4.7 HAZARDOUS MATERIALS

4.7.1 Effects Analysis Indicators and Methodology of Analysis

The analysis of potential effects from hazardous materials includes the following issue and indicators:

Issue: The Stibnite Gold Project (SGP) may cause accidental releases of hazardous materials or wastes, including diesel fuel, gasoline, lubricants, antifreeze, chemical reagents and reactants (including sodium cyanide and sulfuric acid), antimony concentrate, mercury containing residuals, lime, explosives and other substances during their transport, use, storage, or disposal.

Indicators:

- Volumes and types of hazardous materials and hazardous wastes transported, used, and stored during site operation.
- Practices for storage and use on site including primary/secondary/tertiary containment types and volumes and material handling practices;
- Amount of vehicular transport of hazardous materials during construction, operations and closure and reclamation; and
- Travel routes and road conditions (e.g. terrain, proximity to water bodies, geohazard risk, etc.)

The assessment considers the measures identified by the U.S. Forest Service (Forest Service) or Midas Gold Idaho, Inc. (Midas Gold), as listed in **Appendix D**, Mitigation Measures and Environmental Commitments, to avoid or reduce impacts such as:

- Methods for transporting and safely storing such materials;
- Methods and ability to respond to potential spill events; and
- Methods and plan for waste disposal.

Use and transport of hazardous materials is currently occurring at the site associated with exploration activities as described in Section 3.7, Hazardous Materials. The existing conditions are compared to the increased use and transport of hazardous materials anticipated under the proposed mining activities (Midas Gold 2016). In addition, the analysis considers modifications to existing and new access routes and proposed support facilities.

4.7.2 Direct and Indirect Effects

The following analysis of effects associated with hazardous materials is considered in the overall context of direct impacts caused by accidental releases or spills to localized areas, as well as potential impacts to outlying areas associated with releases to groundwater or nearby drainages/streams/surface waters. Elements of this context include:

- Amount, type, and location of storage, use, or disposal of hazardous materials and the potential for release to the environment;
- Transportation of hazardous materials to or from the mine site, and the potential for accidental release to the environment; and
- Fate and transport (i.e., where the hazardous material may go in the environment) of hazardous materials that have entered the environment.

Impacts associated with the storage, use, and disposal of hazardous materials are measured quantitatively by the amount, type, and location of use. Impacts to the environment in the event of an accidental release are assessed qualitatively, based on the type and amount of hazardous material, handling techniques, location of use and contingency plans, risk of accidental release, and exposure pathway to potential sensitive receptors.

The operation of the SGP would involve the use of various materials in order to mine, process, and extract the metals from the ore and conduct related activities. A list of major consumables to be used at the proposed mine site is presented in **Table 2.3-6** and Section 2.3.5.18, Materials, Supplies, Chemical Reagents and Wastes. **Table 4.7-1** provides a list of the hazardous materials to be used.

A release event could range from a minor spill of up to a few gallons (for which on-site cleanup would be readily available) to a large, reportable spill (e.g., over 25 gallons of fuel). Some hazardous chemicals could have immediate adverse impact on soils and vegetation, and potentially degrade aquatic resources and water quality if they enter surface water. Spills of hazardous materials also could potentially seep into the ground and contaminate the groundwater system over the long term. The risk and potential transport to the environment exists for all hazardous materials.

Spills of hazardous materials could adversely affect soils, vegetation, water quality, wildlife and fish, including lower trophic level aquatic organisms (e.g., bacteria and algae). Impacts could include degraded soil and water quality, fish and wildlife habitat contamination, and toxicity, injury or mortality to fish and other aquatic organisms, depending on the type and volume of material released, location, proximity to streams, timing, spill response, etc.

Impacts could occur at the mine site, off-site facilities, along access routes, or in downstream watersheds. The geographic extent of any impacts would depend on the location and size of the spill and the effectiveness of the response. For most spills the extent would likely be limited to the immediate vicinity of the spill due to the response and cleanup measures that would be in place, but if a spill were to occur into a stream, impacts could extend downstream.

The potential for impacts would perist for the life of the mine. More details regarding the effects of accidental release of hazardous materials to fish and aquatic resources are addressed in Section 4.12, Fish Resources and Fish Habitat.

Local, state, and federal laws regulate the storage, use, recycling, disposal, and transportation of hazardous materials, wastes, and fuels. A Spill Prevention, Control, and Countermeasure (SPCC) Plan would be developed prior to SGP construction and operations, providing direction for preventing and controlling spills and describing Best Management Practices to minimize the potential for releases of hazardous materials. In the event of a spill or release of hazardous materials or wastes, standard spill response and cleanup practices would be implemented to mitigate potential impacts, as outlined below.

4.7.2.1 Spill Risk from Truck Transport

4.7.2.1.1 Highways

Trucks would be used to transport hazardous materials to the mine site and off-site facilities. Based on the proposed hazardous materials, supplies, reagents, and wastes being transported to and from the mine site, the greatest concern would be a release of any hazardous material from a transportation accident resulting in a high potential impact to the environment. Data from the Federal Motor Carrier Safety Administration (Federal Motor Carrier Safety Administration 2018) show very low rates of large truck accidents resulting in spills of hazardous material, as addressed below. Strict regulatory controls and SGP emergency response procedures would be expected to limit the extent of any such incidents. The duration of spill risk would be long-term because it would exist throughout the life of the SGP. The impacted area would include the site of the spill and potentially downstream areas as far as the point of dilution. The East Fork South Fork Salmon River (EFSFSR) and associated tributaries, including streams within 0.5 mile of access routes, are the major surface waterbodies that could be impacted by accidental releases.

To evaluate the potential impact of the transport of hazardous materials to and from the mine site, the risk of a transportation accident resulting in the release of hazardous materials was estimated. Accident and incident rates were derived from national statistics for truck accidents that involve hazardous materials as published by the Federal Motor Carrier Safety Administration (2018). Records show that the number of large trucks (gross vehicle weight of more than 10,000 pounds) on national highways from 2013 to 2016 ranged from over 10.59 million to 11.49 million; with large trucks traveling between 275.01 billion miles to 287.89 billion miles annually. Over that same time frame, large truck crashes involving hazardous materials cargo (with no release) ranged from 2,420 to 2,475, while large truck accidents with release of hazardous materials cargo ranged from 385 to 552. The statistical rate of large-truck accidents involving hazardous cargo for miles traveled ranged from approximately 1 accident for every 714 million miles traveled in 2013 to approximately 1 accident for every 522 million miles traveled in 2016. Therefore, statistically, the rate of accidents on the nation's highways involving crashes or spills of hazardous material cargo by large trucks is very low (Federal Motor Carrier Safety Administration 2018).

In 2019 there were a total of 38 spills of hazardous materials reported in the state of Idaho. None of these spills appear to be associated with a mine site or hauling of materials from a mine site. Most of the sillsed were from freight haulers and delivery services such as Fed Ex or United Parcel Service (accessed at https://portal.phmsa.dot.gov/analytics/saw.dll?Dashboard).

While national highways would be used to transport materials to the SGP area as far as Cascade, Idaho, secondary roads would be used to make delivery into, or transport materials out of, the mine site and to the off-site facilities. Statistics for haul truck accidents on county roads and/or in mountainous terrain are very limited. Transportation on local access roads would be at lower speeds and with less traffic than highways, and would likely be safer than highway travel.

4.7.2.2 Regulatory or Permit Requirements

Regulatory or permit requirements in relation to hazardous materials would include:

- The SGP would be required to comply with all federal and state regulations pertaining to the transport, handling, storage, use, and response to releases.
- Storage tanks would be located within a secondary containment designed to comply with federal and state SPCC regulations. Containment design would include, but not be limited to, bedding, impermeable lining, and regulatory-required containment volume for maximum volume release scenarios and local precipitation. For example, minimum secondary containment requirements mandated by federal regulations include a requirement for containment of 100 percent of the largest tank volume plus freeboard which is typically interpreted as 110 percent secondary containment capacity of the largest tank volume. Routine inspection and maintenance of storage vessels, containment, and preventative infrastructure (e.g., cathodic protection, alarms) would be conducted at prescribed intervals per planning documents.
- Used oils would be managed in accordance with the Used Oil Standards 40 Code of Federal Regulations 279 in closed containers labeled as “used oil” and sent off site for recycling, reclamation, fuel blending and or energy recovery.
- A SPCC Plan for the SGP would be maintained as required by 40 Code of Federal Regulations 112 regulations. The SPCC Plan would address site-specific spill prevention measures, fuel haul guidelines, fuel uploading procedures, inspections, secondary containment of all on-site fuel storage tanks, and staff training.
- A 90-day capacity hazardous waste storage facility and appropriate satellite storage facilities would be constructed to store any generated hazardous wastes as required by U.S. Environmental Protection Agency and State of Idaho regulations. All hazardous waste stored at the facility would be transported to an U.S. Environmental Protection Agency-approved off-site disposal facility within 90 days of collection.
- A solid waste management plan would be developed to assist with the storage, handling and disposal of solid and hazardous waste streams, including recyclables. This plan would be developed in accordance with state and federal regulations pertinent to waste. The solid waste management plan establishes procedures to identify hazardous waste and protocols to track, collect, and dispose of hazardous materials in accordance with

state and federal regulations. The plan also outlines methods to minimize the generation of hazardous waste (e.g., using industrial soaps in place of solvents wherever possible). Hazardous materials would be characterized for proper off-site disposal.

4.7.2.3 Standards of Practice Under the International Cyanide Management Code

The International Cyanide Management Code (ICMC) is a voluntary initiative for the gold and silver mining industries and the producers and transporters of cyanide used in gold and silver mining. It is intended to complement a mining operation's existing regulatory requirements. The ICMC focuses exclusively on the safe management of cyanide that is produced, transported, and used for the recovery of gold and silver, and on mill tailings and leach solutions. Standards of practice specific to cyanide transport, handling, storage, and emergency response under the ICMC include:

- Establish clear lines of responsibility for safety, security, release prevention, training, and emergency response in written agreements with producers, distributors, and transporters.
- Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.
- Design and construct unloading, storage, and mixing facilities consistent with sound, accepted engineering practices and quality control and quality assurance procedures, as well as spill prevention and spill containment measures.
- Operate unloading, storage, and mixing facilities to incorporate inspections, preventive maintenance, and contingency plans to prevent or contain releases and control and respond to worker exposures.
- Prepare detailed emergency response plans for potential cyanide releases.
- Involve site personnel and stakeholders in the planning process.
- Designate appropriate personnel and commit necessary equipment and resources for emergency response.
- Develop procedures for internal and external emergency notification and reporting.
- Incorporate into response plans monitoring elements and remediation measures that account for the additional hazards of using cyanide treatment chemicals.
- Periodically evaluate response procedures and capabilities and revise them as needed.

The combination of Midas Gold's proposed management practices, conformance with the ICMC standards of practice, and the state and federal regulatory requirements described in the above measures, would minimize and/or mitigate the risk of accidental release during the transportation, storage, management, and use of cyanide and other hazardous materials. In addition, the management practices under the ICMC code anticipated to be exercised by Midas

Gold would minimize the generation of hazardous waste, which could reduce the risk of accidental release.

Additional Forest Service mitigation measures and Midas Gold design features are listed in **Appendix D**, Mitigation Measures and Environmental Commitments. These measures are incorporated into the analysis for each alternative.

4.7.2.4 Alternative 1

Under Alternative 1, the volume and types of hazardous materials transported, stored, and used at the mine site and off-site facilities would increase from the current conditions of the permitted exploration operations. Substantial quantities of fuels, lubricants, and chemicals would be transported annually via large truck, and would be stored in aboveground storage tanks, bins, totes, and drums, within the required secondary containment designed to prevent spill releases to the environment. **Table 2.3-6** in Chapter 2, Alternatives Including the Proposed Action, lists the major materials, supplies, and chemical reagents to be potentially used at the mine site and off-site facilities, including fuel, explosives, and ore processing reagents.

Table 4.7-1 provides a list of the hazardous materials to be used as part of the SGP under Alternative 1. While a waste management plan has not been prepared for the SGP at this time, estimates of the wastes likely to be generated can be made based on the volume of materials proposed to be used.

Table 4.7-1 List of Hazardous Materials

Name	Units	Annual Usage/ Transport	On-site storage capacity	Amount of Waste Likely to be Generated
Diesel fuel	Gallon	5,800,000	200,000	0 (fully consumed)
Lubricants	Gallon	296,000	30,000	148,000 (50% consumed)[1] Off-site disposal.
Gasoline	Gallon	500,000	10,000	0 (fully consumed)
Antifreeze	Gallon	40,000	4,000	0 (assumed fully consumed but small amounts could require disposal if radiator is flushed)
Propane	Gallon	560,000	30,000	0 (fully consumed)
Antimony Concentrate	Truckloads of up to 20 suoersacs of 2 tons each	365-730	---	All concentrate transported off-site
Ammonium nitrate	Tons	7,300	200	0 (fully consumed)
Explosives	Tons	100	20	0 (fully consumed)
Grinding metals (steel balls for mill)	Tons	10,000	200	0 (fully consumed)
Crusher liners	Tons	3,200	50	0 (fully consumed)

Name	Units	Annual Usage/ Transport	On-site storage capacity	Amount of Waste Likely to be Generated
Sodium cyanide	Tons	3,900	300	Unknown quantity mixed with tailings, neutralized and discharged to the TSF[3]
Lime	Tons	70,000	4,000	0 (fully consumed in process, mixed with tailings as calcium carbonate)
Activated carbon	Tons	470	50	0 (recycled and re-activated)[2]
Copper sulfate	Tons	2,500	100	0 (consumed as a reagent)
Lead nitrate	Tons	700	25	0 (consumed as a reagent)
Aerophine 3418A	Gallon	10,000	300	0 (consumed as a reagent)
Methyl isobutyl carbonyl	Gallon	55,000	6,000	0 (consumed as a reagent)
Flocculant	Tons	600	15	0 (consumed as a reagent)
Sodium metabisulfite	Tons	14,000	500	0 (consumed as a reagent)
Potassium amyl xanthate	Tons	1,700	40	0 (consumed as a reagent)
Sodium hydroxide	Tons	300	20	0 (consumed as a reagent)
Nitric acid	Gallon	115,000	6,000	0 (consumed as a reagent)
Scale control reagents	Gallon	5,000	500	0 (consumed as a reagent)
Hydrogen peroxide	Gallon	30,000	8,000	0 (consumed as a reagent)
Magnesium chloride	Gallon	250,000	20,000	Partially consumed as water treatment, partially utilized on road surfaces
Solvents	Gallon	1,000	1,000	Most would be consumed, a portion of unknown quantity would become waste for off-site disposal
Wastes containing mercury from ore processing (carbon canisters, filter packs, gas condensers)	---	Not quantified	---	Not quantified. Waste would be disposed off-site in permitted facilities.

Table Source: Midas Gold 2016

Table Notes:

1 https://ec.europa.eu/environment/waste/oil_index.htm.

2 Some amount of carbon per ton of ore leached is likely lost to attrition. This lost material would likely end up in the tailings.

3 Waste would be in the form of cyanide mixed with tailings and would be sent to fully contained TSF for disposal. Cyanide levels would be reduced to less than 10 parts per million weak acid dissociable cyanide.

TSF = tailings storage facility.

Specific components proposed under Alternative 1 that would have hazardous materials include the mine site and off-site facilities. The maintenance workshop with truck wash (petroleum products and chemical storage, oil water separator); worker housing facility (with sanitary and solid waste); and fuel and explosives storage at the mine site.

Transportation access to the mine site would be provided by upgrades and/or improvements to Yellow Pine Route and construction of the Burntlog Route, as well as additional haul and service roads at the mine site. The access roads used under Alternative 1 would cross 71 different named and unnamed streams, as inventoried in Section 4.9, Surface Water and Groundwater Quality (see **Table 4.9-13**). New and upgraded utilities would be constructed including: transmission lines (42 miles of existing 69-kilovolt line and 21.5 miles of existing 12.5-kilovolt line upgraded to 138-kilovolt line, and 8.5 miles of new 138-kilovolt line from Johnson Creek Substation to the mine site), three new electrical substations, and upgrades to two existing substations (Lake Fork and Warm Lake substations). In addition, the following off-site facilities would be constructed: Stibnite Gold Logistics Facility (SGLF) (with sanitary and solid waste, warehouse storage, laydown yards, and assay laboratory) and the Landmark Maintenance Facility (with equipment maintenance activities, fuel storage, and sanitary and solid waste).

4.7.2.4.1 CONSTRUCTION

During the construction phase (approximately 2 to 3 years), the mine site would be accessed via the Yellow Pine Route until the Burntlog Route is completed. The Yellow Pine Route crosses 43 of the streams listed in **Table 4.9-13**. The largest volume of hazardous material or petroleum transferred to the mine site during construction would be diesel fuel. It is estimated that on average, two daily round trips to deliver fuel and miscellaneous supplies would occur (**Table 2.3-2** provides the projected construction traffic for supply and haulage of materials to the mine site). Although transportation of hazardous materials presents the greatest risk of impacts from spills and releases to the environment, all deliveries of fuel and hazardous loads would be escorted by pilot vehicles. Hazardous materials would be transported to the mine site in U.S. Department of Transportation (USDOT) certified containers and by USDOT registered transporters (Midas Gold 2016).

4.7.2.4.2 OPERATIONS

During the mining and ore processing operations phase (approximately 12 years), the mine site would be accessed via the Burntlog Route, which would cross 37 of the streams listed in **Table 4.9-13**. Hazardous materials such as diesel, gasoline, propane, lubricants, hydraulic oil, antifreeze, explosives, antimony concentrate, and other ore processing reagents (e.g., corrosive acids and bases) would be transported, stored, and used at the mine site, and potentially at off-site facilities (**Table 4.7-1**). Shipments would be transported by truck (heavy vehicle) along the Burntlog Route access road in USDOT approved containers (totes) or bulk tanker trucks, depending on the oil type and vendor. It is estimated that on average, 23 daily round trips to transport ore processing supplies, fuel, concentrate, and other materials would occur during operation (**Table 2.3-7** provides projected traffic during mining and ore processing operations for supply and haulage of materials to the mine site).

The majority of hazardous materials used on site would be spent or consumed during operations (**Table 4.7-1**). Materials that are not spent or consumed (e.g., lubricants) would be recycled, to the extent practical, or disposed off-site in an approved depository in accordance with applicable federal and state laws (Midas Gold 2016). Antimony concentrate produced at the mine site would be transported off-site for processing.

4.7.2.4.2.1 Wastes Containing Mercury

Multiple mine processes have the potential to generate mercury, including gold and silver leaching and carbon adsorption, and gold and silver electrowinning and refining. In the gold and silver leaching process, sodium cyanide would be used to leach gold and create a gold-cyanide complex that would be adsorbed to activated carbon. The gold would then be stripped from the activated carbon by washing the carbon with an acid solution to remove impurities, rinsing with fresh water, and stripping under pressure at high temperature using a hot alkaline caustic stripping solution. During the carbon stripping process, a small amount of mercury may not desorb from the activated carbon. This residual mercury would volatilize in the carbon reactivation kiln. Release of mercury to the atmosphere would be prevented by installing a venturi scrubber and sulfur-impregnated carbon columns in the kiln off-gas stream. Solid waste from this process (i.e., the carbon canisters and filter packs) would be disposed off-site in a permitted solid waste disposal facility.

For the gold and silver electrowinning and refining, a gold- and silver-bearing solution would be passed through electrowinning cells where the gold and silver would be precipitated onto stainless steel mesh. The gold and silver-plated mesh would be washed to produce a metal-bearing sludge that would be filtered and placed into a furnace to dry the material and volatilize any remaining impurities, such as mercury. The gas from the furnace would then be passed through a chilled condenser, where mercury would be converted to its liquid metallic state and then securely stored prior to shipment to a Resource Conservation and Recovery Act certified hazardous waste disposal facility. To ensure that it is free of mercury, the remaining gas would be passed through a bed of sulfur-impregnated carbon before being released into the atmosphere. The furnace gas condensers would be disposed in a landfill or waste repository permitted to accept this type of waste material.

Produced antimony concentrate also would contain trace amounts of mercury.

4.7.2.4.2.2 Dust

Dust from baghouses at ore crushing/ore reclaim facilities, etc. would be collected and disposed as appropriate. If dust has elevated metals levels, it would be disposed with the tailings.

4.7.2.4.2.3 Oils

Alternative 1 includes the operation of three new substations and upgrades to two existing substations, which would require large quantities of oils (i.e., mineral oils). However, oils would be contained within the substation equipment and as per the site-specific SPCC plans, design of the substation yards would prevent discharges to navigable waters of the U.S. in the event of a release.

4.7.2.4.2.4 Spills at Mine Site and Off-Site Facilities

A large volume release to the environment at the mine site or off-site facilities (SGLF, Landmark Maintenance Facility) is not likely to occur based on the planned infrastructure specifically designed for the storage and management of hazardous materials and use of secondary containment. There was a reportable spill at the mine site from a plane crash in February of 2012 that resulted in a diesel spill.There have been no reportable spills since then.

In the event a release was to occur, it would be relatively small in volume based on estimated container volumes and would be promptly addressed by stopping the source of the spill, using absorbent material or barriers to prevent further migration of the spilled material, and removing, characterizing, and properly disposing of any impacted soil per implementation of the prescribed SPCC Plan and/or Emergency Response Plan recovery efforts. The bulk fuel storage facilities would be constructed with appropriate, redundant, and legally required protection systems in place. The fuel tanks would be aboveground and located within a concrete-lined secondary containment facility that would be capable of holding a minimum of 110 percent of the largest tank volume present within the containment (Midas Gold 2016). For these reasons, possible spill-related impacts to surface water and other physical resources would be low to negligible. Any effects would be temporary in duration, assuming proper spill response measures, but the low risk of spills would be throughout the life of the SGP (long-term). Spills would be limited to the immediate area of release and would therefore be local in geographic extent. The effects would be localized, though spills to flowing water could spread contaminants downstream. Some materials that are highly toxic (e.g. cyanide) could result in greater impacts to a localized area.

For these reasons, the overall direct and indirect effects of hazardous materials and other substances would likely be minor but the effects could increase depending on the location where a spill occurs and the amount and type of material released.

4.7.2.4.2.5 Spills on Access Roads

During operations, all fuel would be trucked to the mine site via the Burntlog Route from a bulk fuel storage farm on Warm Lake Road (SGLF). During operations, one to two truckloads of antimony concentrate would be transported from the mine site each day. There is no past incidence of spills (since 2016) while transporting fuel and consumables to the mine site (Midas Gold 2016).

The most probable release scenario associated with truck transport would be relatively small (for example, less than 25 gallons of fuel) and attributed to mechanical failure or human error. Under this scenario, immediate cleanup actions would typically include deployment of containment and spill recovery materials, and removal of impacted roadbed material. Material spilled to soils/roadbed could likely be contained and recovered, while material which enters waterways may be difficult or impossible to fully recover. Response actions would include notification to the appropriate regulatory agencies.

Most small volume release scenarios would be temporary due to prompt response and cleanup actions; however, higher volume/lower probability spill scenarios could result in longer-term remedial actions and impacts. The risk of spills would last throughout the life of the SGP (long-term). Effects would generally be local and in close proximity to the release source in most scenarios; however, if surface or groundwater were to be impacted with fuels or other hazardous materials, the potential for migration beyond the local area could occur.

A low probability fuel release of up to 10,000 gallons or large spill of concentrate could potentially occur assuming the complete failure of a bulk tanker truck or truck rollover or accident. Under this scenario, spilled material would be released to the immediate roadbed area, and potentially to nearby surface water depending on the topography and location. Spill response and recovery measures such as containment, deployment of absorbent materials, removal of impacted roadbed material and vegetation, and deployment of water-based spill recovery equipment (as needed) may help to limit impacts. Impacts to physical resources and ecological receptors (e.g., vegetation or wildlife) could be greater depending on the location of the spill.

4.7.2.4.3 Closure and Reclamation

Hazardous materials present at the mine site and off-site facilities during closure and reclamation would be similar in comparison to the construction phase of the SGP. However, most of the final closure and reclamation would be concentrated during May through November to avoid winter conditions (Midas Gold 2016). It is estimated that on average, one daily round trip to deliver fuel and miscellaneous supplies would occur during closure and reclamation. **Table 2.3-8** provides projected traffic during closure and reclamation for supply and haulage of materials to the mine site. The risk of spills or releases would diminish throughout the closure and reclamation phase as fuel and other hazardous materials demands progressively diminish.

4.7.2.4.4 Access Route Hazards

Under Alternative 1 the Yellow Pine Route would be used for site access during the first 1 to 2 years of construction. The Burntlog Route would be used during operations.

All access routes could present occasionally adverse road conditions that are common on remote mountain roads, especially due to ice and snow conditions during winter months. Road conditions on high mountain passes such as Warm Lake, Landmark and and Big Creek Summit may be particularly challenging in the winter. Both the Burntlog and Yellow Pine routes have segments with steep grades (above 6 percent), and no emergency truck ramps are present or planned on the routes. Switchbanks and reduced turning radius also may be a challenge for large trucks operating on these roads. Any additional transport of hazardous materials under the action alternatives would increase the spill risk compared to the No Action Alternative.

Both the Burntlog and Yellow Pine access routes have segments that are susceptible to geohazards, including avalanches, landslides and rockfalls. See Sections 3.2 and 4.2, Geologic Resources and Geotechnical Hazards, for additional information on geohazards relevant to the SGP. These geohazards present along the road corridors could increase the potential for truck accidents resulting in spills of hazardous materials.

No geologic hazard assessment, including field reconnaissance, has been conducted to date for the Yellow Pine Route. Therefore, as part of preparation of the Environmental Impact Statement and to enable a general comparison of identified hazards between the Yellow Pine and Burntlog routes, a desktop study of both corridors was conducted (**Appendix E**). The details of the desktop study are provided in **Appendix E** and identified geohazards are depicted on **Figure 3.2-6** (see Section 3.2.3.7.3, Summary of Geohazards – Access Routes). Regarding the potential for avalanches, the desktop study focused on larger avalanches (Class 3 and above) that could be capable of burying or overturning a vehicle. Smaller avalanches (Class 1 or 2) could result in temporary road closures, but would be unlikely to increase the risk of a truck accident.

- Along the Burntlog Route, the desktop study identified 6 landslides and 20 rockfalls. No avalanche paths were identified along the Burntlog Route, although the existing Burnt Log Road (National Forest System Road [FR] 447) is known to experience small avalanches. The Burntlog Route is closer to avalanche "starting zones" such that it may have frequent but small avalanches (Class 1 or 2) that would be unlikely to impact vehicles.
- Along the Yellow Pine Route, 26 landslides, 19 rockfalls, and 12 avalanche paths were identified. Stibnite Road in particular is at the base of several large avalanche paths, and the route is known to have significant avalanches that disrupt traffic periodically.

Avalanches also can happen outside of existing avalanche paths, especially along road cuts and in areas that have undergone burning.

The Yellow Pine Route has increased potential for trucking accidents and greater spill risk from these geohazards compared to the Burntlog Route. See Section 3.2.3.7.2, Access Roads for the complete background information on geohazards across the two access routes.

Road conditions for transport routes beyond Landmark also would include occasionally adverse road conditions as noted above, as well as avalanche hazards at Warm Springs (see **Figure 3.2-6**). Occasional "slides" on Big Creek Summit in the last 20 years have caused temporary road closures, and Warm Lake Summit often has avalanche debris areas (Valley County Road Department 2020). These conditions are generally associated with road cuts. Road hazards past Landmark could increase spill risk for all action alternatives compared to the No Action Alternative.

4.7.2.4.5 IMPACTS TO WATERWAYS

Close proximity of access roads to surface water resources increases the potential for spilled material to enter water, thus increasing the potential consequences of a spill. The Burntlog

Route crosses 37 of the 71 streams listed in **Table 4.9-13** and includes 9 miles of road that are within 0.5 mile of surface water resources. The Yellow Pine Route crosses 43 different streams (**Table 4.9-13**) and includes 27 miles of road that are within 0.5 mile of surface water resources, including several miles that parallel the fish-bearing EFSFSR and Johnson Creek waterways. Though the Burntlog Route includes a greater number of stream crossings, the Yellow Pine Route includes significantly greater proximity to water resources. The potential consequences from trucking spills would thus be greater along the Yellow Pine Route.

4.7.2.4.6 Spill Risk Throughout SGP Phases

The location of the spill risk would change as the SGP progresses. Johnson Creek and the portion of the EFSFSR between the town of Yellow Pine and the mine site would be at risk during the first 1 to 2 years of the SGP when the Yellow Pine Route would be used as the access route while the Burntlog Route is being constructed. For the remainder of the mine life, the waterbodies adjacent to the Burntlog Route would be at risk. Mine transport begins on Warm Lake Road (County Road [CR] 10-579) where the risk of spills would be lower, as it is paved and maintained by Valley County and has overall gentler grades. At the intersection of Warm Lake Road and Johnson Creek Road (CR 10-413) the two mine access routes begin, with the Yellow Pine Route north along Johnson Creek Road (CR 10-413) and the Burntlog Route east onto Burnt Log Road (FR 447). The hauling of fuel and other materials along both routes puts the environment and resources in these adjacent waterways at risk.

4.7.2.4.7 Conclusion

The combination of Midas Gold's proposed management practices, committed mitigation measures, and Forest Service-required mitigation measures detailed in **Appendix D**, and the state and federal regulatory requirements described in Section 4.7.2.2 and practices of the ICMC in Section 4.7.2.3 above, would minimize and/or mitigate the risk of accidental release during the transportation, storage, management, and use of hazardous materials. In addition, management practices exercised by Midas Gold could minimize the overall amounts of generated hazardous waste, which could reduce the risk of accidental release.

4.7.2.5 Alternative 2

The access roads used under Alternative 2 would cross 69 different named and unnamed streams, as inventoried in **Table 4.9-20**. The Burntlog Route Riordan Creek segment would avoid crossing two unnamed streams, therefore reducing the potential for hazardous materials to impact these streams during mine operations and reclamation.

Aside from the change in stream crossings, hazardous materials impacts would generally be similar to those described for construction, operations, and closure and reclamation phases in Alternative 1. Under Alternative 2, an on-site limestone crushing plant and associated lime generation equipment is proposed and would require additional hazardous materials present at the mine site (i.e., diesel for associated trucking and propane to fuel the lime kiln). Producing lime from an on-site source of limestone as opposed to hauling lime from off-site sources would result in an estimated average 13 daily round trips to transport ore processing supplies, fuel, concentrate, and other materials during operation for Alternative 2 (**Table 2.4-3** provides projected traffic during mining and ore processing operations for supply and haulage of materials to the mine site) (M3 2018).

Alternative 2 also would require water treatment chemicals at the Centralized water treatment plant. Water treatment during operations would require hazardous chemicals as listed in **Table 4.7-2** in addition to those listed in **Table 4.7-1**. Water treatment chemical transport would require approximately 40 trips annually. Water treatment could result in sludges which would be transported to the tailings storage facility for disposal with tailings during operations.

Table 4.7-2 Alternative 2 – Operational Water Treatment Chemicals

Name	Units	Operational Annual Usage/ Transport	Post closure Annual Usage/ Transport	On-site storage capacity	Amount of Waste Likely to be Generated
Sodium hypochlorite	Gallons	5,500	2,600	1,000	0 (consumed as water treatment, any precipitants or sludge would be disposed in the TSF)
Ferric sulfate	Gallons	65,000	44,800	To Be Determined	0 (consumed as water treatment, any precipitants or sludge would be disposed in the TSF)
Sulfuric acid	Gallons	1,700	870	To Be Determined	0 (consumed as water treatment, any precipitants or sludge would be disposed in the TSF)

Table Source: Brown and Caldwell 2020

Water treatment at the water treatment plant would continue post closure and would require ongoing transport of chemicals to the site. The expected amount of chemicals needed post closure are listed on **Table 4.7-2**. In addition, an unknown number of trips would be required to transport any residual treatment sludges and wastes from the site, since these wastes would no longer be able to be disposed of in the TSF.

The in-perpetuity treatment would result in approximately 20 truck trips annually to delivery water treatment chemicals and an unknown number of trips to haul sludges and wastes from the treatment plant off-site for disposal. Transport would occur during the spring through fall with chemicals stockpiled in the fall to avoid winter transport.

4.7.2.6 Alternative 3

Hazardous materials impacts would generally be the same as those described for construction, operations, and closure and reclamation phases in Alternative 1. The number of stream crossings by access roads also would be the same.

4.7.2.7 Alternative 4

The use, storage, and disposal of hazardous materials during the construction, operations, and closure and reclamation phases would generally be similar to those described in Alternative 1. However, the Yellow Pine Route would be used as primary access to the mine site, including transport of hazardous materials and supplies. The Yellow Pine Route under Alternative 4 has both a higher spill risk than the Burntlog Route due to increased presence of landslides, rockfalls, and avalanche paths, and higher potential consequences from a spill due to the route's close proximity to surface water resources, as discussed above under Alternative 1.

Under Alternative 4, no improvements or construction of new segments for the Burntlog Route would be completed. Therefore, potential impacts from hazardous materials due to road construction for Burntlog Route or use of the Burntlog Route as an access route would not occur.

4.7.2.8 Alternative 5

Alternative 5 assumes that the mine site would remain as is. Exploration activities would continue, because these activities have been previously approved by the Forest Service. Existing use of petroleum products (fuels, lubricants, and hydraulic and motor oils), cleaning agents, batteries, tires, and other routine materials used for drill rig support equipment, such as generators, water pumps, vehicles, and helicopters, and other exploration-related operations would be ongoing. Alternative 5 would not address legacy mining impacts. This includes proposed reclamation of multiple open pits, development of rock dumps, tailings deposits, heap leach pads, and spent heap leach ore piles, in addition to legacy infrastructure. It is possible that hazardous substances associated with previous mining activities at the mine site remain beneath tailings and sediments. These substances could include cyanide, mercury, petroleum hydrocarbons, and solid waste.

There would be no direct or indirect effects on hazardous materials associated with Alternative 5. With no direct or indirect effects, this alternative also would not contribute to cumulative effects from hazardous materials. No additional use, storage, transport, or disposal of hazardous materials or solid waste would occur beyond what is currently ongoing at the mine site. The risk of accidental spill or release would not be any greater over what is currently occurring at the mine site. Assuming the current exploration activities continue, the potential for spills or releases from exploration operations would remain low, based on the single recordable release (2012 airplane crash) during the 6 years of exploration work in the mine site area.

4.7.3 Mitigation Measures and Effectiveness

Mitigation measures required by the Forest Service and measures committed to by Midas Gold as part of design features of the SGP are described in **Appendix D**, Mitigation Measures and Environmental Commitments; see **Table D-1**, Preliminary Mitigation Measures Required by the Forest Service; and **Table D-2**, Mitigation Measures Proposed by Midas Gold as SGP Design Features, respectively. The preceding impact analysis has taken these mitigation measures into consideration, as well as measures routinely required through federal, state, or local laws, regulations or permitting, such that the identified potential impacts of the SGP are those that remain after their consideration.

Mitigation measures may be added, revised, or refined based on public comment, agency comment, or continued discussions with Midas Gold and will be finalized in the Final Environmental Impact Statement.

4.7.4 Cumulative Effects

The cumulative effects analysis area for hazardous materials is bound by the bordering transportation routes that would provide access to the mine site: Warm Lake Road (CR 10-579) (from Cascade, Idaho), bound by South Fork Road (FR 474 and 50674) to the west; the East Fork Road portion of McCall – Stibnite Road and the Stibnite Road portion of McCall - Stibnite Road (CR 50-412) to the north (from Yellow Pine, Idaho); and Burnt Log Road (FR 447) to the East.

Cumulative effects associated with the SGP consider the range of existing and foreseeable activities and their potential effects with respect to hazardous materials. Past and present actions that have, or are currently, affecting hazardous materials include the following (from the complete listing presented in Section 4.1, Introduction):

- Midas Gold Operations and Exploratory Drilling from 2016 to 2019. The SGP has included transportation of approximately 141,000 gallons of fuel (diesel, gasoline, and jet fuel) per calendar year to the fuel storage facility on private land at the mine site. This activity occurs on existing County and Forest Service roads.
- Mine Closure and Reclamation of Hecla and Stibnite Mine, Inc. mining and processing facilities occurred between 1993 and 2000. These activities were conducted near the headwaters of EFSFSR and Sugar Creek.
- Comprehensive Environmental Response Compensation and Liability Act Actions. Several Comprehensive Environmental Response Compensation and Liability Act removal actions were conducted by the Forest Service, U.S. Environmental Protection Agency, and Exxon-Mobil Corporation. These activities were conducted near the headwaters of EFSFSR and Sugar Creek.

Each of these projects represents past and present actions that have occurred around or near the historic Stibnite Mining District.

Some of the reasonably foreseeable future actions (RFFAs) presented in Section 4.1, Introduction, have the potential to use some of the same roads as the SGP for access (e.g., Warm Lake Road, Johnson Creek Road, Stibnite Road). Although there is insufficient information about the nature of the RFFAs to assess specific hazardous materials usage, these reasonably foreseeable future actions projects would similarly be required to comply with state and federal regulations regarding transport and use of hazardous materials. Furthermore, available information for the RFFAs that could potentially use some of the same roads as the SGP and incrementally contribute to traffic (including heavy vehicle traffic involving transport of hazardous materials) suggests a nominal amount of cumulative traffic. For example, the Big Creek Hazardous Fuels Reduction Project in the Edwardsburg area north of Yellow Pine could be accessed via McCall - Stibnite Road; however, this project would involve 10,600 acres of treatment over a short period of time, such that the contribution of the action alternatives combined with this, and other similar projects would result in negligible changes to the overall traffic volume. The SGP when added to other past, present, and RFFAs could slightly increase the impact from hazardous materials in the cumulative impact analysis area.

4.7.5 Irreversible and Irretrievable Commitments of Public Resources

Under all alternatives, no irreversible or irretrievable commitment of public resources or impacts are anticipated. However, if a spill were to affect a sensitive resource, an irretrievable impact could occur pending the recovery of the resource (i.e., soil, water, vegetation, or wildlife).

4.7.6 Short-term Uses versus Long-term Productivity

Development of the SGP would result in potential short-term impacts to resources from the presence of hazardous materials in the area. Small spills would likely occur but would be cleaned up and managed in accordance with state and federal regulations. Residual contamination from previous mining and exploration efforts in the area would be addressed as they are encountered during the SGP. Potential hazardous materials would be characterized for proper off-site disposal. Long-term positive impacts due to removal and proper disposal of residual and SGP hazardous materials, habitat reclamation and post- mining reclamation are anticipated to provide an overall long-term environmental benefit and improve the long-term productivity.

4.7.7 Summary

All action alternatives would include the use, storage, and transport of hazardous materials which, if spilled, could potentially affect human health, water quality, wildlife, and vegetation. Hazardous materials to be used would include diesel fuel, gasoline, lubricants, antifreeze, other petroleum products, chemical reagents and reactants (including sodium cyanide and sulfuric acid), antimony concentrate, mercury containing residuals, lime, explosives and other substances (see **Table 4.7-1** for a list of hazardous materials to be used for the SGP).

Potential direct adverse impacts to soil and waterways could result from accidental releases or spills of hazardous materials. Spills also could result in indirect impacts to outlying areas from releases to tributaries of the nearby watersheds or groundwater.

Duration of spill risk for all action alternatives would be long-term as it would last throughout the life of the SGP. The extent of potential impacts would include the site of the spill and any downstream areas, as far as the point of containment or the point where dilution and/or dispersion mitigate the impacts naturally.

State and federal regulations, project controls and emergency response procedures would be in place to reduce spill risk and the extent of potential spill impacts.

4.7.7.1 Storage and Use of Hazardous Materials

Across all alternatives, storage and use of hazardous materials would occur at the mine site and at the SGLF and off-site maintenance facility during construction and operations. The probability of small volume/low impact spills is high, while the probability of large volume/high impact spills is relatively low. Designs utilizing areas with secondary containment for storage and grading to direct spills that could escape secondary containment into catchment areas, as well as spill prevention, containment and response measures incorporated into the SPCC Plan would reduce the probability of hazardous material spills and the extent of impacts in the event of a spill.

Use, volumes, and storage of fuels, lubricants, and chemicals at the mine site and off-site facilities (SGLF and the off-site maintenance facility) would be the same or similar across all action alternatives, with the exception of Alternative 2, which would include an on-site limestone crushing plant and associated lime generation equipment. This would require an additional 1,463,000 gallons of propane annually to fuel the lime kiln, and would require additional propane storage. Alternative 2 would have a somewhat elevated spill risk of these materials over other alternatives during storage and use at the mine site.

4.7.7.2 Transport of Hazardous Materials

Transport of hazardous materials would occur for all alternatives. The volume and frequency of hazardous material transport by truck would be the same or similar for Alternatives 1, 3, and 4, but the volume and frequency would change under Alternative 2, with on-site lime generation. Under Alternative 2, fewer truck trips would occur during an operational year. The reduced truck trips would be related to reduction of 2,032 truck trips each year for shipment of lime for use at the site and an increase of 133 propane delivery trucks each year for an overall net decrease of 1,889 truck trips each year of operations (an average annual daily traffic reduction from 49 trips per day to 33 trips per day. The overall risk of a spill would be reduced with reduced truck trips.

The mine access road corridors utilized for operations would vary across alternatives. The Burntlog Route would be used under Alternatives 1, 2, and 3, while the Yellow Pine Route would be the only route used under Alternative 4. Under Alternatives 2 and 3 there would be variations in the Burntlog Route corridor alignment, which would result in only slight changes to the spill risks.

In general, the potential for a release of hazardous material from a truck accident can be reduced for both the Burntlog and Yellow Pine Routes with the use of appropriate management practices such as pilot vehicles, speed restrictions and requiring appropriate spill kits in trucks hauling hazardous materials and in pilot vehicles.

Both the Burntlog and Yellow Pine Routes have segments with steep grades (greater than 6 percent), and no emergency truck ramps are present on the routes. Both routes have segments that are susceptible to landslides, rockfalls and avalanches These geohazards present along the road corridors could increase the potential for truck accidents resulting in spills of hazardous materials. Along the Burntlog Route, 6 landslides and 20 rockfalls were identified. No avalanche paths were identified along the Burntlog Route. Along the Yellow Pine Route, 26 landslides, 19 rockfalls and 12 avalanche paths were identified. The Yellow Pine Route thus may have higher potential for increased trucking accidents and greater spill risk from these geohazards.

Close proximity to surface water resources increases the potential consequences of a spill along the access routes. The Burntlog Route crosses 37 of the 71 streams listed in **Table 4.9-13** and includes 9 total miles that are within 0.5 mile of surface water resources. The Yellow Pine Route crosses 43 different streams (**Table 4.9-13**) and includes 27 miles that are within 0.5 mile of surface water resources, including several miles which parallel the fish-bearing EFSFSR and Johnson Creek waterways. Though the Burntlog Route includes a greater number of stream crossings, the Yellow Pine Route includes greater proximity to water resources. The potential consequences from trucking spills would thus be greater along the Yellow Pine Route.

Table 4.7-3 provides a summary comparison of hazardous materials impacts by issue and indicators for each alternative.

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Table 4.7-3 Comparison of Hazardous Materials Impacts by Alternative

Issue	Indicator	Baseline Conditions	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
The SGP may cause accidental release of hazardous materials or wastes, including milling reagents and reaction products, during the transport, use, storage, and disposal of materials.	Volumes and types of hazardous materials and hazardous wastes transported, used, and stored during site operation.	Petroleum products are currently stored at exploration-related facilities for activities associated with the exploration activities. In total approximately 63,885 gallons of petroleum products are used, stored and transported annually.	Hazardous materials and petroleum products storage would be stored at the following locations: SGLF; Landmark Maintenance Facility; Worker Housing Facility; Fuel and Explosive Storage. Approximate hazardous materials annual use and transport volumes would include: fuels and lubricants (6.6 million gallons); antifreeze (40,000 gallons); propane (560,000 gallons); antimony concentrate (365 to 730 truckloads); sodium cyanide (3,900 tons); copper sulfate (2,500 tons); nitric acid (115,000 gallons); solvents (1,000 gallons) along with numerous other chemicals as listed in **Table 4.7-1**.	Same as Alternative 1 except additional propane supply and storage volume would be required for the on-site lime kiln facility. This additional propane storage would slightly elevate the risk of a spill during hazardous materials transport and storage. Additional chemicals would be required for water treatment during operations and in-perpetuity. Chemicals include sodium hypochlorite, ferris sulfate, and sulfuric acid.	Same as Alternative 1.	Same as Alternative 1.	Same as Baseline Conditions.
	Practices for storage and use on site including primary and secondary containment types and volumes and material handling practices.	Hazardous materials are used and stored on site in accordance with applicable regulations including secondary containment for fuels and other hazardous materials. Midas Gold has developed documents for use and storage including a SPCC Plan and a Solid Waste Management Plan, which addresses management of hazardous materials.	Hazardous materials would be are used and stored on site in accordance with applicable regulations including secondary, and in some cases tertiary, containment for fuels and other hazardous materials. Midas Gold would develop documents for use and storage including a SPCC Plan and a Solid and Hazardous Materials Handling and Emergency Response Plan, which addresses management of hazardous materials Following regulatory requirements and plans for spill containment, control, and response would reduce the potential for spills and for impacts associated with those spills.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	Same as Baseline Conditions.
	Hazardous materials transport traffic volumes during construction, operations and closure and reclamation.	Petroleum products are transported to the site on an as-needed basis.	Overall heavy vehicle traffic, of which hazardous materials transport will be a part, would be approximately 45 trips per day as an average annual daily traffic (AADT) count for construction; for operations the AADT would be 49 daily trips; and for closure and reclamation the AADT would be 13 daily trips. These trips represent the	Net truck traffic and associated risk of a traffic accident would be reduced over Alternative 1 by an AADT count of 16 daily trips to a total AADT of 33. A reduction in traffic volumes would represent a reduced risk for a spill of hazardous materials. Trips for operational delivery of water treatment chemicals	Same as Alternative 1.	Same as Alternative 1.	Same as Baseline Conditions.

Issue	Indicator	Baseline Conditions	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
			risk of a traffic accident.	would continue in-perpetuity and would represent approximately 40 trips annually with an unknown number of trips to haul water treatment sludges and wastes off-site for disposal.Post closure delivery of chemicals would be approximately 20 trips annualy and would not occur during winter months.			
	Travel route road hazards	The existing routes are a combination of paved routes (Warm Lake Road) and existing native surface roads. There are potential road hazards along the routes used for delivery of supplies for the exploration project including landslide and rockslide areas, avalanche paths and routes close to streams. These hazards would represent a potential for hazard for accidents and spills.	Yellow Pine Route has potential road hazards, including landslide areas, rockfall areas, and avalanche paths. Twenty-seven miles of the route have streams within 0.5 mile of the travel way. Burntlog Route which would be used for most of the life of the mine has fewer landslide and rockslide areas and no mapped avalanche paths. Nine miles of the travel way have streams within 0.5 mile. Short-term use of the Yellow Pine Route would have a higher risk for accidents due to potential road hazards resulting in spills than the longer-term use of Burntlog Route. Yellow Pine Route also has more road length with waterways close to the road which could increase the transport of any spilled materials.	Same as Alternative 1.	Same as Alternative 1.	Major road improvements would occur for use of the Yellow Pine Route. Burntlog Route would not be constructed. The Yellow Pine would represent a higher risk for road hazards that could result in an accident and spill of hazardous materials, and the route's greater proximity to waterways could increase the consequences of a spill.	Same as Baseline Conditions.