

Appendix 18-C

Summary of Potential Temporal Linkages between the
Brucejack Gold Mine Project and Other Human Actions
in Regards to Wildlife

Appendix 18-C. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Wildlife

Table 18-C1. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Moose

Action/Project	Past	Present	Future
Eskay Creek Mine	X; This closed mine (and use of Eskay Creek Road) is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations (Figure 18.9-2). This project potentially affected the past condition of moose.	X; Since this project closed 6 years ago (2008) and moose live for 15 to 20 years, this project may affect the present condition of this VC.	X; Since this project closed in 2008 and moose live for 15 to 20 years, past effects of this project may affect the future condition of this VC.
Goldwedge Mine	X; This mine site is scoped out due to high elevation (> 1,100 m). However, road use related to the mine is at suitable elevations for moose and is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations (Figure 18.9-2). This project potentially affected the past condition of this VC.	NL	NL
Johnny Mountain Mine	X; This project is within the CEA Area used to assess cumulative effects on moose populations, but outside of the home range of an individual moose that could also interact with the Brucejack Gold Mine Project, and above the most suitable habitat/ elevational range for moose (> 1,100 m). However, this project potentially affected the past condition of this VC.	X; The closure of this project occurred in 1990. The tailings impoundment and other project implements remain at site, and the site offers continuing exploration potential. Therefore, this project may affect the present condition of this VC.	X; The closure of this project occurred in 1990. The tailings impoundment and other project implements remain at site, and the site offers continuing exploration potential; therefore this project may affect the future condition of this VC.
Kitsault Mine (Closed)	NL	NL	NL

Table 18-C1. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Moose

Action/Project	Past	Present	Future
Silback Premier Mine	X; This mine closed in 1996 (18 years ago) and is within the home range of an individual moose that could also interact with Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations (Figure 18.9-2). This project potentially affected the past condition of this VC.	X; Since the mine closed 18 years ago and moose live 15 to 20 years, this project may affect the present condition of this VC.	NL
Snip Mine	NL	NL	NL
Sulphurets Project	X; This mine site is scoped out due to high elevation (> 1,100 m). However, road use associated with the project is at suitable elevations for moose and is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations (Figure 18.9-2). This project potentially affected the past condition of this VC.	NL	NL
Swamp Point Aggregate Mine	NL	NL	NL
Granduc Mine/ Granduc Copper Mine	X; This project is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations (Figure 18.9-2). This project potentially affected the past condition of this VC.	X; The access road developed for this mine remained after closure, providing a permanent access route for hunters, guide outfitters, recreationalists, and mining and exploration activities in the area. Therefore, this project may affect the present condition of this VC.	X; The access road developed for this mine remained after closure, providing a permanent access route for hunters, guide outfitters, recreationalists, and mining and exploration activities in the area. In addition, this project was sold and is anticipated to re-open operations in 2016 with a 15-year life span if permitting is approved. Therefore, the new mine and existing components may affect the future condition of this VC.

Table 18-C1. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Moose

Action/Project	Past	Present	Future
Brucejack Exploration	X; This project is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations (Figure 18.9-2). This project potentially affected the past condition of this VC.	X; This project began in 2011 and is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations. The access road also provides a route for hunters, guide outfitters, recreationalists, and mining and exploration activities in the area. Therefore, this project may affect the present condition of this VC.	X; The access road is expected to remain in the landscape for a portion of time before being reclaimed, providing an access route for hunters, guide outfitters, recreationalists, and mining and exploration activities in the area. Therefore, this project may affect the future condition of this VC.
Forrest Kerr Hydroelectric Project	NL	X; This project is within the CEA Area used to assess cumulative effects on moose populations, but outside of the home range of an individual moose that could also interact with the Brucejack Gold Mine Project. Construction began in 2011, so it has the potential to affect the present condition of this VC.	X; As this project will become operational in 2014 for a 60-year operational life, it has the potential to affect the future condition of this VC.
Long Lake Hydroelectric Project	NL	X; This project is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations. Construction began in 2010, so it has the potential to affect the present condition of this VC.	X; This project is expected to become operational in 2014 and it will have a project life of 80 years. Therefore, it will have the potential to affect the future condition of this VC.
McLymont Creek Hydroelectric Project	NL	X; This project is within the CEA Area used to assess cumulative effects on moose populations, but outside of the home range of an individual moose that could also interact with the Brucejack Gold Mine Project. Construction began in 2012, so it has the potential to affect the present condition of this VC.	X; The project is expected to become operational in 2015 and it will have a project life of 40 years. Therefore, it will have the potential to affect the future condition of this VC.

Table 18-C1. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Moose

Action/Project	Past	Present	Future
NTL (Northwest Transmission Line)	NL	X; This project is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations. Construction of this project, as well as use of Highway 37, began in 2012, so it has the potential to affect the present condition of this VC.	X; This transmission line is expected to be operational by 2014, and the presence of a cleared corridor will remain indefinitely. The use of Highway 37 and helicopters for repairs and maintenance will also continue, and has the potential to affect the future condition of this VC.
Red Chris Mine	NL	NL	NL
Arctos Anthracite Coal Mine	NL	NL	X; The right-of-way to be used for the Arctos Anthracite Coal Mine project abuts the eastern edge of the CEA Area used to assess cumulative effects on moose populations, but is outside of the home range of an individual moose (Movement Area) that could interact with the Brucejack Gold Mine Project. Project construction is expected to begin in 2015, take two years to complete and have a minimum 20-year operational life span. Therefore, it will have the potential to affect the future condition of this VC.
Bear River Gravel	NL	NL	X; This project is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), but outside of the CEA Area used to assess cumulative effects on moose populations. Construction of this project is expected to begin in 2018 and will operate for 25 years. Therefore, it will have the potential to affect the future condition of this VC.

Table 18-C1. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Moose

Action/Project	Past	Present	Future
Bronson Slope Mine	NL	NL	X; This project is within the CEA Area used to assess cumulative effects on moose populations, but outside of the home range of an individual moose that could also interact with the Brucejack Gold Mine Project. It is expected that construction of this project will begin in 2019 and operate for 20 years. Therefore, it will have the potential to affect the future condition of this VC.
Coastal GasLink Pipeline Project	NL	NL	NL
LNG Canada Export Facility	NL	NL	NL
Galore Creek Mine	X; This project is within the CEA Area used to assess cumulative effects on moose populations, but outside of the home range of an individual moose that could also interact with the Brucejack Gold Mine Project. The original construction of 48 km of the access road was completed in 2007 before the project was halted. Thus, this could have potentially affected the past condition of this VC.	X; The original construction of 48 km of the access road was completed in 2007 before the project was halted for financial reasons. These construction activities, along with activities between 2007 and present, could have potentially affected the present condition of this VC.	X; The construction of the mine and the remainder of the access road is expected to occur in 2018 and the project will operate for 18 years. Therefore, it will have the potential to affect the future condition of this VC.
KSM Project	NL	NL	X; This project is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations. Construction of the project is assumed to begin in 2014 for five years and operate for 52.5 years. Therefore, it will have the potential to affect the future condition of this VC.

Table 18-C1. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Moose

Action/Project	Past	Present	Future
Kinskuch Hydroelectric Project	NL	NL	X; This project is within the CEA Area used to assess cumulative effects on moose populations, but outside of the home range of an individual moose that could also interact with the Brucejack Gold Mine Project. This project was anticipated to be commissioned in 2015 but is behind schedule. It has a predicted lifespan of greater than 50 years. Therefore, it will have the potential to affect the future condition of this VC.
Kitsault Mine	NL	NL	NL
Kutcho Mine	NL	NL	NL
LNG Canada Export Terminal Project	NL	NL	NL
Northern Gateway Pipeline Project	NL	NL	NL
Prince Rupert Gas Transmission Project	NL	NL	NL
Prince Rupert LNG Project	NL	NL	NL
Schaft Creek Mine	NL	NL	X; This project is within the CEA Area used to assess cumulative effects on moose populations, but outside of the home range of an individual moose that could also interact with the Brucejack Gold Mine Project. Construction of this mine is expected to begin in 2014 until 2017, and the project will operate for 15 years. Therefore, it will have the potential to affect the future condition of this VC.
Storie Moly Mine	NL	NL	NL

Table 18-C1. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Moose

Action/Project	Past	Present	Future
Treaty Creek Hydroelectric	NL	NL	X; This project is within the home range of an individual moose that could also interact with the Brucejack Gold Mine Project (Movement Area), and within the CEA Area used to assess cumulative effects on moose populations. This project is in the early planning phases, but it is expected that it has the potential to affect the future condition of this VC when construction and operation begin.
Turnagain Mine	NL	NL	NL
Volcano Hydroelectric Project	NL	NL	X; This project is within the CEA Area used to assess cumulative effects on moose populations, but outside of the home range of an individual moose that could also interact with the Brucejack Gold Mine Project. This project is anticipated to be commissioned in 2015. Therefore, it will have the potential to affect the future condition of this VC.
Agricultural Resources	NL	NL	NL
Fishing	X; Fishing has occurred in the past along several rivers and tributaries, and in other bodies of water within the CEA Area.	X; Fishing occurs along the several rivers and tributaries, and in other bodies of water within the CEA Area.	X; Fishing is expected to continue along several rivers and tributaries, and in other bodies of water within the CEA Area.
Guide Outfitting	X; Moose hunting has occurred in the past within the CEA Area and Movement Area.	X; Moose hunting continues within the region. Several guide outfitting tenures exist within close proximity to the Project and all target moose.	X; Moose hunting, is expected to continue within the region.
Resident and Aboriginal Harvest	X; Hunting for moose has traditionally been undertaken by residents of nearby communities and Aboriginal groups within the CEA Area.	X; Hunting for moose now occurs within the CEA Area.	X; Hunting is expected to continue within the CEA Area.

Table 18-C1. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Moose

Action/Project	Past	Present	Future
Mineral and Energy Resource Exploration	X; Multiple exploration activities have occurred in the past throughout the CEA Area.	X; Multiple mineral exploration endeavors are ongoing throughout the CEA boundaries.	X; Mineral exploration is expected to continue into the future throughout the CEA boundaries, particularly as new roads increase access and the NTL makes energy resources more available.
Recreation and Tourism	X; Past recreation activities within the CEA Area have included ATVing, snowmobiling, wildlife viewing, river travel, multi-day hiking, river and lake paddling, fly-fishing, heli-skiing, and horse trips in the remote backcountry.	X; Current recreation activities within the CEA Area include ATVing, snowmobiling, wildlife viewing, river travel, multi-day hiking, river and lake paddling, fly-fishing, heli-skiing, and horse trips in the remote backcountry.	X; Future recreation activities within the CEA Area are likely to include ATVing, snowmobiling, river travel, multi-day hiking, river and lake paddling, fly-fishing, and horse trips in the remote backcountry.
Timber Harvesting	X; The Brucejack Gold Mine Project falls within the north-western part of Nass Timber Supply Area (TSA), parts of which have been historically clear-cut. Most forestry activities in the past have been largely restricted south of Bell II and relatively close to Highway 37. Thus, this could have potentially affected the past condition of this VC.	X; Recent timber harvest has occurred close to the Brucejack Gold Mine Project north of Bowser Lake and near Treaty Creek within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas. Most logging activity in the region is outside of the assessment areas for mountain goats, south and southwest of the Project.	X; Plans for future timber harvest exist within two registered forest tenures in the vicinity of the Project. Additional forest harvesting is expected to occur within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas but for substantially smaller volumes compared to historical harvesting activities.
Traffic and Roads	X; Use of roads by vehicles, particularly along Highway 37, and Access Road within the CEA Area may have impacted moose in the past.	X; Use of roads by vehicles along Highway 37, and Access Road within the CEA Area could presently impact moose.	X; Use of roads by vehicles along Highway 37, Access Road, and other roads developed for the proposed projects within the CEA Area could impact moose in the future.

Notes:

NL = No Linkage (no spatial and temporal overlap, or potential effects do not act in combination)

X = Potential spatial and temporal linkage with project or action

Table 18-C2. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Mountain Goat

Action/Project	Past	Present	Future
Brucejack Access Road	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas used to assess cumulative effects on mountain goat populations. Thus, this could have potentially affected the past condition of this VC.	NL	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas and is integrated with the Project infrastructure, so it has the potential to affect the past condition of mountain goats.
Eskay Creek Mine	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Thus, this could have potentially affected the past condition of this VC.	X; Since this project closed 6 years ago (2008), effects of this project are likely still affecting the present condition of mountain goats.	X; Since this project closed in 2008, past effects of this project may affect the future condition of mountain goats.
Johnny Mountain Mine	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Thus, this could have potentially affected the past condition of this VC.	X; The project closed 24 years ago (1990), so remaining project components (tailings impoundment), may affect the present condition of mountain goats.	X; Due to the lifespan of mountain goats, ongoing exploration potential, and remaining project infrastructure, it may affect the future condition of mountain goats.
Goldwedge Mine	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Thus, this could have potentially affected the past condition of this VC.	X; Due to the proximity of the historic mine site to the Brucejack Gold Mine Project and the tailings and waste rock disposal at that location this mine has the potential to link past effects to the present condition of mountain goats.	X; Due to the proximity of the historical mine site to the Brucejack Gold Mine Project and the tailings and waste rock disposal at that location, this mine has the potential to link past effects to the future condition of mountain goats.
Silback Premier Mine	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Thus, this could have potentially affected the past condition of this VC.	X; Since this project closed 18 years ago (1996), the effects of this project may affect the present condition of mountain goats.	X; Since this project closed 18 years ago (1996), the effects of this project may affect the future condition of mountain goats.

Table 18-C2. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Mountain Goat

Action/Project	Past	Present	Future
Snip Mine	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Thus, this could have potentially affected the past condition of this VC.	X; Since this mine closed 15 years ago (1999), the effects of this project may affect the present condition of mountain goats.	X; Since this project closed 15 years ago (1999), the effects of this project may affect the future condition of mountain goats.
Sulphurets Project	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Thus, this could have potentially affected the past condition of this VC.	X; Due to the proximity of this exploration project to the Brucejack Gold Mine Project, its associated waste rock outputs to Brucejack Lake, and since exploration activities were completed 24 years ago (1990), the effects of this project may affect the present condition of mountain goats.	X; Since this project closed 24 years ago (1990), the effects of this project may affect the future condition of mountain goats.
Galore Creek Mine	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Construction of 48 km of the access road was completed in 2007 and then the project was halted for financial reasons. Thus, this could have potentially affected the past condition of this VC.	X; The original construction of 48 km of the access road was completed in 2007 before the project was halted for financial reasons. These construction activities, along with monitoring and maintenance activities between 2007 and present, have the potential to affect the present condition of mountain goats.	X; The construction of the mine and the remainder of the access road is expected to occur in 2018, and the project will operate for 18 years. Therefore, it will have the potential to affect the future condition of mountain goats.
Granduc Mine/ Granduc Copper Mine	Construction of the project began in 1964 and the project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Thus, this could have potentially affected the past condition of this VC.	Since this project closed 30 years ago (1984) and mountain goats live between 13 and 17 years, effects of this project are possibly still affecting the present condition of mountain goats.	X; The project was sold and is anticipated to re-open operations in 2016 with a 15-year life span if permitting is approved. Therefore, it will have the potential to affect the future condition of mountain goats.

Table 18-C2. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Mountain Goat

Action/Project	Past	Present	Future
Forrest Kerr Hydroelectric Project	NL	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Construction began in 2011, and so it has the potential to affect the present condition of mountain goats.	X; This project will become operational in 2014 for a 60-year operational life, so it has the potential to affect the future condition of mountain goats.
NTL (Northwest Transmission Line)	NL	X; This transmission line runs north-south across the Movement Area and within the CEA Area used to assess cumulative effects on mountain goats. Use of Highway 37 for project maintenance also falls within this zone. Construction of this project began in 2012, so it has the potential to affect the present condition of mountain goats.	X; This transmission line is expected to be operational by 2014, and the presence of a cleared corridor will remain indefinitely. The use of Highway 37 for repairs and maintenance will also have the potential to affect the future condition of mountain goats.
Long Lake Hydroelectric Project	NL	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Construction began in 2010, so this project will potentially affect the present condition of mountain goats.	X; This project became operational in 2014 and it will have a project life of 80 years. Therefore, the footprint and operation activities will potentially affect the future condition of mountain goats.
McLymont Creek Hydroelectric Project	NL	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Construction began in 2012 and is expected to take three years so it has the potential to affect the present condition of mountain goats.	X; The project is expected to be operational in 2015, with a 40-year lifespan, so it has the potential to affect the future condition of mountain goats.

Table 18-C2. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Mountain Goat

Action/Project	Past	Present	Future
Bear River Gravel	NL	NL	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Construction is assumed to begin in 2018 and the project will operate for 25 years. It will have the potential to affect the future condition of mountain goats.
Bronson Slope Mine	NL	NL	X; This mine project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Construction is assumed to begin in 2019 for two years and then operate for 20 years. It will have the potential to affect the future condition of mountain goats.
Volcano Hydroelectric Project	NL	NL	The project is anticipated to be commissioned in 2015 and the life span is unknown at this time. The project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project along the associated 1.2-km-long transmission line and maintenance access roads. It will have the potential to affect the future condition of mountain goats.
Kinskuch Hydroelectric Project	NL	NL	The project was anticipated to be commissioned in 2015 but is behind schedule, so the actual start date is unknown, with a forecasted lifespan of greater than 50 years. The project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas. Individuals and populations could interact with the Brucejack Gold Mine Project and this project along the associated 40 km long transmission line and maintenance access roads, so it has the potential to affect the future condition of mountain goats.

Table 18-C2. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Mountain Goat

Action/Project	Past	Present	Future
KSM Project	NL	NL	X; This project is within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. The project will operate for 52.5 years so it will have the potential to affect the future condition of mountain goats.
Schaft Creek Mine	NL	NL	X; This project is anticipated to start construction in 2014 for three years and have an operational life span of 15 years, so it has the potential to affect the future condition of mountain goats.
Treaty Creek Hydroelectric	NL	NL	X; This project is in close proximity to the Brucejack Gold Mine Project with overlap of the mountain goat Movement and CEA Areas, so it is likely that individuals and populations will interact with the Brucejack Gold Mine Project and this project along access roads and the transmission line and it thus has the potential to affect the future condition of mountain goats.
Turnagain Mine	NL	NL	NL
Agricultural	NL	NL	NL
Fishing	NL	NL	NL
Guide Outfitting	X; Mountain goat hunting has occurred in the past within the mountain goat CEA Area. Thus, this could have potentially affected the past condition of this VC.	X; Mountain goat hunting continues within the region. Five guide outfitting tenures exist within close proximity to the Project and the Mountain goat CEA and Movement Areas.	X; Mountain goat hunting is expected to continue within the region.

Table 18-C2. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Mountain Goat

Action/Project	Past	Present	Future
Resident and Aboriginal Harvest	X; Mountain goat hunting has traditionally been undertaken by residents of nearby communities and five aboriginal groups (Skii km Lax Ha, Tahltan Nation, Nisga'a Nation, Gitksan, and Gitanyow) have traditional territory within the Brucejack Gold Mine Project mountain goat Movement and CEA Areas. Thus, this could have potentially affected the past condition of this VC.	X; Mountain goat hunting occurs within the CEA Area and there is an open season for a portion (WMU 6-17) of the mountain goat CEA Area.	X; Mountain goat hunting is expected to continue within the CEA Area. Hunting interest and success rates may increase with increased road access into the area.
Mineral and Energy Resource Exploration	X; Historical exploration and mining projects were identified within the mountain goat Movement and CEA Areas. Thus, this could have potentially affected the past condition of this VC.	X; Multiple mineral exploration endeavors are ongoing throughout the mountain goat CEA boundaries.	X; Mineral exploration is expected to continue in the future, particularly as new roads increase access and the NTL makes energy resources more available. Future mining and exploration projects may occur within the mountain goat Movement and CEA Areas.
Recreation and Tourism	X; Past recreation activities within the CEA Area that could impact mountain goats have included ATV and snowmobile use, wildlife viewing, hiking, heli-skiing, and horse trips in the remote backcountry. Thus, this could have potentially affected the past condition of this VC.	X; Current recreation activities within the CEA Area that could impact mountain goats include ATV and snowmobile use, wildlife viewing, hiking, heli-skiing, and horse trips in the remote backcountry.	X; Future recreation activities within the CEA Area are likely to continue in the remote backcountry.
Timber Harvesting	X; The Brucejack Gold Mine Project falls within the northwestern part of the Nass Timber Supply Area (TSA), parts of which have been historically clear-cut. Most forestry activities in the past have been largely restricted south of Bell II and relatively close to Highway 37. Thus, this could have potentially affected the past condition of this VC.	X; Recent timber harvest has occurred close to the Brucejack Gold Mine Project north of Bowser Lake and near Treaty Creek within the Project mountain goat Movement and CEA Areas. Most logging activity in the region is outside of the assessment areas for mountain goats, south and southwest of the Project.	X; Plans for future timber harvest exist within two registered forest tenures in the vicinity of the Project. Additional forest harvesting is expected to occur within the Project mountain goat Movement and CEA Areas but for substantially smaller volumes compared to historical harvesting activities.

Table 18-C2. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Mountain Goat

Action/Project	Past	Present	Future
Traffic and Roads	X; Use of the roads in the past by vehicles, particularly along Highway 37, Highway 37A, and the Access Road was within the Project mountain goat Movement and CEA Areas. Traffic has had the potential to affect the past condition of mountain goats. Thus, this could have potentially affected the past condition of this VC.	X; Traffic along Highway 37, Highway 37A, Access Road, and other roads developed for various proposed projects fall within the Project mountain goat Movement and CEA Areas, so they could presently impact mountain goat populations.	X; There are 11 future projects identified within the Project mountain goat Movement and CEA Areas that have associated access road development potential. Use of the roads by vehicles along access roads at higher elevations could impact mountain goat populations in the future with road mortality and increased hunting access.

Notes:

NL = No Linkage (no spatial and temporal overlap, or potential effects do not act in combination)

X = Potential spatial and temporal linkage with project or action

Table 18-C3. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Grizzly Bear

Action/Project	Past	Present	Future
Eskay Creek Mine	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so individuals could interact with the Brucejack Gold Mine Project and this project. Thus, this project could have potentially affected the past condition of grizzly bears.	X; Since this project closed six years ago (2008), effects of this project are likely still affecting the present condition of grizzly bears.	X; Since this project closed in 2008, past effects of this project may affect the future condition of bears.
Goldwedge Mine	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so individuals could interact with the Brucejack Gold Mine Project and this project. Thus, this project could have potentially affected the past condition of grizzly bears.	X; Due to the proximity of the historical mine site to the Brucejack Gold Mine Project and the tailings and waste rock disposal at that location, this mine has the potential to link past effects to the present condition of grizzly bears.	X; Due to the proximity of the historical mine site to the Brucejack Gold Mine Project and the tailings and waste rock disposal at that location, this mine has the potential to link past effects to the future condition of grizzly bears.
Johnny Mountain Mine	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so individuals could interact with the Brucejack Gold Mine Project and this project. Thus, this project could have potentially affected the past condition of grizzly bears.	X; Since this project closed 24 years ago (1990), and project components remain (tailings impoundment), so the effects of this project may affect the present condition of grizzly bears.	X; Due to the lifespan of grizzly bears, ongoing exploration potential, and remaining project components, this project may affect the future condition of grizzly bears.
Kitsault Mine (Past/Future)	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so individuals could interact with the Brucejack Gold Mine Project and this project. Thus, this project could have potentially affected the past condition of grizzly bears.	X; Since this project closed 32 years ago (1982) and reclamation activities were only completed eight years ago (2006), and because grizzly bears live for 25 to 35 years, the project may affect the present condition of grizzly.	X; The Kitsault mine is permitted to re-open. Construction of the project will begin in 2014 for two years and then the project will operate for 15 to 16 years. Therefore, it will have the potential to affect the future condition of grizzly bears.
Silback Premier Mine	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so individuals could interact with the Brucejack Gold Mine Project and this project. Thus, this project could have potentially affected the past condition of grizzly bears.	X; Since this project closed 18 years ago (1996), the effects of this project may affect the present condition of grizzly bears.	X; Since this project closed 18 years ago (1996), the effects of this project may affect the future condition of grizzly bears.

Table 18-C3. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Grizzly Bear

Action/Project	Past	Present	Future
Snip Mine	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Thus, this project could have potentially affected the past condition of grizzly bears.	X; Since this mine closed 15 years ago (1999), the effects of this project may affect the present condition of grizzly bears.	X; Since this project closed 15 years ago (1999), the effects of this project may affect the future condition of grizzly bears.
Sulphurets Project	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Thus, this project could have potentially affected the past condition of grizzly bears.	X; Due to the proximity of this exploration project to the Brucejack Gold Mine Project, its associated waste rock outputs to Brucejack Lake, and since exploration activities were completed 24 years ago (1990), the effects of this project may affect the present condition of grizzly bears.	X; Since this project closed 24 years ago (1990), the effects of this project may affect the future condition of grizzly bears.
Swamp Point Aggregate Mine	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Thus, this project could have potentially affected the past condition of grizzly bears.	X; Due to the recent closure of this mine approximately three years ago (2011), and the long lifespan of grizzly bears, it has the potential to affect the present condition of grizzly bears.	X; Due to the recent closure of this mine approximately three years ago (2011), and the long lifespan of grizzly bears, it has the potential to affect the future condition of grizzly bears.
Granduc Mine/ Granduc Copper Mine	Construction of the project began in 1964 and the project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Thus, this project could have potentially affected the past condition of grizzly bears.	Since this project closed 30 years ago (1984), effects of this project are likely still affecting the present condition of grizzly bears.	X; The project was sold and is anticipated to commence operations in 2016 with a 15-year life span if permitting is approved. Therefore, it will have the potential to affect the future condition of grizzly bears.

Table 18-C3. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Grizzly Bear

Action/Project	Past	Present	Future
Brucejack Exploration	X; Exploration activities began in 2011, and included construction of the Brucejack Access Road. This project is within the Brucejack Gold Mine Project grizzly bear Movement and CEA Areas. Thus, this project could have potentially affected the past condition of grizzly bears.	X; The activities have the potential to affect the present condition of individuals because it is still in use.	NL
Forrest Kerr Hydroelectric Project	NL	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Construction began in 2011, and so it has the potential to affect the present condition of grizzly bears.	X; This project will become operational in 2014 for a 60 year operational life so it has the potential to affect the future condition of grizzly bears.
Long Lake Hydroelectric Project	NL	X; This hydroelectric power project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Construction began in 2010, and so this project will potentially affect the present condition of grizzly bears.	X; This project is scheduled to become operational in 2014 and it will have a project life of 80 years. Therefore, the footprint and operation activities will potentially affect the future condition of grizzly bears.
McLymont Creek Hydroelectric Project	NL	X; This hydroelectric power project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Construction began in 2012 and is expected to take three years, so it has the potential to affect the present condition of grizzly bears.	X; The project is expected to become operational in 2015, with a 40-year project lifespan, so it has the potential to affect the future condition of grizzly bears.

Table 18-C3. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Grizzly Bear

Action/Project	Past	Present	Future
NTL (Northwest Transmission Line)	NL	X; This transmission line runs north-south across the Movement Area and within the CEA Area used to assess cumulative effects on grizzly bears. Construction of this project began in 2012, and so it has the potential to affect the present condition of grizzly bears.	X; This transmission line is expected to be operational by 2014, and the presence of a cleared corridor will remain indefinitely. The use of Highway 37 for repairs and maintenance will also have the potential to affect the future condition of grizzly bears.
Red Chris Mine	NL	NL	NL
Bear River Gravel	NL	NL	X; This gravel extraction, processing and shipping project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Construction of the project is assumed to begin in 2018 and the project will operate for 25 years. Therefore, it will have the potential to affect the future condition of grizzly bears.
Bronson Slope Mine	NL	NL	X; This mine project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Construction of the project is assumed to begin in 2019 for two years and the project will then operate for 20 years. Therefore, it will have the potential to affect the future condition of grizzly bears.
Galore Creek Mine	X; This project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. Construction of 48 km of the access road was completed in 2007 and then the project was halted for financial reasons. Thus, this project could have potentially affected the past condition of grizzly bears.	X; The original construction of 48 km of the access road was completed in 2007 before the project was halted for financial reasons. These construction activities, along with monitoring and maintenance activities between 2007 and present, have the potential to affect the present condition of grizzly bears.	X; The construction of the mine and the remainder of the access road is expected to occur in 2018, and the project will operate for 18 years. Therefore, it will have the potential to affect the future condition of grizzly bears.

Table 18-C3. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Grizzly Bear

Action/Project	Past	Present	Future
KSM Project	NL	NL	X; This mine project is within the Brucejack Gold Mine Project grizzly Movement and CEA Areas, so grizzly bear individuals could interact with the Brucejack Gold Mine Project and this project. The project will operate for 52.5 years, so it will have the potential to affect the future condition of grizzly bears.
Prince Rupert Gas	NL	NL	NL
Prince Rupert LNG	NL	NL	NL
LNG Canada Export Terminal	NL	NL	NL
LNG Canada Export Facility	NL	NL	NL
Coastal GasLink Pipeline Project	NL	NL	NL
Northern Gateway Pipeline Project	NL	NL	NL
Kutcho Mine	NL	NL	NL
Volcano Hydroelectric Project	NL	NL	X; The hydroelectric project is anticipated to be commissioned in 2015 and the life span is unknown at this time. The project is within the Brucejack Gold Mine Project grizzly bear Movement and CEA Areas, so individuals could interact with the Brucejack Gold Mine Project and this project along the associated 1.2-km long transmission line and maintenance access roads.

Table 18-C3. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Grizzly Bear

Action/Project	Past	Present	Future
Kinskuch Hydroelectric Project	NL	NL	X; The hydroelectric project was anticipated to be commissioned in 2015 but is behind schedule, so the actual start date is unknown. It has a forecasted lifespan of greater than 50 years. The project is within the Brucejack Gold Mine Project grizzly bear Movement and CEA Areas, so individuals could interact with the Brucejack Gold Mine Project and this project along the associated 40-km-long transmission line and maintenance access roads.
Arctos Anthracite Coal Mine	NL	NL	X; The proposed Arctos Anthracite Coal Mine is within the Movement Area (home range) of an individual bear but outside the CEA Area. The railway transport route is within both the grizzly bear Movement and CEA Areas. Project construction is expected to begin in 2015, take 2 years, and then have a minimum 20-year operational life span. Therefore, it will have the potential to affect the future condition of grizzly bears.
Schaft Creek Mine	NL	NL	X; This project is anticipated to start construction in 2014 for three years and have an operational life span of 15 years, so it has the potential to affect the future condition of grizzly bears.
Treaty Creek Hydroelectric	NL	NL	X; This project is in close proximity to the Brucejack Gold Mine Project with overlap of the Movement and CEA Areas, so it is likely that individuals and populations will interact with the Brucejack Gold Mine Project and this project along access roads and the transmission line.
Turnagain Mine	NL	NL	NL
Agricultural	NL	NL	NL

Table 18-C3. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Grizzly Bear

Action/Project	Past	Present	Future
Fishing	X; Fishing has occurred in the past along the Bowser River, the Bell-Irving River and its tributaries, and in other watercourses within the grizzly bear Brucejack Gold Mine Project Movement and CEA Areas.	X; Fishing occurs along the Bowser River, the Bell-Irving River and its tributaries, and in other watercourses within the Brucejack Gold Mine Project grizzly bear Movement and CEA Areas.	X; Fishing is expected to continue along Bowser River, the Bell-Irving River and its tributaries, and in other watercourses within the Brucejack Gold Mine Project grizzly bear Movement and CEA Areas.
Guide Outfitting	X; Big game hunting has occurred in the past within the Cassiar region, and species targeted have included grizzly bears.	X; Big game hunting continues within the Cassiar region. Five guide outfitting tenures exist within close proximity to the Project, so they have authority to currently hunt grizzly bears by limited entry requirements.	X; Big game hunting, including bear hunting, is expected to continue within the Cassiar region. Hunting success may increase due to increased backcountry access from mine, exploration, and hydroelectric projects. Future grizzly bear outfitting is anticipated to occur within the Brucejack Gold Mine Project Movement and CEA Areas.
Resident and Aboriginal Harvest	X; Hunting has traditionally been undertaken by residents of nearby communities and five Aboriginal groups (Skii km Lax Ha, Tahltan Nation, Nisga'a Nation, Gitxsan, and Gitanyow) have traditional territory within the Brucejack Gold Mine Project grizzly bear Movement and CEA Areas.	X; Limited entry and Aboriginal harvest of grizzly bears are currently permitted within the Brucejack Gold Mine Project grizzly bear Movement and CEA Areas.	X; Hunting is expected to continue within the Brucejack Gold Mine Project grizzly bear Movement and CEA Areas. Hunting interest and success rates may increase with increased road access into the area
Mineral and Energy Resource Exploration	X; Eight historical exploration and mining projects were identified within the grizzly bear Movement and CEA Areas.	X; Multiple mineral exploration endeavors are ongoing throughout the grizzly bear Movement and CEA Areas. Infrastructure from past projects may still affect grizzly bear individuals or populations.	X; Mineral exploration is expected to continue in the future, particularly as new roads increase access and the NTL makes energy resources more available. A total of seven future mining and exploration projects were identified within the grizzly bear Movement and CEA Areas.

Notes:

NL = No Linkage (no spatial and temporal overlap, or potential effects do not act in combination)

X = Potential spatial and temporal linkage with project or action

Table 18-C4. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to American Marten

Action/Project	Past	Present	Future
Brucejack Exploration and Bulk Sample	X; Exploration activities began in 2011, and included construction of the Brucejack Access Road. This project is within the Brucejack marten CEA Area, so it may have affected the past condition of marten.	X; Marten can live up to 14.5 years in the wild (Bull and Heater 2001), so this project could potentially affect the present condition of this VC.	NL
Snowfields	X; Exploration activities were completed in 2010 within the Brucejack Gold Mine Project marten CEA Area so it may have affected the past condition of marten.	X; Marten can live up to 14.5 years in the wild (Bull and Heater 2001), so this project could potentially affect the present condition of this VC.	NL
Eskay Creek Mine	NL	NL	NL
Johnny Mountain Mine	NL	NL	NL
Kitsault Mine (Closed/Future)	NL	NL	NL
Goldwedge Mine	X; This project is within the Brucejack Gold Mine Project American marten CEA Area, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. This project has the potential to affect the past condition of marten.	X; Due to the proximity of the historical mine site to the Brucejack Gold Mine Project and the tailings and waste rock disposal at that location, this mine has the potential to link past effects to the present condition of marten.	X; Due to the proximity of the historical mine site to the Brucejack Gold Mine Project and the tailings and waste rock disposal at that location, this mine has the potential to link past effects to the present condition of American marten.
Silback Premier Mine	NL; This project closed 17 years ago so it is beyond the lifespan of existing marten and the scope of this assessment.	NL	NL
Sulphurets Project	NL; This project is within the Brucejack Gold Mine Project American marten CEA Area but was completed 23 years ago and reclaimed 15 years ago, so it is beyond the lifespan of existing marten and the scope of this assessment.	NL	NL
Snip Mine	NL	NL	NL

Table 18-C4. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to American Marten

Action/Project	Past	Present	Future
Swamp Point Aggregate Mine	NL	NL	NL
Galore Creek Mine	NL	NL	NL
Granduc Mine/ Granduc Copper Mine	NL; This project is within the Brucejack Gold Mine Project American marten CEA Area but was completed 30 years ago so it is beyond the lifespan of existing marten and the scope of this.	NL	X; The project was sold and is anticipated to re-open operations in 2016 with a 15-year life span if permitting is approved. Therefore, it will have the potential to affect the future condition of American marten.
Forrest Kerr Hydroelectric Project	NL	NL	NL
Red Chris Mine	NL	NL	NL
NTL (Northwest Transmission Line)	NL	X; Construction of the transmission line began in 2012 and it runs north-south across the Brucejack Gold Mine Project American marten CEA Area. Use of Highway 37 for project maintenance also falls within this zone, so it has the potential to affect the present condition of American marten.	X; This transmission line is expected to be operational by 2014, and the presence of a cleared corridor will remain indefinitely. The use of Highway 37 for repairs and maintenance will have the potential to affect the future condition of American marten.
McLymont Creek Hydroelectric Project	NL	NL	NL
Long Lake Hydroelectric Project	NL	X; This hydroelectric power project is within the Brucejack Gold Mine Project American marten CEA Area. Construction began in 2010 and the project is now operational. Existing marten individuals and populations could interact with the Brucejack Gold Mine Project and this project.	NL; This project became operational in 2014 and it will have a project life of 80 years. Nevertheless, because of its scope and limited personnel it was not considered a relevant source of attractants for marten.

Table 18-C4. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to American Marten

Action/Project	Past	Present	Future
Bear River Gravel	NL	NL	X; This gravel extraction, processing and shipping project is within the Brucejack Gold Mine Project American marten CEA Area, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. Construction of the project is assumed to begin in 2018 and the project will operate for 25 years, so it will have the potential to affect the future condition of American marten.
Bronson Slope Mine	NL	NL	NL
KSM Project	NL	NL	X; This mine project is within the Brucejack Gold Mine Project American marten CEA Area, so individuals and populations could interact with the Brucejack Gold Mine Project and this project. The project will operate for 52.5 years so it will have the potential to affect the future condition of American marten.
Prince Rupert Gas	NL	NL	NL
Prince Rupert LNG	NL	NL	NL
LNG Canada Export Terminal	NL	NL	NL
Coastal GasLink Pipeline Project	NL	NL	NL
Northern Gateway Pipeline Project	NL	NL	NL
Kitsault Mine	NL	NL	NL
Kutcho Mine	NL	NL	NL
Volcano Hydroelectric Project	NL	NL	NL
Kinskuch Hydroelectric Project	NL	NL	NL

Table 18-C4. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to American Marten

Action/Project	Past	Present	Future
Arctos Anthracite Coal Mine	NL	NL	NL
Schaft Creek Mine	NL	NL	NL
Treaty Creek Hydroelectric	NL	NL	X; Details about construction and operations of this project are not available at this time because it is still in the early planning stages. It is in close proximity to the Brucejack Gold Mine Project with overlap of the American marten CEA Area, so it is highly likely that individuals and populations will interact with the Brucejack Gold Mine Project and this project along its access roads and transmission line. Thus it has the potential to affect the future condition of American marten when construction and operation begin.
Turnagain Mine	NL	NL	NL
Agricultural	NL	NL	NL
Fishing	NL	NL	NL
Guide Outfitting	NL	NL	NL
Resident and Aboriginal Harvest	X; Trapping has traditionally been undertaken by residents of nearby communities and five aboriginal groups (Skii km Lax Ha, Tahltan Nation, Nisga'a Nation, Gitxsan, and Gitanyow) have traditional territory within the American marten CEA Area.	X; Trapping for American marten continues within the CEA boundary used to assess cumulative effects on American marten.	X; Trapping is expected to continue within the American marten CEA Area. Trapping efforts within existing tenures may increase with increased road access into the CEA area.
Mineral and Energy Resource Exploration	X; Three applicable historical exploration and mining projects were identified within the American marten CEA Area.	X; Multiple mineral exploration endeavors are ongoing throughout the American marten CEA Area. Infrastructure from past projects may still affect individuals or populations.	X; Mineral exploration is expected to continue in the future, particularly as new roads increase access and the NTL makes energy resources more available. Three relevant mining and exploration projects were identified within the American marten CEA Area.

Table 18-C4. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to American Marten

Action/Project	Past	Present	Future
Recreation and Tourism	NL	NL	NL
Timber Harvesting	NL	NL	NL
Traffic and Roads	NL	NL	NL

Notes:

NL = No Linkage (no spatial and temporal overlap, or potential effects do not act in combination)

X = Potential spatial and temporal linkage with project or action

Table 18-C5. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Western Toad

Action/Project	Past	Present	Future
Brucejack Exploration	X; This project is within the CEA boundaries of the western toad and could have affected the past condition of this VC.	X; This road is still in use, and therefore has the potential to affect the present condition of this VC.	X; This project is within the CEA boundaries of the western toad so it has the potential to affect wetland breeding habitat for western toads in the future.
Granduc Copper Mine	NL	NL	NL
Sulphurets Project	X; This closed mine is within the CEA boundaries used to assess cumulative effects on western toad. This project potentially affected the past condition of this VC.	X; The access road for this mine remained after closure, providing a permanent access route, potentially affecting the present condition of this VC.	X; This closed mine was reclaimed in 1998, but the access road for this mine remained, and could potentially affect the future condition of this VC.
Goldwedge Mine	NL; Access to this project was via helicopter, therefore no effects to this VC resulted.	NL	NL
Silbak Premier mine	X; This project intersects the CEA boundaries via the Granduc Access Road from Steward. The road may have affected the past condition of this VC.	NL	NL
NTL (Northwest Transmission Line)	NL	X; This project intersects the CEA boundaries used to assess cumulative effects on western toad. Construction of the NTL, including the use of Highway 37, began in January 2012 and so it has the potential to affect the present condition of this VC.	X; This transmission line is expected to be operational by 2014, and the presence of a cleared corridor will remain indefinitely. The use of Highway 37 will also continue, and has the potential to affect the future condition of this VC.
Long Lake Hydroelectric Project	NL	NL	NL
Treaty Creek Hydroelectric	NL	NL	X; This project will use Highway 37, and is within the CEA boundaries used to assess western toad. This project is in the early planning phases, but it is expected that it has the potential to affect the future condition of this VC if construction and operation begin. However, currently access to road data is not available.

Table 18-C5. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Western Toad

Action/Project	Past	Present	Future
KSM Project	NL	NL	X; This project is within the CEA boundaries of the western toad, so it has the potential to affect wetland breeding habitat for western toads in the future.
Treaty Creek Hydroelectric	NL	NL	X; This project will use Highway 37, and is within the CEA boundaries used to assess western toad. This project is in the early planning phases, but it is expected that it has the potential to affect the future condition of this VC if construction and operation begin.
Agricultural Resources	NL	NL	NL
Fishing	NL	NL	NL
Guide Outfitting	NL	NL	NL
Resident and Aboriginal Harvest (Trapping)	NL	NL	NL
Mineral and Energy Resource Exploration	X; Multiple exploration activities have occurred within the CEA boundaries for western toad and may have affected the past condition of this VC.	X; Exploration activities are presently identified within the CEA boundaries for western toad. Therefore, they could affect the present condition of this VC.	X; Increasing exploration activities are expected in the future within the CEA boundaries for western toad, due to increased accessibility and the NTL. The future condition of this VC may be affected.
Recreation and Tourism	NL	NL	NL
Timber Harvesting	X; The CEA boundaries for western toad include the north-western part of Nass Timber Supply Area (TSA), parts of which have been historically clear-cut. This may have affected the past condition of this VC.	X; Recent timber harvest has occurred close to the Brucejack Gold Mine Project north of Bowser Lake and near Treaty Creek within the western toad CEA Areas. There are three registered forest tenures in the vicinity of the Project, currently leased to Seabridge Gold Inc. (KSM), Pretium Resources Inc, and the District Manager Skeena-Stikine. This may affect the present condition of this VC.	X; Plans for future timber harvest exist within the two registered forest tenures in the vicinity of the Project. Other forest harvesting may occur within the CEA boundary and could affect the future condition of this VC.

Table 18-C5. Summary of Potential Temporal Linkages between the Brucejack Gold Mine Project and Other Human Actions in Regards to Western Toad

Action/Project	Past	Present	Future
Traffic and Roads	X; The use of Highway 37 and the exploration access roads within the CEA boundary may have impacted western toad in the past. There has been a large amount of traffic, which can affect western toad if this species attempts to cross the road during seasonal migration from breeding to overwintering areas. This may have affected the past condition of this VC.	X; Use of Highway 37 and the exploration access road within the CEA boundaries could presently impact western toad. There is presently traffic associated with this activity, which can affect western toad if this species attempts to cross the road during seasonal migration from breeding to overwintering areas.	X; Use of Highway 37 and added traffic from other new roads for proposed projects within the CEA boundaries could impact western toad in the future. Traffic density is expected to increase in the future, which can affect western toad if this species attempts to cross the road during seasonal migration from breeding to overwintering areas.

Notes:

NL = No Linkage (no spatial and temporal overlap, or potential effects do not act in combination)

X = Potential spatial and temporal linkage with project or action