite Road, and all of South Fork Salmon River Road (Valley County 2019). Some sections of roads closed in the winter are groomed for OSV use. This includes portions of Johnson Creek Road, Warm Lake Road, and Burnt Log Road.

- A majority of the FRs within the analysis area are open year-round (with some seasonal restriction due to snow) to all motorvehicles (i.e., including OHVs), except for South Fork Salmon River Road, which allows highway legal vehicles only.

- Traffic volume within the analysis area can be mainly attributed to recreational activities and residential traffic. Other activities could include fuels management, mineral exploration, road and utility maintenance activities, and timber harvest. Current traffic levels within the analysis area also can be attributed to the activities that have been ongoing for exploration, monitoring, and research purposes.

- Vehicle accidents occurring on the existing roadway network are caused by driver error, vehicle mechanical issues, and environmental factors such as poor road conditions due to weather and wildlife crossings. Although it is not designated as a NFS road and is therefore not managed by the Forest Service, Warm Lake Road experiences the highest incidents of accidents within the Forest Transportation System due to the higher traffic volumes and higher speeds observed (Ulberg 2017).

- Air transportation is a common mode of transportation for residents and visitors recreating in the surrounding region. There are seven public use airports and one private airstrip (Stibnite airstrip) located within the analysis area.

- The Port of Lewiston, Idaho's only seaport, handles barging of cargo shipments andis located approximately 245 road miles and approximately 135 air miles northwest of the SGP.

- The Idaho Northern and Pacific rail line runs from Cascade south along the Payette River to Emmett and west to Payette where it connects with the Union Pacific line (ITD 2016). The Idaho Northern and Pacific line previously hauled timber products between Emmett and Cascade; however, the use of that railroad line has stopped largely due to the closure of the Boise Cascade sawmill in Cascade (ITD 2013; Valley County 2018). No active rail transportation is located within the analysis area.

For specific discussions on the impacts associated with the construction and use of access roads and SGP-related traffic to the physical, biological, and social environments, refer to the SGP Noise Specialist Report (Forest Service 2022b), SGP Fisheries and Aquatic Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Specialist Report (Forest Service 2022c), SGP Wildlife and Wildlife Habitat (Including Threatened, Endangered, Proposed, and Sensitive Species) Specialist Report (Forest Service 2022d), SGP Recreation Specialist Report (Forest Service 2022e), SGP Scenic Resources Specialist Report (Forest Service 2022f), SGP Social and Economic Conditions Specialist Report (Forest Service 2022g), SGP Special Designations Specialist Report (Forest Service 2022h), and SGP Tribal Rights and Interests Specialist Report (Forest Service 2022i).

The analysis of effects to access and transportation included in this section is focused on the main access routes to and from the mine in the summer and winter where the bulk of mine-related traffic would occur during construction, operations, and closure and reclamation and therefore could result in potential traffic,

access, and safety issues. Thus, this section does not discuss traffic or public access impacts from SGP components such as the transmission line upgrades, the new transmission line to the SGP, communication facilities, or the maintenance facility where substantially less traffic would be anticipated in comparison to daily mine-related traffic on the main access routes to and from the SGP. The SGP Recreation Specialist Report (Forest Service 2021e) discusses impacts for recreation-related vehicle traffic, as well as impacts to OHV use on roads and trails. In addition, because winter access east of Warm Lake and east and south of the village of Yellow Pine is primarily recreation-related, the SGP Recreation Specialist Report (Forest Service 2022e) includes the discussion of winter public access impacts from new OSV routes and changes to existing winter access.

5.1.2 Cumulative Effects Boundaries

The cumulative effects analysis area for access and transportation consists of the access roads located on private and public lands in Valley County, the PNF, and the BNF that would be used to access the SGP area and extends out to and along SH 55 north to the Port of Lewiston and south to Boise.

5.2 Analysis Area Methodology

The analysis area for access and transportation focuses on the existing and proposed roads (many unpaved) providing access and transport to and from the SGP, off-site facilities, and transmission line. For transportation purposes, the analysis area corresponds with the area where activities for the SGP would occur with some discussion of routes that pass through the area, serve adjacent lands, or provide motorized access to or near the SGP. Although road transportation is the primary focus of the analysis area, a discussion of other modes of transportation (air, water, and rail) that are part of the transportation network also is included. The access and transportation analysis area includes portions of the PNF, BNF, and Valley County.

6.0 Affected Environment

6.1 Existing Conditions

This section presents a brief description of local and regional transportation systems existing on land, air, and water in the analysis area, including roads, rail, port, and airstrips. The section focuses mainly on the local and regional road transportation system and provides a discussion of the road system development history, existing roads and areas of motorized access in the analysis area, vehicle accident data, and current (2015-2017 and 2019) traffic volumes.

Baseline information, including annual average daily traffic (AADT) data for PNF and BNF, as well as accident data, are derived from USFS, the Idaho Department of Transportation, Perpetua, and Valley County data to provide a characterization of the analysis area. A general overview of existing plans, road maintenance, and road standards also are included in the discussion below.

6.1.1 Existing Road Transportation Network

The Stibnite Mining District has been explored and mined since the early 1900s and included activities such as road construction and exploration. Many of the forest roads in the area were originally built to access mining claims or other remote sites and tend to be very steep, rocky, and winding (Forest Service 2019d).

The transportation network in the analysis area includes SH 55, Valley County roads, and NFS roads. Valley County maintains Warm Lake Road, Johnson Creek Road, and McCall-Stibnite Road on NFS lands through easements issued under the FRTA (**Figure 5-1**). For the purposes of this report, McCall-Stibnite Road is presented as three segments to provide a more location-specific discussion of existing conditions and potential impacts associated with the SGP. These three segments include: Lick Creek Road (from SH 55 east to South Fork Salmon River Road), East Fork Road (from South Fork Salmon River Road east to the village of Yellow Pine), and Stibnite Road (from the village of Yellow Pine east to the SGP). There are approximately 130 miles of state roads, approximately 278 miles of Valley County roads, and approximately 1,557 miles of NFS roads in the analysis area.

Table 6-1 lists the existing primary roads in the analysis area by name, NFS road or county road (CR) number, a brief description of the route, including: jurisdiction, length, surface treatment, and Forest Service maintenance level (as appropriate). The road width of SH 55 generally spans from 20 to 24 feet and the average posted speed limit is 55 miles per hour. Valley County road surface widths range from 14 to 26 feet and general speed limits range from 20 to 50 miles per hour (Valley County 2008b). NFS road surfaces in the SGP area range from 10 to 16 feet wide. Most NFS roads do not have posted speed limits, but generally have a design speed limit of 5 to 15 miles per hour depending on the level of service and design criteria of the road. Most roads in the PNF and BNF are single-lane, native surfaced roads with high rock fragment content from the rocky terrain and include pullouts for passing vehicles. General maintenance during snow-free months consists of grading and re-compacting the road surface, intermittent dust control, and periodic cleaning of drainage culverts and ditches. Refer to the SGP Recreation Specialist Report (Forest Service 2022e) for a comprehensive list of roads and trails in the recreation analysis area.

The Forest Service Road Maintenance Levels (NFS MLs) are defined by the FSH 7709.59 – Road Systems Operations and Maintenance as the level of service provided by, and maintenance required for, a specific road which are consistent with road management objectives and maintenance criteria (Forest Service 2012a). Maintenance levels are summarized below per FSH7709.59 Section 62.32:

- **Maintenance Level 5** – "Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities." Some may have an aggregate surface and dust abatement may be used. They are usually an arterial or collector road. Typically, connect to state roads and county roads (CRs) and include some developed recreation roads.

- **Maintenance Level 4** – "Assigned to roads that provide a moderate degree of user comfort and convenience at moderate traffic speeds. Most roads are double lane and have an aggregate surface." However, some roads may be single lane. Some roads may be paved and/or dust abated. May connect to state and CRs and include some developed recreation roads.

- **Maintenance Level 3** – "Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities." Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Typically connect to arterial and collector roads or other maintenance Level 3 roads. May include some dispersed recreation roads.

- **Maintenance Level 2** – "Assigned to roads open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations. Warning signs and traffic control devises are not provided with the exception that some signing, such as W-18-1 'No Traffic

Signs,' may be posted at intersections. Motorists should have no expectations of being alerted to potential hazards while driving these roads. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, orspecialized uses. Long haul may occur at this level." Typically, these are local roads that connect to collectors and other local roads and may not be passable during periods of inclement weather.

- **Maintenance Level 1** – Assigned to intermittent service roads during the time they are closed to vehicular traffic, typically more than 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Roads receiving maintenance level 1 may be of any type, class, or construction standard, and may be managed at any other maintenance level while they are open for traffic. While being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses.

Table 6-1 Existing Primary Roads in the Analysis Area

Name	FR/CR Number	Jurisdiction	Length	Access1,2,3	Notes
SH 55	-	ITD	27.63 miles From Cascade north to McCall	Open year-round to highway legal vehicles	Asphalt road; Plowed in winter
Warm Lake Road	CR 10-579	Valley County	34.32 miles From SH 55 east to just east of CR 10-413 at the start of the proposed Burntlog Route/Burnt Log Road	Open year-round to all vehicles	Asphalt road; Plowed to Warm Lake Parking Area; Groomed OSV from Warm Lake Parking Area to Landmark (8 miles)
Johnson Creek Road	CR 10-413	Valley County	25.10 miles From CR 10-579 north to the Stibnite Road portion of CR 50-412 at the village of Yellow Pine	Open year-round to all vehicles (wheeled vehicles seasonally restricted due to grooming for OSVs)	Aggregate/native surfaced road; Groomed OSV from CR 10-579 north to Wapiti Meadow Ranch by Valley County; Plowed from Wapiti Meadow Ranch north to Yellow Pine by Valley County
Lick Creek Road	CR 50-412	Valley County	35.17 miles Portion of CR 50-412 from SH 55 east (in McCall) to FR 50674	Open year-round to all vehicles	Asphalt/aggregate/native surfaced road; Plowed for the paved portion and from Zena Creek Ranch to the end and ungroomed in between
East Fork Road	CR 50-412	Valley County	14.67 miles Portion of CR 50-412 from FR 50674 east to the village of Yellow Pine	Open year-round to all vehicles	Aggregate/native surfaced road; Plowed in winter by Valley County
Stibnite Road	CR 50-412	Valley County	14.71 miles Portion of CR 50-412 from the village of Yellow Pine east to FR 50375 (within the SGP) and continuing just south of the junction with FR 50375	Open year-round to all vehicles	Aggregate/native surfaced road; Plowed in winter by Perpetua through agreement with Valley County

Name	FR/CR Number	Jurisdiction	Length	Access1,2,3	Notes
Warren-Profile Gap Road*	CR 50-340	Valley County	27 miles From CR 50-412 north to Edwardsburg- Big Creek	Open year-round to all vehicles	Aggregate/native surfaced road
South Fork Salmon River Road	FR 50674	PNF	23.65 miles From FR 474 north to East Fork Road CR 50-412	Open year-round to highway legal vehicles (a 2-mile stretch between Buckhorn Creek Trailhead and Jackie Creek/Phoebe Creek Trailhead is open to all vehicles.)	Also locally known as South Fork Road; Asphalt road; Plowed in winter by Valley County (under Schedule A agreement) NFS ML: 4
South Fork Salmon River Road	FR 474	BNF	7.19 miles From CR 10-579 north to FR 50674	Open year-round to highway legal vehicles	Also locally known as South Fork Road; Asphalt road; Plowed in winter by Valley County (under Schedule A agreement). NFS ML: 4
Burnt Log Road	FR 447	BNF	21.73 miles From approximately 230 feet east of CR 10-413 to end	Open year-round to all vehicles	Native surfaced road; Last 0.25 to 0.5 mile of road is closed, and motorized traffic is prohibited; Groomed OSV route from Landmark by Valley County (approximately 9.8 miles total: 6 miles groomed and 3.8 miles of infrequently groomed). NFS ML: 3 (4 miles) and 2 (17 miles)
Thunder Mountain Road	FR 50375	PNF	5.14 miles From the east terminus of CR 50-412, then east to Lookout Mountain Trailhead	Open year-round to all vehicles	Native surfaced road. NFS ML: 2
Thunder Mountain Road	FR 440	BNF	8.54 miles From CR 10-413 east to FR 440/Riordan Trailhead	Open year-round to all vehicles	Also locally known as Old Thunder Mountain Road; Native surfaced road. NFS ML: 2
Meadow Creek Lookout Road	FR 51290	PNF	11.46 miles From Meadow Creek/Summit Trailhead north to FR 50375	Open year-round to all vehicles	Native surfaced road. NFS ML: 2

Name	FR/CR Number	Jurisdiction	Length	Access1,2,3	Notes
Horse Heaven Road	FR 416W	BNF	2.19 miles From Johnson Creek Road (CR 10-413) east to Hennessey Meadows/Riordan Trailhead	Open year-round to all vehicles	Also locally known as Riordan or Powerline Road; Native surfaced road. NFS ML: 2
Cabin Creek Road	FR 467	BNF	10.58 miles From FR 474 east to Spur FR 467P and Trout Creek Campground at CR 10-413	Open to all vehicles from June 1 to September 15	Native surfaced road. NFS ML: 2
Paradise Valley Road	FR 488	BNF	1.74 mile From CR 10-579 north to FR 467	Open year-round to all vehicles	Native surfaced road. NFS ML: 2

Source: Forest Service 2005, 2018, 2019a-d; Valley County 2014, 2019

*Warren-Profile Gap Road is outside of the analysis area but could be used to access the SGP when connecting from the north to Stibnite Road.

[1]Roads Open to Highway Legal Vehicles = These roads are open only to motor vehicles licensed under state law for general operation on all public roads within the state.

[2]Roads Open to All Vehicles = These roads are open to all motor vehicles, including smaller OHVs that may not be licensed for highway use (but not to oversize or overweight vehicles under state traffic law).

[3]Unless otherwise noted, FR roads are closed by snow in the winter and re-open once snow melts in the spring. Roads do not open for through-traffic until at least mid-June and close to public use as early as October 15.

The maintenance of certain NFS roads is coordinated between the USFS and Valley County through Schedule A agreements. Typically, NFS road maintenance activities (including dust control, removal of debris from roadway and rights-of-way, road repair, and snow removal) are coordinated with the Valley County Roads and Bridge Department. Most Valley County backcountry roads are closed through the winter and melt off in the spring (Valley County 2017). Similarly, NFS roads are closed by snow in the winter and re-open once the snow melts off in the spring. Therefore, roads do not open for through-traffic until at least mid-June and often close to public use as early as October 15.

6.1.2 Primary Routes

There are three existing primary routes within the analysis area to access the SGP from Cascade or McCall: Johnson Creek, Lick Creek, and South Fork Salmon River routes as shown on **Figure 5-1**. All of the routes require the use of Idaho State Highway (SH) 55.

6.1.2.1 Johnson Creek Route

During non-winter conditions (roads clear of snow), the SGP can be accessed from the City of Cascade by traveling northeast on Warm Lake Road for about 34 miles to Landmark, then north on Johnson Creek Road for approximately 25 miles to the village of Yellow Pine, and approximately 14 miles east on the Stibnite Road portion of McCall-Stibnite Road (Stibnite Road). The Johnson Creek Route, which only includes Johnson Creek Road and the Stibnite Road portion of McCall-Stibnite Road, is currently used to access the SGP during the summer.

The Johnson Creek Road is a county maintained, native surface road that is open to vehicles with seasonal restrictions due to snow. During the winter, Valley County plows approximately 10 miles of Johnson Creek Road from Yellow Pine to Wapiti Meadow Ranch and Perpetua (under agreement with Valley County) plows along Stibnite Road. Valley County grooms the remaining 17 miles of Johnson Creek

Road from Wapiti Meadow Ranch to Warm Lake Road at Landmark for OSV use. Valley County does not plow Warm Lake Road from Warm Lake to Landmark. This section is a designated groomed OSV route.

The Stibnite Road portion of the route is also a county-maintained native surface road, open to all vehicles with seasonal restrictions due to snow. This road is plowed in the winter by Perpetua through an agreement with Valley County. Stibnite Road connects to Thunder Mountain Road on the southeastern portion of the Stibnite site and currently provides public access through the site.

6.1.2.2 Lick Creek Route

The SGP also can be accessed from McCall during non-winter conditions by traveling east on the Lick Creek portion of McCall-Stibnite Road (Lick Creek Road) for approximately 37 miles to the East Fork South Fork portion of McCall-Stibnite Road (East Fork Road), then approximately 16 miles to the village of Yellow Pine, and approximately 14 miles east on Stibnite Road. Lick Creek Road is not maintained during the winter; however, East Fork Road and Stibnite Road are plowed from South Fork Salmon River Road to Yellow Pine by Valley County and from Yellow Pine to the SGP by Perpetua to access their private land inholdings in the area.

6.1.2.3 South Fork Salmon River Route

Additionally, the SGP can be accessed year-round from Cascade by traveling approximately 24 miles northeast on Warm Lake Road to the intersection with South Fork Salmon River Road, then north on South Fork Salmon River Road for approximately 30 miles to McCall-Stibnite Road, and approximately 30 miles east on McCall-Stibnite Road (i.e., East Fork Road and Stibnite Road). Some segments along South Fork Salmon River Road have sharp curves which can be challenging for heavy vehicle travel. However, this route currently provides the only access to the SGP during winter months.

6.1.2.4 Warm Lake Road

Warm Lake Road (CR 10-579) is a two-lane (one lane each direction), asphalt-paved roadway with lane markings open year-round to all vehicles from SH 55 to Warm Lake. The road starts in Cascade at an intersection with SH 55, which is a major north-south transportation corridor. This intersection would be used by all mine-related traffic through all phases of the SGP. The Warm Lake Road continues eastward for approximately 35 miles, ending at Johnson Creek Road (CR 10-413) at Landmark. Warm Lake Road is under the jurisdiction of Valley County. Currently, Valley County does not maintain Warm Lake Road in winter beyond Warm Lake Lodge. With adequate snowpack, an 8-mile segment of the Warm Lake Road route east of Warm Lake Lodge is used as an OSV route, allowing access into Landmark and points beyond.

6.1.3 Existing Stream Crossings

Existing stream crossings along the existing Johnson Creek, Stibnite, and Burnt Log roads are shown on **Figure 5-1**. The number of stream crossings along each existing route are quantified and the type of streams at the crossings are provided in **Table 6-2** below.

Table 6-2 Existing Stream Crossings at Main Access Roads

Route Name	Type of Stream	Number of Stream Crossings
Yellow Pine Road	Intermittent	3
	Perennial	2
McCall-Stibnite Road	Intermittent	22
	Perennial	39
Johnson Creek Road	Intermittent	2
	Perennial	18
South Fork Salmon River	Intermittent	19
	Perennial	31
Warm Lake Road	Canal/Ditch	1
	Intermittent	11
	Perennial	19
SH 55	Canal/Ditch	7
	Intermittent	11
	Perennial	4
Thunder Mountain Road	Intermittent	3
	Perennial	3
Burnt Log Road	Perennial	18
Total		213

Source: USGS 2021

There is a total of 213 existing stream crossings along existing main access roads in the analysis area. These crossings include intermittent and perennial streams and irrigation canals and ditches.

6.1.4 Existing Seasonal Access for OHVs and OSVs

OHVs can access the roads and trails throughout the analysis area during both summer and winter seasons. Currently, OHVs can access the SGP area primarily from Stibnite Road to Thunder Mountain Road in order to reach Monumental Summit and the Lookout Mountain Trailhead in the summer. For a more detailed discussion on existing recreational access within the recreation analysis area, refer to the SGP Recreation Specialist Report (Forest Service 2022e).

During the winter, numerous roads in the analysis area are plowed for vehicle use or groomed for OSV use. Specifically, Valley County plows the following roads/road sections for highway legal vehicle use during the winter: East Fork Road from South Fork Salmon River Road to Yellow Pine; Johnson Creek Road from Yellow Pine to Wapiti Meadow Ranch, the beginning and end portions of Lick Creek Road, and Warm Lake Road from SH 55 to Warm Lake under existing FRTA easements. Valley County also plows South Fork Salmon River Road for use during the winter under a Schedule A cooperative maintenance agreement. Perpetua plows Stibnite Road from Yellow Pine to the SGP under an annual road maintenance agreement with Valley County to maintain access to their private land inholdings in the area.

Valley County currently grooms for OSV use the portion of Johnson Creek Road from Wapiti Meadow Ranch to Warm Lake Road (approximately 17 miles) and the length of Warm Lake Road from Warm Lake to Landmark (approximately 11 miles). Valley County also grooms Burnt Log Road for OSV use (approximately 9.8 miles total: 6 miles groomed and 3.8 miles of infrequently groomed). Cabin Creek Road is currently used during the summer and is not a groomed OSV route.

6.1.5 Existing Traffic Conditions

Existing vehicle traffic was determined by traffic count data collected on local roadways and at SH 55 intersections in the analysis area (HDR 2017a, 2017b; ITD 2017). Traffic count data was collected to record two-way road usage at nine sites from July through October from 2015 through 2016. **Table 6-3** summarizes the baseline traffic volumes (i.e., AADT) for key roadway segments in the analysis area.

The traffic volumes along the key roadway segments decrease with distance from SH 55. SH 55 is a public highway classified by Valley County as a principal arterial per the ITD functional classification that provides for relatively high travel speeds and minimum interference to through movement (American Association of State Highway and Transportation Officials 2018; Valley County 2008a). Arterials function to move through traffic and generally link counties and cities (Valley County 2008a). Warm Lake Road has the most daily traffic of the county and NFS roads in the analysis area. Many recreational facilities are located off this road including numerous facilities near Warm Lake. Residences are spread out along Warm Lake Road within 4 miles of SH 55 and along McCall-Stibnite Road in Yellow Pine and north to Big Creek using Warren-Profile Gap Road. Warm Lake Road, Johnson Creek Road, and McCall-Stibnite Road are considered county collector roads per ITD functional classification, which generally move traffic from local roads to the arterials or other points of interest (Valley County 2008a).

Table 6-3 Existing Traffic Volumes for Key Roadway Segments

Name	FR/CR Name	AADT1,2
SH 55	-	4,900
Warm Lake Road	CR 10-579	1,670
Johnson Creek Road	CR 10-413	70
Stibnite Road[3] (Yellow Pine to Stibnite)	CR 50-412	30
Burnt Log Road	FR 447	70
East Fork Road[4] (South Fork Salmon River Road to Yellow Pine)	CR 50-412	84
Thunder Mountain Road[5]	FR 440	11
Horse Heaven Road[5]	FR 416W	6

Source: AECOM 2019; HDR 2017a, 2017b; ITD 2017, 2019

[1]Data was collected in 2015 or 2016 except for Warm Lake Road data collected in 2017. 2019 data from the ITD was available for SH 55, Warm Lake Road, Johnson Creek Road, Stibnite Road, and Burnt Log Road. AADT is calculated by Total Recorded Count/Number of Days Recorded. All figures have been rounded up to whole numbers.

[2]Average daily traffic count data provided by USFS for calendar year 2014 at Lick Creek Summit (35 AADT), East Fork (Eiguren Ranch) (37.8 AADT), South Fork (confluence) (34.7 AADT), Profile Summit (14.1 AADT), and Stibnite (18.1 AADT) support the data provided in Table 6-3 (Forest Service 2014). However, for consistency purposes, the 2015, 2016, and 2019 data collected would be used to account for traffic counts along the segments.

[3]A portion of the traffic turns off onto Warren-Profile Gap Road towards Big Creek/Edwardsburg (approximately 5 to 18 vehicles between 2014 through 2016). However, for purposes of this analysis, all traffic on Stibnite Road between Yellow Pine and the SGP is considered.

[4]This road considers traffic counts available from 2015-2017 data as more recent traffic counts for the specific road segments from South Fork Salmon River Road to Yellow Pine were not available from the ITD.

[5]The traffic counts are assumed to include OHVs only. These roads include 2015-2017 traffic counts as more recent data was not available from the ITD.

South Fork Salmon River Road is considered an NFS arterial road, which serves smaller areas and usually connects to local roads or terminal facilities. Burnt Log Road, Thunder Mountain Road, and Horse

Heaven Road are NFS local roads that connect a terminal facility (e.g., trailheads) with collector roads, arterial roads, or public highways and usually serve a single purpose involving intermittent use (Forest Service 2016).

Traffic volume in the analysis area is mainly attributed to recreational activities and residential traffic. Other activities could include fuels management, road and utility maintenance activities, and timber harvest. In addition, current traffic levels in the analysis area also can be attributed to the activities that have been ongoing since 2009 for exploration purposes, monitoring, background studies, and private property infrastructure maintenance. Traffic volume and traffic behavior vary depending on the day of the week and the season. Valley County has many summer recreational areas that attract visitors from May through October with peak levels in June, July, and August. Although the AADT is less during the winter months, winter driving conditions influence the amount of traffic (Valley County 2008a).

6.1.6 Vehicle Accidents

Vehicle accident data for full-size vehicles, motorcycles, and OHVs from 2000 through 20121 was obtained from Valley County Sheriff's Department records for the six roads associated with the three existing primary access routes to the SGP. Warm Lake Road experienced an average of seven accidents per year from 2000 through 2021, followed by South Fork Salmon River Road with an average of two accidents per year, Lick Creek Road with two accidents per year, Johnson Creek Road with one accident per year, and Stibnite Road and East Fork Road with no accidents on average per year (Ulberg 2017, VCSD 2022).

According to the Valley County Sheriff's traffic incident records from 2000 through 2016, the causes of most accidents on the existing roadways fall under the general categories of driver error, vehicle mechanical issues, and environmental factors (Ulberg 2017, VCSD 2022). Examples of driver error include speeding, following another vehicle too closely, inattentiveness, fatigue, gear shift issues, failure to share road, inexperience as a driver, and impairment. Examples of mechanical issues include brake and engine failure and tire-related problems including the misuse or lack of use of chains during ice or snow conditions. Environmental factors that affected traffic incidents include weather-related (e.g., snow, ice, flooding, and other conditions that contributed to poor visibility), poor road conditions (e.g., soft shoulders), and wildlife crossings.

It is likely that Warm Lake Road experiences the most accidents due to the higher traffic volumes and higher speeds observed. OHV and motorcycle-related crashes were included in the Valley County Sheriff's Department records. The accident data summarized here may have some discrepancies as it is likely that not all crashes are reported (Ulberg 2017, VCSD 2022).

6.1.7 Other Modes of Transportation

Road transportation is the primary mode of transportation in the analysis area; however, other modes are also part of the transportation network.

6.1.7.1 Air Transportation

Flying by airplane is a common mode of transportation for both residents and visitors in the surrounding region. The Idaho Division of Aeronautics of the ITD and Forest Service have airstrips in the analysis area for public use. Perpetua owns the Stibnite airstrip for private use. **Table 6-4** provides a summary of airports/airstrips located within the analysis area.

Table 6-4 Airports/Airstrips Located in the Analysis Area

Airport/Airstrip	Owner	Annual Operations1
Stibnite (ID41) (Private)	Perpetua/Hecla Mining Company	Not Available
Johnson Creek (3U2) (Public)	Idaho Division of Aeronautics	5,720 (7/27/2017)
Landmark (0U0) (Public)	Forest Service	900 (6/23/2017)
Krassel Forest Service (24K) (Public)	Forest Service	396 (7/30/2019)
Reed Ranch (I92) (Public)	Idaho Division of Aeronautics/Forest Service	225 (7/30/2019)
Big Creek (U60) (Public)	Idaho Division of Aeronautics/Forest Service	4,004 (7/30/2019)
Cascade (U70) (Public)	City of Cascade	9,125 (7/27/2017)
McCall Municipal (MYL) (Public)	City of McCall	43,435 (7/30/2019)

Source: AirNav 2019

[1]Annual operations data represents the flights recorded for 12 months ending in date denoted in parentheses.

Johnson Creek airstrip is the most utilized airstrip in the analysis area. Small airplanes and private charter flights use this airstrip to access camping and fishing in the backcountry. Landmark is the second most-used airstrip, located on the southern section of Johnson Creek in a high mountain valley surrounded by trees. Krassel airstrip is a short airstrip located on a bluff above the South Fork of the Salmon River that is used for helicopter traffic during the summer and particularly during wildfire season. The Krassel Work Center is located east of the airstrip. Reed Ranch is the newest backcountry airstrip in the analysis area and is operated by the Idaho Division of Aeronautics through a special use permit from the PNF. This airstrip is open May 1 through October 31 (AirNav 2019). The Stibnite airstrip is administratively closed to public access through a Notice to Airmen filed with the Federal Aviation Authority (2020).

6.1.7.2 Water Transportation

Regional waterborne transportation is located north of the analysis area at the Port of Lewiston. Located approximately 135 air miles northwest of the SGP, the Port of Lewiston is Idaho's only seaport. The Port of Lewiston is the most inland seaport on the west coast and is located approximately 465 river miles from the ocean. In addition to barging, the Port of Lewiston supports multiple modes of transportation including trucks and rail (Port of Lewiston 2019). The port handles breakbulk (bulk cargo that is not containerized), specialty, and roll on/roll off cargoes. Cargo shipments generally travel by barge to truck or rail destinations in Canada, Wyoming, Montana, North Dakota, and the Port of Portland (Port of Lewiston 2019).

6.1.7.3 Rail Transportation

Historically, a railroad line ran predominantly west of SH 55 from McCall south through Cascade. This segment of the line has been abandoned and the rails and ties removed. A segment of the abandoned grade extending approximately 3.5 miles south of McCall was converted to the North Valley Rail Trail (Visit McCall 2020). The Idaho Northern and Pacific line runs from Cascade south along the Payette River to Emmett and west to the Town of Payette where it connects with the Union Pacific line (ITD 2016). The Idaho Northern and Pacific line previously hauled timber products between Emmett and Cascade; however, the use of that railroad line has stopped largely due to the closure of the Boise Cascade sawmill in Cascade in 2001 and subsequent closures of timber facilities along the route (ITD 2013; Valley County 2018). The railroad mostly shipped forest products, agricultural products, and chemicals (Rio Grande Pacific 2019). The Idaho Northern and Pacific line is a subsidiary of the Rio Grande Pacific Corporation,

but has its local operations based out of Emmett (ITD 2013). The Idaho Historical Railroads started a Thunder Mountain Line tour operation in 1998, originating in Cascade and traveling to Horseshoe Bend, but operation ceased in 2016 (Thunder Mountain Line 2017).

6.1.8 Golden Meadows Exploration

Affiliates of the former Midas Gold, now Perpetua, initiated mineral exploration activities in 2009 and currently use the existing road transportation network. The exploration area is accessed via the Johnson Creek Route during the summer and the South Fork Salmon River Route during the winter.

Known as the Golden Meadows Exploration Project, it includes the construction of short temporary trails, reopening of former roads, and use of existing non-system roads to access adjacent areas of private inholdings or drill sites. These temporary roads would be reclaimed once access to adjacent areas of private inholdings is no longer required or when drilling is completed, and drill sites reclaimed.

7.0 Environmental Consequences

7.1 Impact Definitions

The impacts definitions for intensity, duration (Forest Service 2012a), and context are provided in **Table 7-1**.

Table 7-1 Impact Definitions

Attribute	Term	Description
Intensity	Negligible	Impacts would result in a change in current conditions that would be too small to be physically measured using normal methods or would not be perceptible. There is no noticeable effect on the natural or baseline setting. There are no required changes in management or utilization of the resource.
Intensity	Minor	Impacts would result in a change in current conditions that would be just measurable with normal methods or barely perceptible. The change may affect individuals of a population or a small portion of a resource, but it would not result in a modification in the overall population, or the value or productivity of the resource. There are no required changes in management or utilization of the resource.
Intensity	Moderate	Impacts would result in an easily measurable change in current conditions that is readily noticeable. The change affects a large percentage of a population, or portion of a resource which may lead to modification or loss in viability, value, or productivity in the overall population or resource. There are some required changes in management or utilization of the resource.
Intensity	Major	Impacts are considered significant. Impacts would result in a large, measurable change in current conditions that is easily recognized. The change affects a majority of a resource or individuals of a population, which leads to significant modification in the overall population, or the value or productivity of the resource. This impact may not be in compliance with applicable regulatory standards or impact thresholds, requiring large changes in management or utilization of the resource.
Duration	Temporary	Impacts that are anticipated to last no longer than 1 year.
Duration	Short-Term	Impacts that are anticipated to begin and end within the first 3 years during the construction phase.
Duration	Long-Term	Impacts lasting beyond 3 years to the end of mine operations and through reclamation, approximately 20 years.

Attribute	Term	Description
Duration	Permanent	Impacts that would remain after reclamation is completed.
Context	Localized	Impacts would occur within the analysis area or the general vicinity of the Operations Area Boundary.
Context	Regional	Impacts would extend beyond the Operations Area Boundary and local area boundaries.

Intensity is the severity or levels of magnitude of an impact.
Duration is the length of time an effect would occur.
Context is the effect(s) of an action that must be analyzed within a framework, or within physical or conceptual limits.

7.2 Direct and Indirect Effects

7.2.1 No Action Alternative

Under the No Action Alternative, no approval would be undertaken for the SGP. Consequently, the current transportation systems for roads, air, and water would remain as they are under existing conditions and there would not be any SGP-related traffic on the roadways. Traffic associated with the currently authorized Golden Meadows Exploration Project would continue until reclamation were complete.

Valley County would continue to maintain the roads under the FRTA easements. Road maintenance activities would include blading and shaping the roadbed, ensuring proper moisture conditions of the road surface, cleaning and repairing drainage facilities, removal of obstructions, dust abatement, and snow removal (Lau 2018).

No direct or indirect effects on access and transportation from SGP-related activities would occur under the No Action Alternative.

7.2.2 2021 MMP

7.2.2.1 Warm Lake Road

Warm Lake Road north of Cascade intersects SH 55, which is a major transportation corridor throughout Valley County. Perpetua would work with the ITD to improve the Warm Lake Road intersection with SH 55 by adding left and right turning lanes. Improvements may include the addition of a northbound right turn lane, a southbound left turn lane, a new southbound through lane or an acceleration lane on SH 55; modified striping to reduce the skew angle to better accommodate heavier vehicles without additional improvements; and relocation of the 35-miles per hour to 50-miles per hour increase in speed limit on SH 55 at Warm Lake Road further north (Parametrix 2018).

The addition of turning lanes would allow for large trucks carrying equipment and supplies to make turns to/from SH 55 from/onto Warm Lake Road. The improvements also would require approval by Valley County.

SGP would need year-round passenger and delivery truck access from the onset of construction through the life of the mine. Warm Lake Road is suitable for this use in its current condition. Wintertime maintenance east of Warm Lake Lodge would be conducted by Perpetua to ensure safe, year-round access to the sole route of ingress/egress to the SGP for all mine support traffic. This would include snow removal and road sanding, as appropriate, to maintain a safe driving surface. Commitments for wintertime maintenance of Warm Lake Road would be documented in a Road Maintenance Agreement with Valley County.

Perpetua wintertime maintenance and use of Warm Lake Road would result in two changes to current traffic conditions:

a. Warm Lake Road east of Warm Lake Lodge would not be available as a recreational OSV route from the start of construction through reclamation of the SGP. To replace this recreational use, a dedicated alternative OSV route would be established from the Warm Lake area to Landmark via the Cabin Creek/Trout Creek drainages and adjacent to the Johnson Creek Road. Establishing this replacement OSV route would minimize the interactions between SGP traffic and recreational traffic in the winter. The proposed OSV route is illustrated in Figure 2.4-4 of the SGP 2021 Modified Mine Plan Alternatives Report (Forest Service 2022a).

b. Expanded wintertime public vehicle access on Warm Lake Road east of Warm Lake Lodge would commingle SGP and public travel.

Changes to the SH 55 and Warm Lake Road intersection would improve access for large trucks carrying equipment and supplies to the SGP and would facilitate turns from SH 55 onto Warm Lake Road and from Warm Lake Road back onto SH 55. Any changes proposed to the intersection would need to be approved and implemented by the Idaho Transportation Department (ITD). Recommended changes to the intersection include: the addition of left and right turning lanes (Parametrix 2018); an intersection modification to accommodate larger trucks; potential relocation of two power poles (HDR 2017); and a modification to the westbound approach at Warm Lake Road to improve the view of traffic coming from the north.

7.2.2.2 Construction

During the initial construction period of the Burntlog Route (approximately 2 to 3 years), mine-related traffic would access the SGP from SH 55, north of the city of Cascade, via Warm Lake Road for approximately 34 miles, then north on Johnson Creek Road for approximately 25 miles to the village of Yellow Pine, and from Yellow Pine east approximately 14 miles to the SGP via the Stibnite Road. The portion of the route that includes Johnson Creek Road and Stibnite Road is known as the Johnson Creek Route. This route is primarily situated topographically adjacent to the valley bottom, paralleling Johnson Creek and then the East Fork SFSR.

The Johnson Creek Route (Johnson Creek Road and the Stibnite Road portion of the McCall-Stibnite Road) would be used for year-round access until completion of the Burntlog Route for long-term use during operations. Minor surface improvements (e.g., ditch and culvert repair, adding gravel, winter snow removal, resurfacing if required, and summer dust suppression) would occur on the Johnson Creek Route under the 2021 MMP to reduce sediment runoff and dust generation. However, there would be no road alignment modification or widening of these existing roads along the Johnson Creek Route. The road varies in elevation from approximately 4,750 to 6,700 feet amsl with an average grade of 1.5 to 2 percent with occasional local segments with grade up to approximately 8 percent.

Portions of Johnson Creek Road (i.e., Landmark to Wapiti Meadows) are currently used as a groomed OSV trail during winter and use of the Johnson Creek Route by mine-related construction traffic would conflict with this existing groomed OSV trail. Thus, while the Burntlog Route (described below) is under construction, a temporary 16-foot-wide groomed OSV trail adjacent to Johnson Creek Road between the proposed Cabin Creek Groomed OSV Route and Landmark would be constructed. However, the OSV tail from Trout Creek Campground to Wapiti Meadows would be closed until construction of the Burntlog Route is complete; once mine traffic moves to that route, then the OSV route would return to Johnson Creek Road and would reconnect Landmark with Wapiti Meadows.

Perpetua has an existing agreement with Valley County for maintenance of Johnson Creek and Stibnite roads, including performing maintenance measures to repair segments that have deteriorated. Appropriate revisions to the road maintenance agreement would be established for use of the Johnson Creek Route as a construction route and to ensure year-round access in accordance with Valley County's public road easement stipulations. Once construction of the Burntlog Route has been completed (2-3 years), the Johnson Creek Route would no longer be used by mine-related traffic.

Approximately 20 miles of existing Burnt Log Road would be widened and improved and approximately 15 miles of new road connecting to Meadow Creek Lookout Road would be constructed within the first two years as part of the Burntlog Route. Approximately 1.3 miles of Meadow Creek Lookout Road and approximately two miles of Thunder Mountain Road would also be upgraded. Improvements on Burnt Log Road are anticipated to be completed from May into November, depending upon road and weather conditions. Until the Burntlog Route construction is completed (by the end of the second year), SGP-related traffic would access the SGP via the Johnson Creek Route (**Figure 5-1**). Perpetua would establish eight borrow sites along the Burntlog Route as needed to meet road construction and ongoing maintenance throughout the life of the operation and through closure and reclamation. Signs warning of construction activities would be placed along Burntlog Route.

The Burntlog Route would connect the eastern end of Warm Lake Road (at Landmark) to the SGP (to the northeast) by widening and improving approximately 23 miles of existing roads, including the full length of the existing Burnt Log Road and segments of Meadow Creek Lookout Road and Thunder Mountain Road. The three road segments would be connected with two new road segments totaling approximately 15 miles. Burnt Log Road is currently a native surface road that is open year-round to all vehicles with seasonal restrictions due to snow. The last 0.25 to 0.5 mile of the existing road is closed and motorized traffic prohibited. Meadow Creek Lookout Road is a native surface road, open year-round to all vehicles. The Burntlog Route is primarily situated topographically on mid-slopes and ridgeline.

Improvements on the existing roads that comprise the Burntlog Route include:

- Straightening tight corners to allow for improved safety and traffic visibility;
- Maintaining grades of less than 10 percent in all practicable locations;
- Placing sub-base material and surfacing with gravel;
- Application of a road binding agent in localized segments to increase stability and reduce sediment runoff;
- Widening the existing road surface (currently approximately 12 feet wide) to a 20-foot-wide travel way (approximately 26 feet including shoulders); and
- Installing side-ditching, culverts, guardrails, and bridges, where necessary, with design features to provide fish passage and limit potential sediment delivery to streams.

A segment of new road construction for the Burntlog Route would be located on the south side of the Riordan Creek drainage and cross Riordan Creek north of Black Lake. The approximately 5.3-mile road segment would have 12 stream crossings, three of which cross perennial streams. The elevation of this road segment is approximately 8,000 to 8,600 feet and the average grade of this road segment would be 5 to 6 percent. After construction is completed, public use would be allowed on Burntlog Route when other public access roads are blocked by mine operations.

The connection segment between the end of Burnt Log Road and Meadow Creek Lookout Road is approximately 11 miles and would cross Trapper Creek 0.5 miles east of the intersection of Trapper Creek Road and FR 440A and continue northeast towards Black Lake and on to the Meadow Creek Lookout Road. The second connector between the Meadow Creek Lookout Road and Thunder Mountain Road would be approximately 4 miles and links up with Thunder Mountain Road approximately 2 miles south of the SGP. Minor surface improvements (e.g., blading) would occur on the existing Thunder Mountain Road and Meadow Creek Lookout Road to provide a safe road surface for transportation of construction equipment required to build the Burntlog Route. There would be no road alignment modification or widening of the existing roads.

Primary SGP access would shift from the Johnson Creek Route to the Burntlog Route near the end of the construction phase. The Burntlog Route would be compliant with all related usage and approval requirements. The Burntlog Route would avoid environmental and human health and safety risks associated with the Johnson Creek Route which passes through identified areas for avalanches, landslides, and floods. This route would provide another route for SGP ingress/egress, would decrease SGP and public traffic interaction with Yellow Pine and Johnson Creek area residents; and would decrease the potential for spill risk adjacent to fish-bearing streams. Upon completion, the Burntlog Route would serve as an alternative public access route to the Thunder Mountain area for the life of the mine until it is decommissioned following mine reclamation and closure.

The South Fork Salmon River Route (including the Warm Lake Road from the SH 55 intersection), which is currently used for winter access to the SGP, would not be used as part of the SGP.

While the Johnson Creek Route is in use, Perpetua would coordinate with Valley County on the use and maintenance of the route for year-round access in accordance with Valley County's public road FRTA easement stipulations. Valley County's use and maintenance requirements involve soil erosion control, vegetation maintenance on slopes associated with earth cut or fill, repair and cleanup of drainage facilities, removal and cleanup of hazardous spills originating from road use, removal of obstructions from the roadway (e.g., fallen trees, limbs), dust control, and snow removal. Revisions could be required to the existing Valley County Road Maintenance Agreement for the Johnson Creek Route for use as a construction route under the 2021 MMP. Under a cooperative agreement with Valley County, Perpetua maintenance measures would be performed to repair segments that have deteriorated over time. The aggregate source for the Johnson Creek Route maintenance is unknown but would be sourced locally.

Traffic Volumes

During construction, mine traffic under the 2021 MMP would generate an estimated AADT of 198 vehicles (30 heavy vehicles and 168 light vehicles) between SH 55 and the SGLF and 65 vehicles (45 heavy vehicles and 20 light vehicles) between the SGLF and the SGP. Traffic increases between SH 55 and the SGLF would be less impactful to current traffic conditions representing about 5 and 17 percent increases, respectively. From the SGLF to the SGP, traffic would more than double on these roads. Heavy vehicles typically travelling on the access roads would include mine supply and delivery trucks transporting materials, goods, equipment, and people. This would result in approximately five mine vehicles traveling from the SGLF to the SGP every hour during the 14 hours of vehicle movement outside the SGP (between 5:00 am and 7:00 pm). Mine haul trucks would only be used at the SGP on private mine haul roads not open to public use. **Table 7-2** shows the existing and 2021 MMP AADT for the public roads used during construction.

As shown in **Table 7-2**, traffic volumes associated with the 2021 MMP construction would increase approximately 93 percent on Johnson Creek Road and approximately 216 percent on the Stibnite Road

portion of McCall-Stibnite Road from Yellow Pine to the SGP. Over a third of the vehicles traveling on these one-lane, native surfaced roads would be comprised of heavy vehicles and would result in slower travel times for non-mine-related traffic and may deter travelers from using these roadways. Travelers may use alternative roadways, including McCall-Stibnite Road and South Fork Salmon River Road, to access the village of Yellow Pine. Traffic volumes on Burnt Log Road also would increase from existing conditions due to the construction of the Burntlog Route. The roadways that are currently more traveled would have a less noticeable increase in daily traffic; Warm Lake Road traffic would increase by 11.9 percent and SH 55 traffic would increase by only 4.0 percent. Heavy vehicles would comprise less than 2 percent of the total traffic on these two roadways; however, due to the one-lane constraints on both roadways, non-mine-related vehicles may experience slower travel times.

Table 7-2 Existing and 2021 MMP Construction AADT

Name	Existing AADT[1]	Construction AADT (% Increase from Existing) SH 55 to SGLF	% Heavy Vehicles[2] SH 55 to SGLF	Construction AADT (% Increase from Existing) SGLF to SGP	% Heavy Vehicles[2] SGLF to SGP
Burntlog Route AADT	n/a	198	15	65	69.2
SH 55	4,900	5,135 (4.0)	0.6	n/a	n/a
Warm Lake Road	1,670	1,868 (11.9)	1.6	1,735 (3.9)	2.6
Johnson Creek Road	70	n/a	n/a	135 (93%)	33.3
Stibnite Road (village of Yellow Pine to SGP)	30	n/a	n/a	95 (216%)	47.4
Burnt Log Road	70	n/a	n/a	70[3]	-

Table Source: HDR 2017a, 2017b; ITD 2017, 2019; Perpetua 2021a

[1]Data was collected in 2015 or 2016 except for Warm Lake Road data collected in 2017. 2019 data from the ITD was available for SH 55, Warm Lake Road, Johnson Creek Road, Stibnite Road, and Burnt Log Road. AADT is calculated by Total Recorded Count/Number of Days Recorded. All figures have been rounded up to whole numbers.

[2]The approximate minimum percentage of SGP-related heavy vehicles occurring on the roads.

[3]Traffic volumes on Burnt Log Road are anticipated to peak at 50 AADT during the operations phase.

Additionally, reconstruction of the transmission line to the SGP could overlap with the 2021 MMP construction traffic. Construction would occur along the existing alignment and construction crews would be separated throughout the SGP area to minimize construction traffic (HDR 2017c). Reconstruction of the transmission line along Warm Lake Road and Johnson Creek Road to the SGP is estimated to occur in the third and fourth years of construction and would overlap at the end of the 2021 MMP construction period. Therefore, traffic interruption and delays associated with the reconstruction of the transmission line would increase overall SGP-related traffic on Warm Lake and Johnson Creek roads. Reconstruction of the transmission line is planned to occur at several facilities and construction crews would be spread throughout the SGP, which would reduce associated construction traffic.

Additionally, there is a seasonal effect of traffic on these roads. Valley County has many summer recreational areas that attract visitors from May through October with peak AADT levels in June, July, and August. Winter weather and driving conditions influence the amount of traffic and result in less AADT during the winter months. Therefore, the seasonal effect of traffic on these roads would show a

noticeably greater increase in mine-related winter traffic (i.e., drivers would notice a higher ratio of mine-related traffic to general traffic).

Perpetua would limit their vehicle traffic outside the SGP to between 5:00 am and 7:00 pm everyday resulting in approximately five mine-related vehicles traveling on the Johnson Creek Route per hour during the two years the Burntlog Route is constructed. Non-mine-related vehicles may experience slower travel times as mine-related vehicle transport would occur during the morning and evening peak hours and typical commute or travel times. However, once construction of Burntlog Route is completed, the Johnson Creek Route would no longer be used by mine-related traffic, and the AADT on Johnson Creek and Stibnite Road would return to the baseline AADT traffic volume.

Impacts to traffic volumes during construction would be localized, short-term, and minor to major. Major impacts would be associated primarily with the mobilization of materials and equipment to commence facility construction projects. The potential for traffic-related spills would also increase with impacts minimized by spill response under the SPCC.

Public Access

During construction, the public would continue to have access to the PNF and BNF on NFS roads currently available to the public (**Figure 1-1**), including along Johnson Creek Road, Burnt Log Road, and through the SGP on Stibnite Road connecting to Thunder Mountain Road. Road closures from half-day to multiple days may occur during construction on Stibnite Road between the village of Yellow Pine and the SGP, part of Thunder Mountain Road, and Burnt Log Road. Periodic lane restrictions and appropriate signage would be posted to notify travelers of construction activities.

During construction, public access through the SGP on Stibnite Road would be restricted for one year or more while a new 4-mile-long, 12-foot-wide gravel road is constructed to provide public access from Stibnite Road (FR 50412) to Thunder Mountain Road (FR 50375). The public access road would be constructed on a widened bench in the Yellow Pine pit, then south of the Yellow Pine pit, would pass under the haul road and continue southward, and then run parallel to the mine haul road on a former haul road. Southwest of the ore processing area, the public access road would connect with Thunder Mountain Road (FR 50375) and continue toward the worker housing facility, exiting the SGP to the southeast.

The through-SGP public access road would provide seasonal access, similar to current conditions. During operations, public access through the SGP would be provided during the snow-free season to all vehicle types. Vehicles passing through the SGP would be required to check-in with mine personnel at the North or South SGP entry points to receive a safety briefing and would also be required to check-out with mine site personnel upon exiting the SGP. For safety purposes, no stopping or deviating from the public access road would be allowed. SGP access would be restricted during road construction and maintenance, blasting, highwall scaling, mining in the immediate area of the road, and similar operations.

Public access would be separated from other SGP roads by berms, security fencing, and an underpass to allow the public road to pass beneath the mine haul road. The underpass would be in the vicinity of Fiddle Creek. The public access road would not be plowed in the winter (current county maintenance standards) and static and electronic signage and automated timed stoplights would be present at points of public access to inform the public of seasonal and temporary closures. Road signs would be placed at the start and end of routes while a convoy is operating to inform the public that a fuel convoy is in progress and to proceed with caution.

Security personnel, fencing (including wildlife exclusion fencing), and signs would restrict public access to vehicular traffic on the designated public access roadway within the Operations Area Boundary.

The newly constructed Burntlog Route connecting to Thunder Mountain Road would be a temporary road necessary for mining purposes and would meet requirements for environmental protection to assume that mining operations are conducted to minimize adverse environmental impacts to the extent feasible for roads. Accordingly, the road would not be designated for public motor vehicle use under 36 CFR 212.50 on the Motor Vehicle Use Map. Therefore, for public motor vehicle use to be allowed on the road when other public access roads are blocked by mine operations, one of the other exceptions from the prohibitions on motor vehicle use on NFS land at 36 CFR 261.13 must be met. The approved plan of operations would meet the exception for written Forest Service authorization under 36 CFR 261.13(h) by including a provision in the mine plan for public use of the road when other public road access is blocked by mining operations.

Impacts to public access during construction would be localized, short-term, and minor to major. Major impacts would generally be associated with road construction and non-standard maintenance activities plus the mobilization of equipment resulting in over-sized loads.

7.2.2.3 Operations

Traffic Volumes

Upon completion of Burntlog Route, mine vehicles would travel approximately 71 miles from the intersection of Warm Lake Road and SH 55 to the SGP. Approximately 13.5 miles of new private access roads would be created during the life of the mine. No new NFS roads would be created during the life of the mine. Operational AADT would be 156 vehicles (25 heavy vehicles and 131 light vehicles) between SH 55 and the SGLF and 50 vehicles (33 heavy vehicles and 17 light vehicles) between the SGLF and the SGP. Perpetua would limit their vehicle traffic outside the SGP to between 5:00 am and 7:00 pm, resulting in approximately four mine-related vehicles traveling between the SGLF and SGP on the Burntlog Route per hour. **Table 7-3** shows the existing and 2021 MMP AADT for the main roadway segments in the access and transportation analysis area during operations.

Table 7-3 Existing and 2021 MMP Operations AADT

Name	Existing AADT[1]	Operations AADT (% Increase from Existing) SH 55 to SGLF	% Heavy Vehicles[2] SH 55 to SGLF	Operations AADT (% Increase from Existing) SGLF to SGP	% Heavy Vehicles[2] SGLF to SGP
Burntlog Route AADT	n/a	156	16.0	50	66
SH 55	4,900	5,056 (3.2%)	0.5	n/a	n/a
Warm Lake Road	1,670	1,826 (9.3%)	1.4	1,720 (3.0)	1.5
Johnson Creek Road	70	n/a	n/a	70 (0%)	-
Stibnite Road (village of Yellow Pine to SGP)	30	n/a	n/a	30 (0%)	-
Burnt Log Road	70	n/a	n/a	120 (71.4%)	27.5

Table Source: HDR 2017a, 2017b; ITD 2017, 2019; Perpetua 2021a

[1]Data was collected in 2015 or 2016 except for Warm Lake Road data collected in 2017. 2019 data from the ITD was available for SH 55, Warm Lake Road, Johnson Creek Road, Stibnite Road, and Burnt Log Road. AADT is calculated by Total Recorded Count/Number of Days Recorded. All figures have been rounded up to whole numbers.

[2]The approximate minimum percentage of SGP-related heavy vehicles occurring on the roads.

As shown in **Table 7-3**, traffic volumes associated with the 2021 MMP operations would increase traffic on the Burntlog Route. Specifically, the upgraded Burnt Log Road section of the Burntlog Route would experience a traffic increase of approximately 71.4 percent with approximately 27.5 percent of traffic comprised of heavy vehicles. Overall, there would be less mine-related traffic on the road during operations than during construction; however, the driver experience would still be noticeably different than existing conditions with an increase in mine-related heavy vehicles and slower travel times. The roadways currently more traveled would have a less noticeable increase in daily traffic; Warm Lake Road traffic would increase by 9.3 percent and SH 55 traffic would increase by about 3.2 percent. Perpetua would limit their vehicle traffic outside the SGP to between 5:00 am and 7:00 pm, resulting in approximately four mine-related vehicles traveling on the Burntlog Route per hour. Additionally, as previously discussed, winter driving conditions influence the amount of traffic and typically result in less AADT. Therefore, the seasonal effect of traffic on these roads would show a noticeably greater increase in mine-related winter traffic (i.e., drivers would notice a higher ratio of mine-related traffic to general traffic).

Traffic on Johnson Creek Road and Stibnite Road would return to local and recreation traffic only and baseline AADTs.

Impacts to traffic volume on existing roadways during operations would be localized, long-term, and minor to major. Major impacts would be associated primarily with the mobilization of materials and equipment to commence facility construction projects. The potential for traffic-related spills would also increase with impacts minimized by spill response under the SPCC.

Public Access

Public access within the analysis area would be the same as construction once the public access road through the SGP from Stibnite Road to Thunder Mountain Road, was complete. Approximately 13.5 miles of new roads managed by Perpetua, but open to controlled public access, would be created.

The newly constructed Burntlog Route connecting to Meadow Creek Lookout Road and then Thunder Mountain Road would allow public access when other routes are not available (i.e., the public access route through the SGP). The newly constructed roadway portion of the Burntlog Route would be a temporary road that is necessary for mining purposes and would meet requirements for environmental protection.

There are tribal concerns regarding continued access to usual and accustomed places in which tribes exercise their treaty rights. Currently, there are no tribal access restrictions on the Forest Service lands in the SFSR watershed. There would be a long-term loss of access to land for exercising treaty rights within the Operations Area Boundary while the lands are occupied for mining; however, lands within the Operations Area Boundary have been highly disturbed by past mining activities. Further details on the impacts to Tribal treaty rights and land access are discussed in the SGP Tribal Rights and Interests Specialist Report (Forest Service 2022i).

Impacts to public access during operations would be localized, long-term, and minor.

7.2.2.4 Closure and Reclamation

Mine closure and reclamation activities of recontouring slopes, removing facilities, seeding, and planting areas under the 2021 MMP would require approximately five to seven years during which all access roads to the SGP would be maintained. These roads would be used for transporting workers and supplies and removing recycled materials or wastes generated during the closure activities. Any newly constructed

roads within the SGP mine operations area would be closed for any long-term use. Areas disturbed by the Burntlog Route expansion and SGP roads would be contoured and graded to blend into surrounding terrain.

The Burntlog Route would be needed until the disturbed area is reclaimed at the SGP. After reclamation work is completed, the Burntlog Route would be decommissioned, and the existing upgraded sections of Burnt Log Road would be narrowed to their pre-mining widths while the new roadway portion of the Burntlog Route would be completely removed and reclaimed. Once all final mine closure, reclamation, and related environmental closure monitoring work has been completed, the 20-foot roadway width of 20 miles of Burnt Log Road, 1.3 miles of Meadow Creek Lookout Road, and 2 miles along Thunder Mountain Road of the upgraded portion of Burntlog Route would be reduced to their approximate pre-mining width of approximately 12 feet. Road removal and reclamation would include pulling back and re-contouring road cuts, removing culverts and bridges from all stream crossings, and removing the roadbed, safety berms, retaining walls (although soil nail walls would remain), ditches, cross drains, mile markers, guardrails, and signs on roads would be removed if these features are no longer needed upon permanent closure. The remaining roads that were upgraded would retain their flatter grades and gentler curves constructed for mine operations.

Monitoring of all facilities and disturbance areas would be conducted following the completion of closure and reclamation to demonstrate compliance with permit requirements and to measure the success of reclamation. Reclamation success monitoring such as erosion and sediment control monitoring would be completed per the Reclamation and Closure Plan upon Forest Service approval.

Traffic Volumes

During closure and reclamation, the 2021 MMP would generate a total estimated AADT of 27 vehicles (15 heavy vehicles and 12 light vehicles). Post-closure monitoring activities would generate a total estimated AADT of six light vehicles. **Table 7-4** shows the existing and 2021 MMP AADT for the main roadway segments in the access and transportation analysis area during closure and reclamation.

Table 7-4 Existing and 2021 MMP Closure and Reclamation AADT

Name	Existing AADT[1]	Closure and Reclamation AADT (% Increase from Existing)	% Heavy Vehicles[2]	Post-Closure AADT (% Increase from Existing)
Burntlog Route AADT	n/a	27	56	6
SH 55	4,900	4,927 (0.6%)	0.3	4,906 (0.1%)
Warm Lake Road (CR 10-579)	1,670	1,697 (1.6%)	0.9	1,676 (0.5%)
Johnson Creek Road (CR 10-413)	70	70 (0%)	-	76 (8.6%)
Stibnite Road (village of Yellow Pine to SGP)	30	30 (0%)	-	36 (20%)
Burnt Log Road (FR 447)	70	97 (38.6)	15.5	70 (0%)

Table Source: HDR 2017a, 2017b; ITD 2017, 2019; Perpetua 2021a

[1]Data was collected in 2015 or 2016 except for Warm Lake Road data collected in 2017. 2019 data from the ITD was available for SH 55, Warm Lake Road, Johnson Creek Road, Stibnite Road, and Burnt Log Road. AADT is calculated by Total Recorded Count/Number of Days Recorded. All figures have been rounded up to whole numbers.

[2]The approximate minimum percentage of SGP-related heavy vehicles occurring on the roads.

As shown in **Table 7-4**, traffic volumes associated with the 2021 MMP closure and reclamation would increase traffic on the roads associated with Burntlog Route over existing conditions. Specifically, the upgraded Burnt Log Road section of the Burntlog Route would experience a traffic increase of approximately 38.6 percent, but this would be close to half the traffic of operations. About 15.5 percent of the vehicles traveling this one-lane, native-surfaced road would be heavy vehicles that could result in slower travel times for non-mine-related traffic and may deter travelers from using this roadway. Perpetua would limit their vehicle traffic outside the SGP to between 5:00 am and 7:00 pm resulting in approximately two mine-related vehicles traveling on the Burntlog Route per hour during closure and reclamation. The more traveled roadways would have a less noticeable change in daily traffic; Warm Lake Road and SH 55 traffic would increase by 1.6 percent or less. Heavy vehicles would comprise less than one percent of the total traffic on these two roadways during closure and reclamation; however, due to the one-lane constraints on both roadways, non-mine-related vehicles may experience slower travel times.

Closure and reclamation traffic impacts during the winter would be the same as those discussed under construction and operations. Post-closure winter traffic would not be as noticeable, as closure and reclamation traffic heavy vehicle deliveries would not occur, and approximately six mine-related vehicles per day would utilize the accessible roadways in the analysis area for monitoring and maintenance purposes.

Impacts to traffic volumes during closure and reclamation would be localized, short-term, and minor.

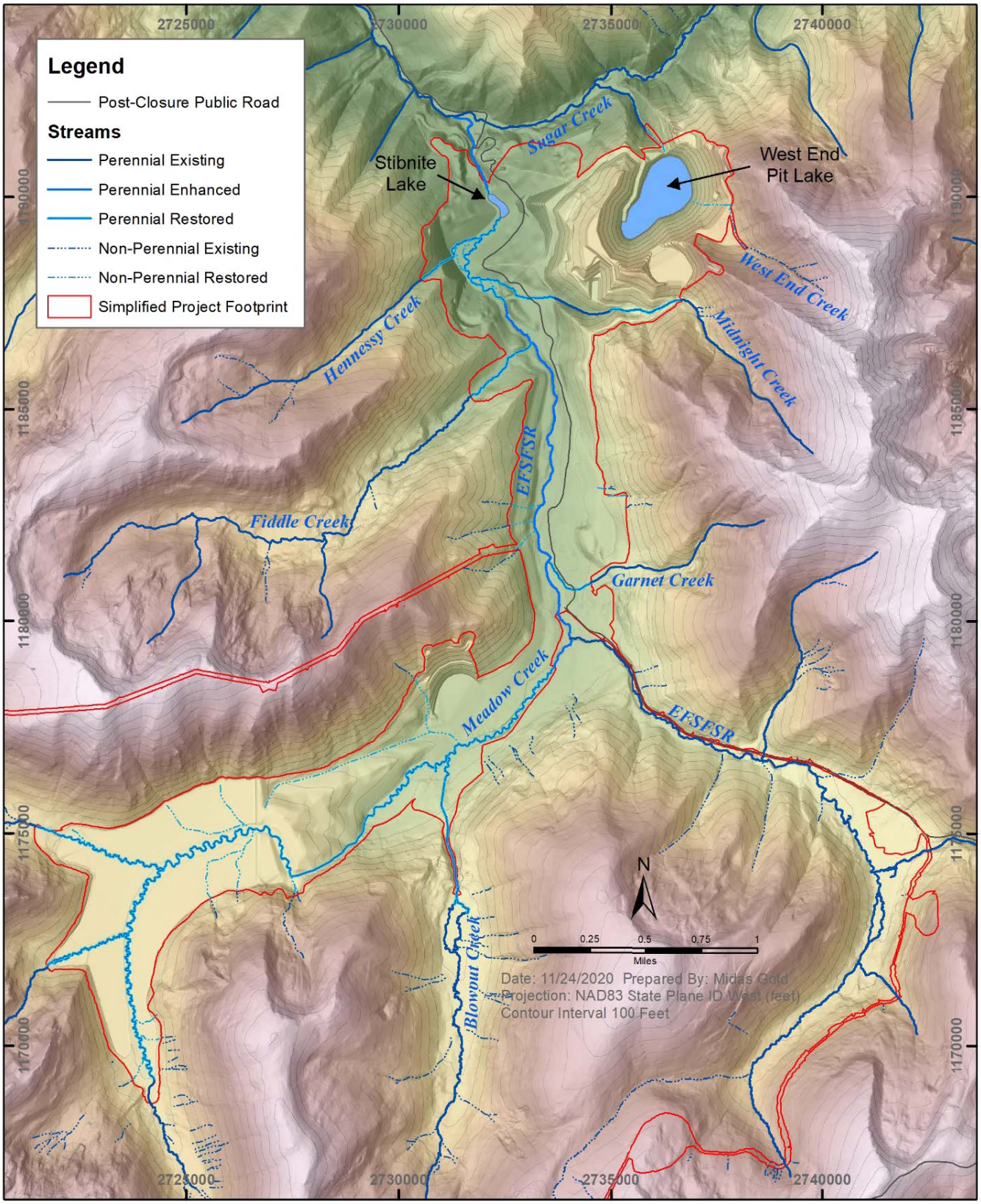
Public Access

Public access during the closure and reclamation phase would be coordinated with the Forest Service and would involve establishing a permanent service road through the backfilled Yellow Pine pit for public access through the SGP for dispersed recreation uses connecting to Thunder Mountain Road (**Figure 7-1**). This would result in a total of approximately 2.2 additional miles of new road that would be accessible for public use following reclamation. Post-closure public access would require revision to the existing FRTA easement with Valley County regarding road maintenance.

Impacts to public access during closure and reclamation would be localized, long-term, and negligible.

7.2.2.5 Safety and Emergency Access

For the duration of the SGP, the increase in total volume of mine-related vehicles, specifically heavy vehicles or trucks, on the Johnson Creek and Burntlog Routes would result in a greater safety risk for accidents occurring between vehicles due to degradation of the road with more frequent heavy vehicle travel and the one-lane constraints (i.e., no passing lane) that restrict the passing of slower moving vehicles. Mine-related traffic on Warm Lake Road would increase by approximately 11 percent during construction activities and nine percent during operation activities, and traffic volume on construction access (Johnson Creek Road and Stibnite Road) and then operational access (Burntlog Route) would increase substantially (**Tables 7-2 and 7-3**). More vehicles would be present on Warm Lake Road to the SGLF, where most vehicles would park and employees would be bussed from there to the SGP. Even with the traffic management and safety controls implemented (**Section 2.4**), accident rates could increase with additional road usage along with associated transportation-related spills. The procedures outlined in the Emergency Response Plan would be followed to protect the environment, the health of employees and the general public, and to comply with federal and state regulations.



Source: Perpetua 2021a

Figure 7-1 Post-closure Public Access Road

Burnt Log Road would be widened to 26 feet (including 3-foot vegetated shoulders), tight corners would be straightened to allow for improved safety and traffic visibility, grades would be maintained at less than 10 percent in all practicable locations, and placement of sub-base material and surface with gravel would occur to provide a stable long-term roadway and reduce sediment. Side-ditching, culverts, guardrails, and bridges would be installed where necessary. During winter road maintenance, snow would be removed from the Burntlog Route plus its temporary construction access, haul roads at the SGP, and the Johnson Creek Route. Although no road alignment modification or widening would occur to Johnson Creek Road and Stibnite Road as part of the Johnson Creek Route under the 2021 MMP, upgrades, including minor surface improvements (e.g., adding gravel, winter snow removal, and summer dust suppression), would occur to reduce dust generation from vehicles, indirectly improving visibility, and support safer road conditions.

Additionally, pilot cars would be used during oversized equipment mobilization and demobilization along the Burntlog Route and portions of the Johnson Creek Route, as needed, to control speed and reduce potential for conflicts or incidents along these narrow access roads leading into the SGP area.

The increased heavy vehicle traffic would degrade the existing and proposed transportation system over the duration of the SGP. However, maintenance measures authorized under a cooperative agreement with Valley County and the Forest Service would be performed to repair segments that have deteriorated over time. The continued maintenance and improvements of the road system would help reduce dust and maintain public safety for the duration of the SGP.

Access for emergency response would be maintained throughout the analysis area. Emergency access would be provided on the Johnson Creek Route during the first two years of construction and then on Burntlog Route for the remainder of the SGP. In the event of an emergency where road closure would facilitate response or when a threat to human life is identified (e.g., fires), roads would be temporarily closed, as appropriate. In addition, there would be access for helicopters at the maintained helipad at the SGP.

Measures would be implemented that would help reduce the incidence of accidents, including busing and/or van pooling to the SGP, housing workers at the SGP to minimize the frequency of SGP worker vehicle trips, driver training (e.g., use of truck compression brakes on steep sections and along areas where residences are located and familiarity with the travel routes including locations of steep slopes that require downshifting), and equipping staff traveling to and from the SGP with two-way radios to communicate positions, relay information about road conditions, and warn of public vehicles traveling on the Burntlog Route (or Johnson Creek Route during construction). This also would allow for rapid response in the event of an accident.

Additionally, Perpetua would adhere to environmental design features and resource protection measures (**Section 2.4**, **Tables 2-2** and **2-3**), Forest Service-required measures, and permit stipulations, including, but not limited to: ensuring drivers and airplane/helicopter pilots are appropriately licensed; annual inspections of transport vehicles; observing county and state speed limits, road restrictions (e.g., use of tire chains for snow or icy road conditions), and load limits; and coordination with Forest Service (and Valley County as appropriate) on air and road operations to further reduce the incidence of accidents.

The public access route through the SGP would separate public traffic from mine traffic on the road through the SGP thereby reducing potential safety issues.

Safety and emergency access impacts from the SGP would be localized, long-term, and negligible to major. Major impacts would be associated with the roads with largest increases in usage compared to existing conditions, primarily the mine access route upon departing the Warm Lake Road.

7.2.2.6 Other Modes of Transportation

Air Transportation

Under the 2021 MMP, a helipad would be maintained in an area at the SGP adjacent to the administration offices and warehouse facilities for exploration and Medevac purposes (**Figure 2-1**). Helicopters would be used to deliver drill rigs and supplies for remote surface exploration drilling activities on an as needed basis when truck or crawler mounted rigs would be unable to reach the drill site. Helicopter support would only occur during daylight hours. However, overall air traffic associated with the 2021 MMP would be intermittent, localized, and generate negligible changes in air traffic patterns.

The new substation at Johnson Creek would not impact air traffic use of the Johnson Creek airstrip.

Communications towers associated with the SGP would be equipped with air traffic safety devices as required.

Water Transportation

Under the 2021 MMP, approximately one round trip (two truck trips) of antimony concentrate would be hauled off-site daily in locked shipping containers for shipping out of the area. As previously discussed, the Port of Lewiston would be the closest port for transport by commercial barge. The daily shipment of antimony and the potential indirect transport of supplies and materials to and from the SGP would generate minimal to negligible changes in water transportation. The addition of associated impacts to transport by commercial barge from the Port of Lewiston to and from distributors, purchasers, and refineries under the 2021 MMP would be regional, long-term, and negligible, and would blend into the typical traffic associated with this type of goods movement.

Rail Transportation

There are no rail transportation systems in the analysis area. However, there is a potential for trucks to transport antimony concentrate to rail lines located in Boise. Additionally, supplies and materials may be indirectly transported to and from the SGP by trucks originating from rail shipments. Nevertheless, these impacts would generate negligible changes to rail transport during operation of the 2021 MMP and would not substantially alter the level of service for this mode of transportation.

7.2.3 Johnson Creek Route Alternative

Under the Johnson Creek Route Alternative, the Johnson Creek Route would be used to access the SGP during all phases, and the Burntlog Route would not be constructed. Upon construction completion of the Johnson Creek Route, mine vehicles would travel approximately 70 miles from the intersection of Warm Lake Road and SH 55 to Johnson Creek Road and Stibnite Road to the SGP. Road widening and straightening, along with drainage and bridge improvements would be required for the Johnson Creek Road portion of the Johnson Creek Route. The Stibnite Road portion would be improved by straightening curves, bridge improvements, constructing retaining walls, and installing culverts. In addition, the Stibnite Road portion would be improved by widening curves to accommodate 55-foot semi-truck trailers. Approximately 1 mile of road through the village of Yellow Pine would be paved. Construction and improvements to the Johnson Creek Route would require approximately 4 years with a total construction schedule for the SGP of 5 years (2 years more than the Burntlog Route).

7.2.3.1 Construction

Approximately 25 miles of existing Johnson Creek Road would be widened and improved and approximately 14 miles of Stibnite Road would be widened and improved as part of the Johnson Creek Route. Improvements on the Johnson Creek Route would be completed from May into November annually, depending upon road and weather conditions. During the first year of construction, upgrades to Johnson Creek Road would require periodic full road closure throughout the entire season. During years two through four, the Stibnite Road segment would be upgraded. Tight terrain and rock blasting would require daily, full-road closures between 10 am and 4 pm, with the road open for public use each morning and night. The delay in road construction results in a delay to bring in appropriate equipment and materials to complete mine construction which would then occur during year five of construction. Seven aggregate sources along the Johnson Creek Route for construction and maintenance have been identified (**Figure 5-1**) with an estimated disturbance of 109 acres.

The portion of Burntlog Route that would connect with Thunder Mountain Road and continue toward the Worker Housing Facility toward the southeast of the SGP would not be plowed in the winter and would not be accessible to the public. During construction, winter snow removal and summer dust suppression would occur under the Johnson Creek Route Alternative, including on Johnson Creek Road. Public access on Johnson Creek Road would be completely restricted for one full year during the first year of construction of the Johnson Creek Route Alternative with improvements to Johnson Creek Road.

Traffic Volume

Traffic volume impacts under the Johnson Creek Route Alternative would be the same as those described under the 2021 MMP for construction (**Table 7-2**) as they use the same route. However, the construction phase would be two years longer than under the 2021 MMP so construction related traffic impacts would be longer in duration. During road closures, local area residents would need to use SH 55 to Warren Wagon Road then to Warren-Profile Gap Road to access the Edwardsburg/Big Creek area.

Impacts to traffic volumes during construction would be localized, short-term, and minor to major.

Public Access

The public would share the Johnson Creek Route with mine-related traffic through construction, operations, and closure and reclamation on Johnson Creek Road and Stibnite Road. During road closures, if there is no alternative route available, the public would be precluded from accessing certain areas during the closure, such as recreational areas along Johnson Creek.

Public access during mine construction and operations is shown on **Figure 1-1**. As with the 2021 MMP, the Johnson Creek Route Alternative would include a public access road through the SGP (**Figure 2-1**). Public access through the SGP would provide motorized access to Thunder Mountain Road.

Impacts to public access during construction would be localized, short-term, and minor to major.

7.2.3.2 Operations

Mine-related traffic would include transport of employees to and from the SGP, delivery of supplies, antimony concentrate trucks, and activities associated with road maintenance such as grading, snowplowing, and sanding.

Supplies and deliveries for the SGP during construction, operations, and closure and reclamation would use SH 55 to Warm Lake Road to access the SGLF. Based on past material deliveries, an estimated two-

thirds of all mine related traffic would originate south of Warm Lake Road on SH 55 and the other third of mine-related traffic would originate from the north.

Traffic Volume

Under the Johnson Creek Route Alternative, mine-related traffic would use the Johnson Creek Route for the duration of the SGP. Public traffic and mine traffic would share the road from Landmark to the SGP. Mine vehicles would travel approximately 70 miles from the intersection of Warm Lake Road and SH 55 to the SGP. Similar to the 2021 MMP, operational AADT would be 156 vehicles (25 heavy vehicles and 131 light vehicles) between SH 55 and the SGLF and 50 vehicles (33 heavy vehicles and 17 light vehicles) between the SGLF and the SGP. No new private access roads or NFS roads would be created under the Johnson Creek Route Alternative. **Table 7-5** shows the existing and Johnson Creek Route Alternative AADT for the main roadway segments in the access and transportation analysis area during operations.

Table 7-5 Existing and Johnson Creek Route Alternative Operations AADT

Name	Existing AADT[1]	Operations AADT (% Increase from Existing) SH 55 to SGLF	% Heavy Vehicles[2] SH 55 to SGLF	Operations AADT (% Increase from Existing) SGLF to SGP	% Heavy Vehicles[2] SGLF to SGP
Johnson Creek Route Alternative	n/a	156	16.0	50	66
SH 55	4,900	5,056 (3.2%)	0.5	n/a	n/a
Warm Lake Road	1,670	1,826 (9.3%)	1.4	n/a	n/a
Johnson Creek Road	70	n/a	n/a	120 (71.4%)	27.5
Stibnite Road (village of Yellow Pine to SGP)	30	n/a	n/a	80 (166.7%)	41.3

Table Source: HDR 2017a, 2017b; ITD 2017, 2019

[1]Data was collected in 2015 or 2016 except for Warm Lake Road data collected in 2017. 2019 data from the ITD was available for SH 55, Warm Lake Road, Johnson Creek Road, Stibnite Road, and Burnt Log Road. AADT is calculated by Total Recorded Count/Number of Days Recorded. All figures have been rounded up to whole numbers.

[2]The approximate minimum percentage of SGP-related heavy vehicles occurring on the roads.

As shown in **Table 7-5**, operations under the Johnson Creek Route Alternative would result in increased traffic volumes on the Johnson Creek Route. Specifically, traffic on Johnson Creek Road and Stibnite Road would increase approximately 71 percent (27.5 percent heavy vehicles) and 167 percent (41 percent heavy vehicles), respectively. Heavy vehicles currently use the Johnson Creek Route to access the SGP in the summer; however, the Johnson Creek Route Alternative operational traffic would result in a noticeable change in baseline driver experience and slower drive times on the Johnson Creek Route due to the substantial increase in mine-related vehicles. Even though Johnson Creek Road would be upgraded under the Johnson Creek Route Alternative, the road would still have many curves and slopes, thus requiring slow speeds.

The more traveled roadways would have a less noticeable increase in daily traffic; Warm Lake Road traffic would increase by approximately 9.3 percent and SH 55 traffic would increase by 3 percent. Perpetua would limit their vehicle traffic outside the SGP to between 5:00 am and 7:00 pm, resulting in

approximately four mine-related vehicles traveling on the Johnson Creek Route per hour. Impacts to traffic volume during operations would be localized, long-term, and major.

Public Access

Public access through the SGP during operations would be similar to the 2021 MMP. Approximately 4 miles of public access through the SGP would be provided. No new construction of mine access roads outside of the SGP would occur under the Johnson Creek Route Alternative.

Impacts to Tribal land access would be the same as under the 2021 MMP, briefly summarized in **Section 7.2.2.2**, except the Burntlog Route would not be constructed. Further details on the impacts to Tribal treaty rights and land access are discussed in the SGP Tribal Rights and Interests Specialist Report (Forest Service 2022i).

Impacts to public access during operations would be localized, long-term, and minor.

7.2.3.3 Closure and Reclamation

Traffic Volume

Traffic volume impacts under the Johnson Creek Route Alternative would be similar to those described under the 2021 MMP for closure and reclamation, except instead of the Burntlog Route, mine-related traffic would use the Johnson Creek Route during closure, reclamation, and post-closure activities. During closure and reclamation, the estimated AADT would be 27 vehicles (15 heavy vehicles and 12 light vehicles). Post-closure monitoring activities would generate a total estimated AADT of six light vehicles. **Table 7-6** shows the existing and the Johnson Creek Route Alternative AADT for the main roadway segments in the access and transportation analysis area during closure and reclamation.

Table 7-6 Existing and Johnson Creek Route Alternative Closure and Reclamation AADT

Name	Existing AADT[1]	Closure and Reclamation AADT (% Increase from Existing)	% Heavy Vehicles[2]	Post-Closure AADT (% Increase from Existing)
Johnson Creek Route Alternative	n/a	27	55.6	6
SH 55	4,900	4,927 (0.6%)	0.3	4,906 (0.1%)
Warm Lake Road (CR 10-579)	1,670	1,698 (1.6%)	0.9	1,676 (0.4%)
Johnson Creek Road (CR 10-413)	70	97 (38.6%)	15.5	77 (8.6%)
Stibnite Road (village of Yellow Pine to SGP)	30	57 (90.0%)	26.3	36 (20.0%)
Burnt Log Road (FR 447)	70	70 (0%)	-	70 (0%)

Table Source: HDR 2017a, 2017b; ITD 2017, 2019

[1]Data was collected in 2015 or 2016 except for Warm Lake Road data collected in 2017. 2019 data from the ITD was available for SH 55, Warm Lake Road, Johnson Creek Road, Stibnite Road, and Burnt Log Road. AADT is calculated by Total Recorded Count/Number of Days Recorded. All figures have been rounded up to whole numbers.

[2]The approximate minimum percentage of SGP-related heavy vehicles occurring on the roads.

As shown in **Table 7-6**, traffic volumes associated with the Johnson Creek Route Alternative closure and reclamation would increase current volumes for the Johnson Creek Route. Specifically, traffic on Johnson Creek Road and Stibnite Road would increase approximately 38.6 percent (approximately 15.5 percent heavy vehicles) and 90 percent (approximately 26 percent heavy vehicles), respectively. Closure and reclamation mine-related traffic would be less than operational traffic with 27 AADT for closure and reclamation versus 50 AADT for operations. The driver experience would still include some heavy vehicles that result in slower drive times, but heavy vehicles would eventually decrease to one or none daily as closure and reclamation is completed. The roadways currently more traveled would have a less noticeable increase in daily traffic; Warm Lake Road traffic would increase by 1.6 percent and SH 55 traffic would only increase by 0.6 percent. Perpetua would limit their vehicle traffic outside the SGP to between 5:00 am and 7:00 pm, resulting in approximately two mine-related vehicles traveling on the Johnson Creek Route per hour during closure/reclamation. Post-reclamation mine-related traffic would consist of 6 light vehicles on these roads (**Table 7-6**).

Impacts to traffic volume during closure and reclamation would be localized, long term, and negligible to minor.

Public Access

A new road would be constructed under the Johnson Creek Route Alternative over the backfilled Yellow Pine pit connecting Stibnite Road to Thunder Mountain Road. A total of approximately 2.2 additional miles of new road would remain post closure and would be accessible for public use through the SGP and would require revision to the existing FRTA easement with Valley County.

Impacts to public access during closure and reclamation would be localized, long-term, and negligible.

7.2.3.4 Safety and Emergency Access

The Johnson Creek Route Alternative would have greater safety and emergency impacts than Burntlog Route due to additional safety considerations required to use the Johnson Creek Route exclusively, which is in steeper terrain than the Burntlog Route and subject to avalanches and landslides (Dynamic Avalanche Consulting 2021). Additionally, access through the SGP under the Johnson Creek Route Alternative would be through a single point of ingress and egress and would require safety considerations for mine deliveries and public access. Also, the steep climb to provide access around the Yellow Pine pit would require a wider road with more switchbacks to accommodate the heavy trucks transporting mine supplies and may increase hazardous driving conditions for crew rotation, emergency responses, and wildfire evacuation.

Under the Johnson Creek Route Alternative, improvements to the Johnson Creek Route would include road widening and straightening, as well as drainage and bridge improvements to the Johnson Creek Road portion of the Johnson Creek Route. The Stibnite Road portion of the Johnson Creek Route would be improved by straightening curves, retaining walls, and installing culverts. The Johnson Creek Route would require 183 acres of cut and fill in addition to the existing roadways to address traffic safety, geotechnical hazards, landslides, and avalanche zones and may result in periods of road closure, while the Burntlog Route would require 246 acres of cut and fill primarily along a new route. While more acreage would be required for the Burntlog Route in comparison with the Johnson Creek Route, the activity along the Johnson Creek Route would be in proximity to Johnson Creek and the East Fork SFSR, whereas the Burntlog Route location avoids these surface flows. In addition to cut and fill in proximity to these surface flows, any traffic-related spills along the Johnson Creek Route would also occur closer to the streams compared to the Burntlog Route.

The public access route through the SGP would separate public traffic from mine traffic on the road through the SGP thereby reducing potential safety issues.

Safety and emergency access impacts from the SGP would be localized, long-term, and minor to major.

7.2.3.5 Other Modes of Transportation

Air, water, and rail transportation impacts under the Johnson Creek Alternative would be the same as those described under the 2021 MMP.

7.3 Mitigation and Monitoring

Mitigation measures required by the Forest Service would represent reasonable and effective means to reduce the impacts identified in the previous section or to reduce uncertainty regarding the forecasting of impacts into the future. These mitigation measures are in addition to the regulatory and Forest Plan requirements and project design features (**Section 2.4**) accounted for in the preceding impact analysis.

Mitigation measures may be added, revised, or refined based on public comment, agency comment, or continued discussions with Perpetua regarding this specialist report or subsequent analysis under NEPA. The adopted mitigation measures will be finalized in the Final EIS.

7.4 Cumulative Effects

Cumulative effects consider the range of existing and foreseeable activities and their potential effects with respect to access and transportation. Past and present actions that have, or are currently, affecting access and transportation include recreational activities, fuels management, road and utility maintenance activities, and timber harvest. In addition, some of the current traffic levels in the analysis area also can be attributed to activities at the SGP that have been ongoing for exploration purposes, monitoring, and background studies. Reasonably foreseeable future actions that could cumulatively contribute to access and transportation impacts in the analysis area include all the projects listed in **Table 7-7** pertaining to recreational management, watershed management, road management, fuels management, mineral exploration, residential development, and special use management.

7.4.1 Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Past actions include activities that may have been initiated in the past but also could involve present operations such as mineral exploration, infrastructure development, and non-mining related actions. They may 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 may have just commenced or 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.

Past and present actions that have an interactive, synergistic, and/or additive effect (per 40 CFR 1508.7) with a specific resource (such as lingering effects or influencing trends) 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 mine site, including prospecting, exploration, underground mining, and open pit mining. To support past mining, other related activities occurred in the vicinity, 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 2015).

The mining, milling, and processing activities created 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.

Other mining projects considered in the cumulative effects analysis include:

- **Valley County Quarry Development** – Development and operation of an aggregate source to support the road maintenance activities on McCall-Stibnite Road (County Road [CR] 50-412), Johnson Creek Road (CR 10-413), and other backcountry roads as determined by Valley County (Forest Service 2017).
- **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 2012b).
- **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).

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 2015). The following is a brief summary of the activities:

- **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 2015).

- **Burntlog Route Geophysical Investigation Field Work (2020-2021)** – Midas Gold collected geophysical data at proposed rock quarries, bridge abutments, cut slopes, and soil nail/mechanically stabilized earth wall locations using four methods including a Dynamic Cone Penetrometer Test, a track mounted excavator, a truck/track mounted hollow stem auger/core rig, and a helicopter assisted casing advancer/core drill rig. Midas Gold is investigating 24 locations by drilling or excavating 40 borings/test pits along the proposed Burntlog Route. The geophysical investigation field work will last approximately 40 days. Nearly half of the locations are situated along the existing Burnt Log Road and the remaining sites are located along the proposed new alignment of the Burntlog Route between Trapper Creek and Stibnite (Midas Gold 2019).

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 and Meadow Creek Lookout Road are both NFS maintenance Level 2 roads that received maintenance in 2014 and 2019 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.

- **Road Maintenance of County Roads** –Warren-Profile Gap Road is maintained by Valley County under a FRTA easement on a regular maintenance schedule; however, the road is also part of a Schedule A Cooperative Maintenance agreement for coordinated maintenance with the Forest Service. 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. In 2017, a vented ford was installed on Smith Creek Road to improve fish habitat in North Fork Smith Creek, and portions of Smith Creek Road underwent storm damage risk reduction maintenance in 2021. Pueblo Summit Road has not received any maintenance for several years (Forest Service 2016).

    - McCall-Stibnite Road is currently maintained by Valley County under a FRTA easement on a regular maintenance schedule that does not require coordination with the Forest Service; however, the road is also part of a Schedule A Cooperative Maintenance Agreement. There is an agreement between Valley County and Midas Gold to allow Perpetua to provide maintenance along the road from Yellow Pine to Perpetua 's property, “the road will be continuously maintained during the open period. Maintenance will, in all respect, be subject to review and approval by the Valley County Road Superintendent. The Owner/Contractor will abide by the Schedule 8: Payette National Forest; Road Maintenance Best Management Practices. During winter operations the Owner/Contractor will maintain a vehicle and trailer

parking and turn around area at Profile Creek and Stibnite. The Owner/Contractor will place a temporary Valley County owned and signed gate above the Profile Creek Road during the Spring Breakup to prohibit any full-size vehicles from entering the Yellow Pine-Stibnite Road, unless otherwise authorized. All-terrain vehicles (ATV), utility-terrain vehicles, and snow mobile access on the Yellow Pine-Stibnite Road will still be permitted for the public at large during this temporary travel restriction."

- **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.

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

Recreation and Tourism – Past and present recreation and tourism activities include sport hunting, fishing, trapping, boating and river recreation, 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. Winter non-motorized recreation and OSV trail use is also common in the area. The current estimated traffic related to these activities was presented in **Section 6.1.5**.

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 (Idaho Power Company [IPCo] 2014). In 2020, IPCo rerouted approximately 2.2 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 2020). These past and present power infrastructure projects create minor traffic from construction crews.

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. These present hydroelectric operations create negligible traffic for maintenance activities.

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 (http://www.fs.usda.gov/project/?project=51257). Target dates for implementation are 2022-2027 (Forest Service 2021a).

Reasonably foreseeable future actions are listed in **Table 7-7**.

Table 7-7 Reasonably Foreseeable Future Actions in the Vicinity of the SGP Area

Project or Activity Name	Agency Document/ District	Brief Description	Approximate Implementation/ Construction/ Operation Dates
Stibnite Mine Site ASAOC	EPA and Forest Service ASAOC (EPA 2021)	Address legacy mining impacts, including time critical removal actions consisting of stream diversion ditches and removal of about 325,000 tons of development rock and tailings.	2022 - 2024
East Fork Salmon River RAMP	PNF	Scoping for the East Fork Salmon River (EFSR) RAMP estimated to start late 2021. The spatial extent of the EFSR RAMP could include Yellow Pine, Big Creek, and Thunder Mountain within the PNF. The purpose of the EFSR 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. http://www.fs.usda.gov/project/?project=60889	Expected Decision: 10/2022 Expected Implementation: 11/2022
Burntlog Route Geophysical Investigation	CE (BNF SOPA)	- Minerals and geology The purpose of the investigation is to collect crucial geophysical data along the existing Burnt Log Road and proposed new alignment between Trapper Creek and Stibnite.	Scoping Start: 02/10/2020 Expected Decision: 03/2022 Expected Implementation: 09/2022
Wildlife Conservation Strategy	EIS (Forest Plan Amendment) 101 (PNF SOPA)	- Land management planning - Wildlife, Fish, Rare plants Short- and long-term management strategies and priorities for maintaining and restoring habitats associated with terrestrial wildlife species. http://www.fs.usda.gov/project/?project=28633	On hold
Nez Perce Tribe Research Equipment	CE / PNF SOPA	Replacement of an existing propane tank servicing a fish detection system (PIT array) with a 1,000-gallon tank in an existing hardened area to ensure fuel supply through winter months.	Scoping initiation: 11/2021 Expected Decision: 04/2022 Expected Implementation: 07/2022
Stallion Gold – Horse Heaven Project		Surface exploration of gold and antimony deposits. The project consists of 695 unpatented federal mining claims and mineral rights on 13,950 acres. This project would share its eastern boundary with the SGP.	

Table Source: FHWA 2020; Forest Service 2018, 2020a, 2020b, 2020c, 2021a, and 2021b; ITD 2020, 2021

CE = Categorical Exemption; EA = Environmental Assessment; EIS = Environmental Impact Statement; FHWA-WFLHD = Federal Highway Administration, Western Federal Lands Highway Division; NOA = Notice of Availability; SOPA = Schedule of Proposed Actions

7.4.2 No Action Alternative

Under the No Action Alternative, there would be no SGP. The effects of past mining activities and the current geophysical investigation activities would remain. The reasonably foreseeable future actions identified in **Table 7-7** including forest management, motorized use of road systems, fire suppression, prescribed fire and wildfire, dispersed camping, fishing, and hunting activities would continue in the cumulative effects area and vicinity, which could impact access and transportation in the cumulative effects analysis area. Under the No Action Alternative, the Golden Meadows Exploration Project would have a negligible direct effect to access and transportation and, therefore, a negligible cumulative contribution.

7.4.3 Common to the 2021 MMP and Johnson Creek Route Alternative

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. 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 through the communities of Donnelly, Lake Fork, and McCall. Through McCall, mine-related traffic would use Deinhard Lane and Boydstun Street.

As previously discussed, the traffic for 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 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 analysis area 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 South Fork Restoration and Access Management Plan, the East Fork Salmon River Restoration and Access Management Plan, and the Big Creek Hazardous Fuel Reduction projects are located closer 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.

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 Meadows, SH 55 Banks Beach Parking Study, and SH 55 Round Valley Improvements projects are 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 2021) (**Table 7-7**) would be additive to anticipated SGP traffic. Light vehicle traffic is anticipated during 2022 with approximately five roundtrips every two weeks over three months, totaling 30 trips. Additionally, 28 trips would occur in support of seven fuel hauls. In total, light vehicle traffic would result in 58 trips total in 2022, and heavy truck traffic would result in approximately six roundtrips. The seven anticipated fuel haul trips would include three-truck convoys (using 4,500-gallon trucks), amounting to a total of 21 individual trips. In 2023, it is anticipated that 50 contractors would be traveling to and from the SGP, with five people per vehicle over six months. Light vehicle traffic (including buses and vans) would result in approximately 12 round trips every two weeks, for a total of 144 trips, plus 64

trips in support of 16 fuel hauls, which would amount to 208 trips total. Heavy truck traffic during 2023 would equal approximately 15 roundtrips. The 16 anticipated fuel haul trips would also include three-truck convoys (using 4,500-gallon trucks), amounting to a total of 48 individual trips. If activities continue in 2024, associated traffic would likely be similar to 2023.

As such, the SGP combined with other reasonably foreseeable future projects would have a greater cumulative effect on roads closer to the SGP and less contribution on the larger arterials further from the SGP.

7.5 Short-term Uses and Long-term Productivity

7.5.1 No Action Alternative

Under the No Action Alternative, the SGP would not be approved by the PNF. Consequently, the public access roads developed for the action alternatives would not create any short-term uses that would affect long-term access and transportation productivity.

7.5.2 2021 MMP

Development of the 2021 MMP would result in short-term SPG transportation uses of the road system within the analysis area that would compete with the baseline traffic and public access conditions. Public access would be expanded from baseline conditions temporarily to additional roads and trails including Burntlog Route, the OHV Connector Trail, Johnson Creek Road temporary OSV route, and the Cabin Creek OSV route; however, the Warm Lake to Landmark groomed OSV route and Johnson Creek Road groomed portion from Landmark to Wapiti Meadows Ranch would be closed for the duration of the 2021 MMP. During operations under the 2021 MMP, a public access road would be located through the SGP to connect Stibnite Road to Thunder Mountain Road. When the mining operations are closed and the SGP is reclaimed, the long-term productivity of the baseline local transportation and public access conditions would be restored.

7.5.3 Johnson Creek Route Alternative

Development of the Johnson Creek Route Alternative would result in the same short-term uses and long-term productivity of the road system within the analysis area as under the 2021 MMP except for the Johnson Creek Route would be used for the duration of the Johnson Creek Route Alternative and new and upgraded portions of Burnt Log Road/Burntlog Route would not be constructed.

7.6 Irreversible and Irretrievable Commitments of Public Resources

7.6.1 No Action Alternative

Under the No Action Alternative, the SGP would not be approved. Consequently, there would be no irreversible and irretrievable commitment of public resources as it relates to access and transportation.

7.6.2 Common to the 2021 MMP and Johnson Creek Route Alternative

The SGP would alter the roadway system, transportation and public access within the analysis area under both the 2021 MMP and the Johnson Creek Route Alternative. This would constitute an irretrievable commitment of the public resource as the baseline transportation and public access conditions would be restored when the SGP reclamation is completed.

Consumption of renewable and non-renewable resources would be required for infrastructure development, including metals, aggregate, cement, wood, fuel and other materials, which would be an irreversible commitment of these resources. Funds and labor would be irretrievably committed for project permitting and development.

7.7 Summary

The following section provides a summary of the SGP impacts and a comparison of differences associated with each alternative. **Table 7-8** provides a summary comparison of access and transportation impacts by issues and indicators for each alternative.

7.7.1 Traffic Volumes

During construction, mine traffic under the 2021 MMP and Johnson Creek Route Alternative would generate an estimated AADT of 65 vehicles (45 heavy vehicles and 20 light vehicles). Construction traffic volumes on Johnson Creek Road and Stibnite Road would almost double and triple, respectively. Over a third of the vehicles traveling on these one-lane, native surfaced roads would be comprised of heavy vehicles and could result in slower travel times for non-mine-related traffic and may deter these travelers from using these roadways. Travelers may use alternative roadways including McCall-Stibnite Road to South Fork Salmon River Road.

During operations, mine-related traffic would include transport of employees to and from the SGP, delivery of supplies, and activities associated with road maintenance such as snowplowing and sanding. Under the 2021 MMP and the Johnson Creek Route Alternative, operational AADT would be 50 vehicles (33 heavy vehicles and 17 light vehicles), resulting in approximately four mine-related vehicles per hour traveling outside the SGP.

The upgraded Burnt Log Road and the newly constructed Burntlog Route would experience an increase in traffic of over 71 percent under the 2021 MMP, with 27.5 percent of the traffic comprised of heavy vehicles. Although heavy vehicles currently use Johnson Creek Route to access the SGP, the Johnson Creek Route Alternative traffic would result in a noticeable change in baseline driver experience and slower drive times due to the substantial increase in mine-related heavy vehicles along Johnson Creek Route during the life of the SGP. Even though upgrades to Johnson Creek Road and Stibnite Road would be made, these roads would still have many curves and slopes.

During closure and reclamation, activities including slope recontouring, facility removal, seeding and planting, and post-closure environmental monitoring would require approximately 7 years. Closure and reclamation would generate a total estimated AADT of 27 vehicles (15 heavy vehicles and 12 light vehicles). Post-closure monitoring activities would generate a total estimated AADT of six light vehicles. The duration of monitoring and monitoring requirements would be outlined in the final permit approval documents. Furthermore, these roads experience a seasonal effect which results in noticeable differences in traffic. Valley County has many summer recreational areas that attract visitors from May through October with peak AADT levels in June, July, and August. Therefore, mine access via the Johnson Creek Route would be more impactful on summer recreational traffic because it utilizes established roads rather than new road development. Winter driving conditions influence the amount of traffic and result in lower AADT levels during the winter months. Therefore, the seasonal effect of traffic on these roads would show a noticeably greater increase in mine-related winter traffic (i.e., drivers would notice a higher ratio of mine-related traffic to general traffic) during construction, operations, and closure and reclamation. Post-closure winter traffic would not be as noticeable as heavy vehicle deliveries would not occur and

approximately six mine-related light vehicles per day would utilize the accessible roadways in the analysis area for monitoring and maintenance purposes.

7.7.2 Public Access

Under the 2021 MMP, public access to the SGP area would be enhanced by the development of a new access road compliant with current road standards. There would be a public access route through the SGP during the operations, and closure and reclamation phases, however, public access would be intermittently interrupted during the construction phase. There also would be a public access route through the SGP under the Johnson Creek Route Alternative. Under the Johnson Creek Route Alternative, the Burntlog Route would not be constructed, and the Johnson Creek Route would be used for both public and SGP-related access. To continue providing OSV access to Landmark, a 10.4-mile groomed OSV route between Warm Lake and Trout Creek Campground on Cabin Creek Road would be created as part of the 2021 MMP along with a parking area, resulting in a new winter access facility that would be maintained by Valley County.

7.7.3 Safety and Emergency Access

For the duration of the SGP, the increase in total volume of mine-related vehicles, specifically heavy vehicles or trucks, on the Yellow Pine and Burntlog routes would result in a safety risk for accidents occurring between public and SGP-related traffic due to the one-lane constraints during construction, for passing slower moving vehicles, and degradation of the road with more frequent heavy vehicle travel. However, the steep terrain would be a greater risk to safety along the Johnson Creek Route under the Johnson Creek Route Alternative as it would be the only route used for the life of the SGP and would require safety considerations for geotechnical hazards, landslides, and avalanche zones, including intermittent and extended road closures during the four years of construction. Additionally, access through the SGP under the Johnson Creek Route Alternative would be through a single point of ingress and egress and would require safety considerations for mine deliveries and public access. The steep climb to provide access around the Yellow Pine pit would require a wider road with more switchbacks to accommodate the heavy trucks transporting mine supplies and may increase hazardous driving conditions for crew rotation, emergency responses, and wildfire evacuation.

7.7.4 Other Modes of Transportation

Under both action alternatives, a helipad would be located at the SGP for exploration during daylight hours, Medevac purposes, and avalanche control activities. 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 water transportation. Although there is no rail transportation system is in the analysis area, there is potential for the trucks to transport mine products to rail lines located in Boise or for supplies and materials to be indirectly transported to and from the SGP by trucks originating from rail shipments. Nevertheless, these impacts would generate negligible changes to rail transport during operation of the SGP and would not substantially alter the level of service.

Table 7-8 Comparison of Access and Transportation Impacts by Alternative

Issue	Indicator	Baseline Conditions	No Action Alternative	2021 MMP	Johnson Creek Route Alternative
The SGP may affect access to public lands during mine construction, operations, and closure and reclamation.	Number, location, and description of changes in access due to new and improved roadways.	See Table 6-1 and Figure 5-1	Same as Baseline Condition	Burnt Log Road (plowed). Mine site public access during operations (not plowed). Loss of winter groomed OSV trail on Warm Lake Road to Landmark. Loss of winter groomed OSV trail on Johnson Creek Road from Wapiti Meadows to Trout Creek campground during construction of Burntlog Route.	No Burntlog Route, only Johnson Creek Route (plowed). Mine site public access during operations (not plowed). Loss of winter groomed OSV trail on Warm Lake Road to Landmark. Loss of winter groomed OSV trail on Johnson Creek Road from Wapiti Meadows to Trout Creek campground for life of SGP.
The SGP may change the miles of roads and trails, the amount of use, and types of vehicles on each road or trail.	Miles of new road for public use.	Forest Service = 1,557 miles Valley County = 278 miles State = 131 miles	Same as Baseline Condition	Forest Service = no change Valley County = 2.2 miles[1] State = no change Private = 13.5 miles (with an additional 4 miles through the SGP)[2]	Forest Service = no change Valley County = 2.2 miles[1] State = no change Private = 4 miles through the SGP[3]
	Change in amount of use.	See **Table 6-1** for existing roads.	Same as Baseline Condition	Johnson Creek Route = 5 mine-related vehicles/hr (C) Burntlog Route = 4 mine-related vehicles/hr (O); 2 mine-related vehicles/hr (C-R)	Johnson Creek Route = 5 mine-related vehicles/hr (C); 4 mine- related vehicles/hr (O); 2 mine-related vehicles/hr (C-R)

Issue	Indicator	Baseline Conditions	No Action Alternative	2021 MMP	Johnson Creek Route Alternative
	Changes in frequency of rail, air, and water transportation.	Rail – no active lines Air – 7 public use airports Water – Port of Lewiston	Same as Baseline Condition	Rail - No impact. Air – Helicopter usage for when roads are inaccessible. Water – potentially 1 roundtrip (2 truck trips) daily of antimony.	Rail - No impact. Air – Helicopter usage for when roads are inaccessible. Helicopter usage during construction to install repeaters. Water – potentially 1 roundtrip (2 truck trips) daily of antimony.
The SGP may affect public safety on the roads used by mine vehicles during construction, operations, and closure and reclamation activities.	Approximate miles of roads used by mine vehicles.	Johnson Creek Route = 70 miles South Fork Salmon River Road = 83 miles Burntlog Route = 0 mile (does not exist)	Same as Baseline Condition	Johnson Creek Route = 70 miles Burntlog Route = 71 miles	Johnson Creek Route = 70 miles Burntlog Route = 0 mile
	Change in traffic volume. (AADT)	Refer to **Table 6-3**.	Same as Baseline Condition	C = 65 (45 HV) O = 50 (33 HV) C-R = 25 (13 HV) Post Closure = 6 (0 HV)	C = 65 (45 HV) O = 50 (33 HV) C-R = 25 (13 HV) Post Closure = 6 (0 HV)
	Number of accidents, both current and projected.	Warm Lake Road = 8/year Johnson Creek Road = 2/year Stibnite Road = 1/year	Same as Baseline Condition	Perpetua would implement safety measures to reduce accidents including radio communications, pilot cars, and hour restrictions.	Perpetua would implement safety measures to reduce accidents including radio communications, pilot cars, and hour restrictions. Johnson Creek Route has a steeper topography and terrain that would require wider roads, more cut/fill sections, and more switchbacks.
	Change in emergency access.	N/A	N/A	Additional access routes via public access through the SGP upon closure (C-R).	Additional access routes via public access during the winter (C) and through the SGP upon closure (C-R).

Issue	Indicator	Baseline Conditions	No Action Alternative	2021 MMP	Johnson Creek Route Alternative
	Change in OSV access.	Groomed OSV trail along Warm Lake Road from Warm Lake Parking Area to Landmark Groomed OSV trail along Johnson Creek Road from Trout Creek campground north to Wapiti Meadows	Same as Baseline Condition	Groomed OSV from Warm Lake to Landmark closed for use for life of SGP. An alternative OSV route would be established from Trout Creek Campground to Landmark. Warm Lake area OSV would be created north of Warm Lake Road to southern end of Cabin Creek Road OSV trail to Warm Lake Road. OSV from Trout Creek Campground to Wapiti Meadows closed through construction of Burntlog Route.	Same as under the 2021 MMP; except the OSV from Trout Creek Campground to Wapiti Meadows closed for use for life of SGP.

[1]Additional miles of new road would be established for public access as a post closure service road and would require revision to the existing FRTA easement with Valley County.
[2]The newly constructed Burnt Log Road would be a temporary road necessary for mining purposes. The duration for public access on SGP roads when other public access roads are blocked by mine operations would only occur during the life of the mine.
[3]During the life of the mine, mine traffic would utilize the existing road network. No new roads would be constructed outside of the SGP; however, public access would be provided on SGP roads when other public access roads are blocked by mine operations.
+ = includes; - = removes; AADT = annual average daily traffic; C = Construction; C-R = Closure and Reclamation; East Fork SFSR TSF = East Fork South Fork Salmon River Tailings Storage Facility; FRTA = Forest Roads and Trails Act; hr = hour; HV = heavy vehicles; N/A = not applicable; O = Operations; OHV = off-highway vehicle; OSV = over-snow vehicle.

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