Coffee Gold Mine

YESAB Project Proposal

Appendix 24-A Land and Resource Use Valued Component Assessment Report

VOLUME IV

Prepared for:
Kaminak Gold Corp. a subsidiary of
Goldcorp Inc.
Suite 3400-666 Burrard Street
Vancouver, BC Canada V6C 2X8

Prepared by:
Hemmera Envirochem Inc.
2237 2nd Avenue, Suite 230
Whitehorse, YT Canada Y1A 0K7

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1.0 INTRODUCTION

The proposed Coffee Gold Mine (Project), owned by the Kaminak Gold Corp., a wholly owned subsidiary of Goldcorp Inc. (Goldcorp or Proponent), is a gold development project being proposed in west-central Yukon, approximately 130 kilometres (km) south of the City of Dawson (Dawson). The Mine Site is accessed by the 214-km Northern Access Route (NAR). The Project is scoped as an open pit gold mine using a cyanide heap leach process to extract ore. Its temporal boundaries consist of a 30-month Construction Phase, followed by a 12-year Operation Phase, with an average operation rate of 5 million tonnes per annum of heap leach feed.

The Mine Site is located on Crown land within the established Traditional Territory of the Tr'ondëk Hwëch'in (TH) and the asserted Traditional Territory of White River First Nation (WRFN). The NAR is located within the Traditional Territory of TH, and portions are located within the shared traditional territories of Selkirk First Nation (SFN), the First Nation of Na-cho Nyäk Dun (FNNND) and the asserted Traditional Territory of WRFN.

The information provided in this assessment report supports the Project Proposal to be submitted to the Yukon Environmental and Socio-economic Assessment Board (YESAB) Executive Committee for screening under the *Yukon Environmental and Socio-Economic Assessment Act*, SC 2003, c. 7 (YESAA). This assessment also supports applications to be submitted for a Quartz Mining Licence, to be issued by Government of Yukon (YG), Energy, Mines and Resources, as well as a Type A Water Licence from the Yukon Water Board, among other permits and licences.

This report presents the results of the assessment of potential Project-related effects and cumulative effects on the Land and Resource Use, including the following:

- Scope of assessment – issues scoping, description of the Valued Component (VC) selection process and outcome, and the establishment of spatial and temporal assessment boundaries
- Existing conditions relevant to Land and Resource Use
- Potential Project – Land and Resource Use interactions with specific Project components and activities; potential adverse effects to non-traditional and traditional land and resource use; mitigation measures to eliminate, reduce, or control these adverse effects; and potential residual adverse effects, including significance and likelihood
- Potential adverse cumulative effects to the VC due to interactions between the residual effects of the Project and the residual effects of other past, present, and future projects and activities, potential adverse cumulative effects on the Land and Resource Use, mitigation measures to eliminate, reduce, or control these adverse effects, and potential residual adverse cumulative effects, including significance and likelihood
- Potential interactions with and effects on Land and Resource Use due to Project-related accidents or malfunctions, mitigation measures to eliminate, reduce, or control these adverse effects, and potential residual adverse effects, including significance and likelihood

- Monitoring to be undertaken to verify assessment predictions and evaluate mitigation effectiveness to Land and Resource Use
- Adaptive management program(s) to be implemented to address any unexpected Project-related effects on Land and Resource Use.

The assessment of the Land and Resource Use VC considers the land use planning regime, as well as the existing non-traditional and current traditional land and resource uses.

1.1 ISSUES SCOPING

This section describes the process used to select Land and Resource Use as a VC, including inputs considered, and the rationale for VC selection. Specifically, the scope of assessment includes:

- Identification of any Intermediate Components (ICs) along the same pathway of effects as the VC, and descriptions of how an understanding of potential Project-related changes to the IC(s) supports the assessment of Project-related effects on the VC
- Identification and justification of the spatial and temporal boundaries used to conduct the assessment
- Identification and description of the indicators used to evaluate potential adverse effects and characterize potential residual effects to the VC.

Through baseline studies undertaken during the Project's Feasibility Study (July 2014 to March 2016), the human environment Project team reviewed a mine plan and detailed technical information related to socio-economic conditions, health, and traditional values in the vicinity of the Project. Available information regarding other existing and proposed quartz mining projects in Yukon, including environmental and socio-economic assessments, was also reviewed. In addition, the Project team identified issues and concerns through a comprehensive primary data collection program and through key informant interviews, focus groups, and surveys with regulators, First Nations, and communities.

Issues, concerns, and information were also identified from the Project's engagement and consultation process, which was conducted to support issues scoping for the Project, and included potentially affected First Nations and communities, government agencies, and interested persons and other stakeholders who may be interested in the Project and its related activities. This consultation and engagement process included Technical Working Groups (TWGs) established with First Nations and government departments, community meetings, one-on-one and small group meetings, and ongoing communications such as print communication, a newsletter, and website updates, including specific presentations and discussions regarding key themes of interest and exploration of candidate VCs to represent the themes.

All of this information supported scoping of the effects assessment, including the identification of candidate VCs, selection of Land and Resource Use as a VC, and the establishment of assessment boundaries for Land and Resource Use.

1.2 SELECTION OF THE VALUED COMPONENT LAND AND RESOURCE USE

Land and Resource Use was selected as a VC following the VC selection process set out in **Section 5.0 Assessment Methodology.**

1.2.1 CANDIDATE VALUED COMPONENT

The key steps involved in the VC selection process included issues scoping and the following:

1. **Identification of Land and Resource Use as a Candidate Valued Component**: Land and resource use is an important socio-economic value that is associated with all aspects of the socio-economic landscape, including: economy, culture, heritage, and social and biophysical environment. Based on secondary research and professional experience, the Land and Resource Use VC was originally identified as two separate candidate VCs: Non-Traditional Land and Resource Use and Current Traditional Land and Resource Use. These candidate VCs collectively represent the values related to land and resource use for both Aboriginal and Non-aboriginal Yukoners. To better reflect the integrative nature of Yukon communities and feedback received from consultation and engagement, the two land and resource-use candidate VCs were amalgamated under the Land and Resource Use VC as two subcomponents to demonstrate the relationship that both of these distinct values share in Yukon.
2. **Selection of Land and Resource Use as a Valued Component:** The Land and Resource Use VC was refined and shaped though the Project's engagement and consultation process, as defined under Section 50 (3) of YESAA, to support issues scoping for the Project. This consultation included potentially affected First Nations and communities, government agencies, and interested persons as well as other stakeholders who may be interested in the Project and its related activities. This consultation and engagement process included TWGs established with First Nations, government departments, community meetings, one-on-one and small group meetings, and ongoing communications such as print communication, newsletter, and website updates, including specific presentations and discussions regarding key themes of interest, as well as exploration of candidate VCs, including Land and Resource Use, to represent the themes. Through secondary and primary research, as well as consultation and engagement activities, the selection of Land and Resource Use was confirmed as a VC (**Table 1.2-1).**

Table 1.2-1 Land and Resource Use – Evaluation Summary

Candidate VC	Project Interaction			Third Party Input		Supports the Assessment of Which Other VC?	Selected as a VC?	Decision Rationale
	Interaction?	Project Phase / Project Component / Activity	Nature of Interaction	Source	Input			
Traditional Land and Resource Use	Yes	Construction, Operation, Reclamation and Closure	The Project will likely change existing conditions for traditional land and resource users through construction and operation of the Mine Site and NAR. The key interactions are changes in access to, environmental conditions of, and/or desirability of lands and resources that First Nations depend on for traditional purposes including intangible aspects of cultural and spiritual resource use.	• First Nations • Regulatory body • Public • Stakeholder	Component should be amalgamated with non-traditional land and resource use to better reflect integrated nature of traditional and non-traditional values.	Social Economy Community Health and Well-being	No, selected as a subcomponent of broader Land and Resource Use.	Traditional land and resource use is present in the local and regional Project area and may interact with and be adversely affected by the Project. Under YESAA, socio-economic effects include effects on culture, traditions, and lifestyles such as traditional land and resource use. The component is very similar to non-traditional land and resource use (below) but pertains to Aboriginal interests, and includes intangible aspects of cultural and spiritual resource use
Non-Traditional Land and Resource Use	Yes	Construction, Operation, Reclamation and Closure	The Project will likely change existing conditions for non-traditional land and resource users through construction and operation of the Mine Site and NAR. The key interactions are changes in access to, environmental conditions of, and/or desirability of lands and resources that individuals depend on for non-traditional purposes.	• First Nations • Regulatory body	Component should be amalgamated with traditional land and resource use to better reflect integrated nature of traditional and non-traditional values.	Social Economy Community Health and Well-being	No, selected as a subcomponent of broader Land and Resource Use.	Non-traditional land and resource use is present in the local and regional Project area and may interact with and be adversely affected by the Project. Under YESAA, socio-economic effects include effects on lifestyles such as non-traditional land and resource use. The component is very similar to traditional land and resource use (above) but pertains to non-Aboriginal interests and lacks intangible aspects of cultural and spiritual resource use.
Land and Resource Use	Yes	Construction, Operation, Reclamation and Closure	The Project will likely change current Land and Resource conditions through construction and operation of the Mine Site and NAR; this may directly affect land and resource use (including non-traditional and traditional land and resource use) by changing the access to, environmental conditions of, and/or desirability of lands and resources that individuals depend on for non-traditional and/or traditional land and resource purposes. Further, Project-related environmental changes may affect such intangible aspects of traditional land and resource use as cultural and spiritual resources.	• First Nations • Regulatory body • Public • Stakeholder	Non-traditional and traditional components should be amalgamated with non-traditional land and resource use to better reflect integrated nature of traditional and non-traditional values.	Social Economy Community Health and Well-being	Yes, selected as the VC, Land and Resource Use. Includes the two candidate components considered above as subcomponents: • Non-traditional rand and Resource use • Current traditional land and resource use	To better reflect the integrated nature of Yukon communities and feedback received from consultation and engagement, the two land and resource-use related candidate VCs were amalgamated under the Land and Resource Use VC as two subcomponents to demonstrate the relationship that both of these distinct values share in Yukon. Rationales for selection of the candidate component includes: • The component is present in the local or regional Project area. • The Project may interact with and adversely affect the component. • The component is an end receptor of potential effects.

1.2.2 SELECTED VALUED COMPONENT

Land and Resource Use was selected as a VC to assess the Project's anticipated interactions with non-traditional and current traditional land and resource use, reflecting local values, consultation, and Traditional Knowledge (TK). The Project may cause direct environmental changes as a result of the Mine Site and NAR activities, which may influence various aspects of Land and Resource Use. This value assesses the Project's potential effects to its two subcomponents as described in **Section 1.2.3**.

The Project may affect air quality, sound, water quality, fish and fish habitat, birds and bird habitat, and wildlife and wildlife habitat, which in turn may affect sensory conditions for land and resource users, as well as the quality of the land and resources.

1.2.3 VALUED COMPONENT SUBCOMPONENTS

The Land and Resource Use VC comprises two subcomponents: non-traditional land and resource use and current traditional land and resource use (**Table 1.2-2**).

Non-traditional Land and Resource Use

The Project footprint is located in an area that has been historically and is currently used for numerous non-traditional land and resource purposes. Non-traditional land and resource use refers to the designated and undesignated use of lands and resources for both commercial and personal purposes. The non-traditional land and resource use subcomponent includes the following topics:

- Land use planning
- Land tenures
- Water licences
- Game management
- Guide outfitting
- Subsistence harvesting
- Parks and protected areas
- Placer mining
- Quartz mining
- Forestry
- Recreation and tourism.

Current Traditional Land and Resource Use

Current traditional land and resource use includes land uses by First Nations with Traditional Territory that potentially interacts with the Project. Current traditional land and resource use was identified through both secondary and primary research as an important value to potentially affected First Nations. This subcomponent was originally identified as a candidate VC to acknowledge the distinct relationship that First Nations share with the land and resources on their respective Traditional Territory. Through consultation with the TH TWG it was suggested that the candidate current traditional land and resource use VC be considered as a subcomponent of a broader 'Land and Resource Use' VC in order to demonstrate that current traditional land and resource use is an important and distinct, yet linked, aspect of land and resource use, in general. Current traditional land and resource use was therefore revised from a candidate VC to a subcomponent.

The assessment of current traditional land and resource use considers current use baseline information presented in the TK and Traditional Use studies with TH and WRFN that were funded by the Proponent. All baseline information related to current traditional land and resource use that was provided or was otherwise made available was used in this assessment. This includes information provided by TH and WRFN.

Table 1.2-2 Subcomponents for Land and Resource Use

Subcomponent	Representative of	Rationale for Selection
Non-traditional Land and Resource Use	• Land use planning • Land use tenures • Water licences • Game management • Guide outfitting • Trapping • Subsistence harvesting • Parks and protected areas • Placer mining • Recreation and tourism	The Project footprint is located in an area that has been historically and is currently used for numerous non-traditional land and resource purposes. Non-traditional land and resource use refers to the designated and undesignated use of lands and resources for both commercial and personal purposes.
Current Traditional Land and Resource Use	• Habitation • Transportation • Subsistence activities • Culture and heritage • Environmental values	Current traditional land and resource use is an important value of all potentially affected First Nations. Traditional land and resource use supports the socio-economic well-being of First Nations and their respective citizens or members, and contributes to their cultural and spiritual well-being.

1.2.4 INDICATORS

Indicators are quantitative or qualitative measures used to describe existing VC or VC subcomponent conditions and trends, and to evaluate potential Project-related effects and cumulative effects to the VC. The indicators and rationale for the Land and Resource Use subcomponents are described in **Table 1.2-3**.

Table 1.2-3 Indicators for Land and Resource Use Subcomponents

Indicator	Rationale for Selection
Non-traditional Land and Resource Use	
Change in access to land and resources	Project-related changes to access may affect access to the environment and/or resources that are currently used for non-traditional land and resource purposes. Measurement is qualitative in terms of whether potential changes in access to land and resources would be perceived by individuals as a positive or adverse effect.
Change in sensory conditions during current use	Project-related changes to sensory conditions may change the appropriateness, desirability, feasibility, and/or possibility of using current areas for non-traditional land and resource purposes. Linked biophysical technical reports that support this indicator include the following ICs: Visual, Noise, and Air Quality. Measurement is qualitative in terms of user perceptions and quantitative where indicators for linked ICs and VCs were quantitative.
Direct change in the availability of land and resources	Construction and operation of the Project will require land area that will no longer be available to certain existing uses.
Change in the quality of land and resources	Project-related changes to environmental conditions may affect the quality (e.g. health, habitat) of the land and resources currently used for non-traditional purposes. Linked biophysical technical reports that support this indicator include the following VCs: Fish and Aquatics, Vegetation, and Wildlife. Measurement is qualitative in terms of changes to other ICs and VCs that make up land and resources used for non-traditional purposes.
Current Traditional Land and Resource Use	
Change in access to land and resources	Project-related changes to access may affect the ability of First Nations to access the environment and/or resources that they currently use for current traditional land and resource purposes. Measurement is qualitative in terms of whether a change in access to land and resources would be potentially perceived by individuals as a positive or adverse change by the Project.
Change in sensory conditions during current use	Project-related changes to sensory conditions may change the appropriateness, desirability, feasibility, and/or possibility of using current areas for traditional land and resource purposes. Linked biophysical technical reports that support this indicator include the following ICs: Visual, Noise, and Air Quality. Measurement is qualitative in terms of user perceptions and quantitative in terms of indicators used for linked analyses.
Direct change in the availability of land and resources	Construction and operation of the Project will require land area that will no longer be available to certain existing uses.
Change in the quality of resources	Project-related changes to environmental conditions may affect the quality (e.g. health, habitat) of the land and resources currently used for traditional purposes. Linked biophysical technical reports that support this indicator include the following VCs: Fish and Aquatics, Vegetation, and Wildlife. Measurement is qualitative relative to changes to other ICs and VCs that make up land and resources currently being used for traditional purposes.

Indicator	Rationale for Selection
Change in quality of intangible cultural resources	Project-related changes to environmental conditions may affect the quality of intangible cultural resources (e.g., connection to the land, sense of place, areas where TK and activities can be taught, etc.) used for current traditional land and resource use. Measurement is qualitative and based on changes to environmental values that relate to intangible cultural resources, and primary data collection

1.3 ESTABLISHMENT OF ASSESSMENT BOUNDARIES

Spatial, temporal, administrative, and technical boundaries for the assessment for each subcomponent are described in this section.

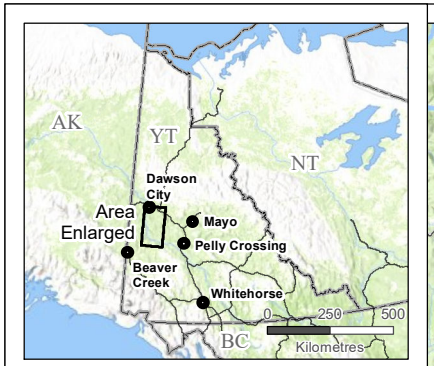
1.3.1 SPATIAL BOUNDARIES

The local assessment area and the regional assessment area spatial boundaries for the land and resource use assessment subcomponents are described below. The boundaries are summarized in **Table 1.3-1** and illustrated in **Figure 1.3-1.**

1.3.1.1 Non-traditional Land and Resource Use Spatial Boundaries

The Local Assessment Area (LAA) for non-traditional land and resource use is defined as a 1-km buffer from the Project footprint, inclusive of any land use designations (for example, trapline concessions, game management areas, or placer claims) that overlap this area. It includes areas that are most likely to be directly or indirectly affected by the Project.

The Regional Assessment Area (RAA), which encompasses the LAA, is established to provide a regional context for the assessment of Project-related effects on non-traditional land and resource use. To support the assessment of the potential residual effects to linked biophysical VCs while following an administrative boundary, the RAA was chosen to encompass the Game Management Subzones that overlap the Project footprint (see **Section 3.4.1.4**, and **Appendix18-A**). In addition, the RAA provides sufficient context for assessment of the land and resource uses within the LAA (YG 2016a). The RAA also encompasses the area where the residual effects of the Project are likely to interact with the residual effects of other past, present, or future projects or activities to result in a cumulative effect or effects; as a result, the RAA defines the boundaries of the cumulative effects assessment. The spatial boundaries for the subcomponent are summarized in **Table 1.3-1.**



COFFEE GOLD MINE

Non-Traditional Land and Resource Use Spatial Boundaries

Legend

- Highway
- National/International Border
- Project Footprint
- Local Assessment Area
- Regional Assessment Area

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Game Management Area Data provided by Govenment of Yukon, 2016 ftp://ftp.geomaticsyukon.ca/GeoYukon/Base/

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Kilometres

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Figure 1.3-1	Date: Mar 22, 2017	Drawn by: NK	Reviewed: DP

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1.3.1.2 Current Land and Resource Use Spatial Boundaries

The LAA for current traditional land and resource use is defined as the established or asserted Traditional Territory of the TH, SFN, FNNND, and WRFN First Nations located within a 1-km area on either side of the Project footprint. It includes the area where direct Project-related effects to traditional land and resource use are most likely to occur during one or more Project Phases, including: Construction; Operation; Reclamation and Closure. Potential Project-related effects tocurrent traditional land and resource use are discussed separately for each of the potentially affected First Nations.

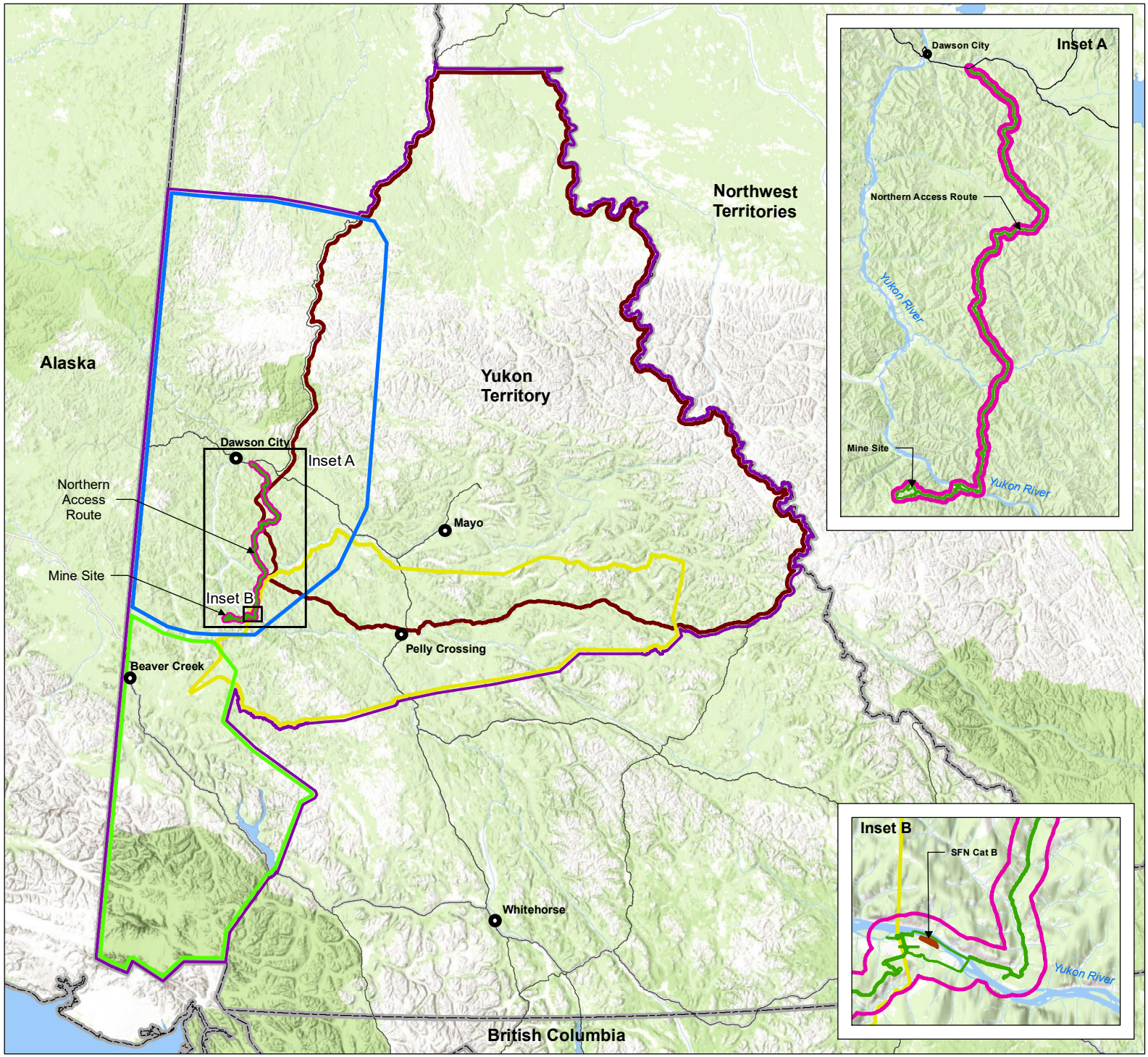
The RAA, which encompasses the LAA, is established to provide a regional context for the assessment of Project effects. The RAA for current traditional land and resource use is defined as the entire Traditional Territory of the TH, SFN, FNNND, and the entire asserted Traditional Territory of the WRFN, as this area provides context for the local area assessments. Further, the RAA has been delineated as the total of Traditional Territory of each potentially affected First Nation to capture any potential Project-related effects that might occur to linked ICs and biophysical VCs upon which this assessment relies.

The cumulative effects assessment area encompasses the area where the residual effects of the Project are likely to interact with the residual effects of other past, present, or future projects or activities to result in a cumulative effect or effects. On review of the extent of Project-related effects, this area is the cumulative effects assessment area as shown in Appendix 5B, which encompasses the majority of the traditional territories.

The spatial boundaries for the Land and Resource Use assessment are summarized in **Table 1.3-1** and shown in **Figure 1.3-2.**

Table 1.3-1 Spatial Boundary Definitions for Land and Resource Use Valued Component and Subcomponents

Spatial Boundary	Description of Assessment Area
Non-traditional Land and Resource Use	
Local Assessment Area	1-km buffer either side of the Project footprint for the Project.
Regional Assessment Area	Game Management Subzones overlapping the Project footprint as shown on **Figure 1.3-1**.
Cumulative Effects Assessment Area	Same as RAA
Current Traditional Land and Resource Use	
Local Assessment Area	The established or asserted Traditional Territory of each First Nation located within 1 km on either side of the Project footprint. These First Nations include TH, SFN, FNNND, and WRFN.
Regional Assessment Area	The entire established Traditional Territory of TH, SFN, and FNNND as shown in **Figure 1.3-2.**
Cumulative Effects Assessment Area	Cumulative effects assessment area defined in Appendix 5B



COFFEE GOLD MINE

Traditional Land and Resource Use Spatial Boundaries

Legend

- Highway
- National/International Border
- Project Footprint
- Local Assessment Area
- Regional Assessment Area
- White River First Nation[2]
- Tr'ondëk Hwëch'in
- Selkirk First Nation
- First Nation of Na-cho Nyäk Dun
- SFN Category B Lands

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. The WRFN traditional territory boundary represented in this figure presents the recognized traditional territory under the UFA. This is not the WRFN asserted territory which WRFN recognizes.

N

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Kilometres

NAD 1983 UTM Zone 8N

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1.3.2 TEMPORAL BOUNDARIES

The temporal boundaries of the Land and Resource Use VC include all Project phases where Project-related effects to the social-economy may occur; these include:

- Construction Phase: 30 months
- Operation Phase: 12 years
- Reclamation and Closure Phase: 11 years total, Active closure 6 years, Post-mining closure 5 years
- Post-closure Phase: Year 24 onwards, as determined to be required.

1.3.3 ADMINISTRATIVE BOUNDARIES

Spatial boundaries for the non-traditional Land and Resource subcomponent RAA are based on Environment Yukon (EY) Game Management subzones, which supports the consideration of linked biophysical VCs in this assessment. For the current traditional land and resource use subcomponent, the spatial boundaries have been delineated in consideration of the established traditional territories of TH, SFN, FNNND, and WRFN; to the best of the Proponent's knowledge, the RAA for Traditional Land and Resource Use encompasses these First Nation territories. This Project has adapted the definition of 'Traditional Territory' as presented in the Umbrella Final Agreement (YG 2008) (UFA) which is: ". . . the geographic area within Yukon identified as that Yukon First Nation's Traditional Territory on the map referred to in 2.9.0") of the UFA).

Goldcorp acknowledges that WRFN has not concluded a Land Claim. The area that WRFN asserts differs from the Traditional Territory boundary currently recognized by the YG. This assessment has taken into account the spatial boundaries of WRFN's asserted Traditional Territory, rather than its recognized Traditional Territory, to enable consideration of potential Project-related effects to the WRFN traditional economy. It should be noted that the spatial boundaries of WRFN's asserted area are not represented on any figures included in this report; however, for the purposes of this assessment it is assumed that WRFN's asserted Traditional Territory encompasses the proposed Mine Site and the southern extent of the NAR, including a portion of the route located immediately north of the Stewart River.

1.3.4 TECHNICAL BOUNDARIES

The technical boundaries for the Land and Resource Use assessment include the limitations and constraints identified for linked biophysical VC and IC assessments, which inform the analyses conducted for this assessment. Please refer to each respective VC and IC assessment for a detailed discussion of the relevant technical boundaries for each.

2.0 ASSESSMENT METHODS

The Land and Resource Use assessment, including the assessment of Project-related effects, cumulative effects, and effects due to accidents and malfunctions, was conducted according to the methods set out in **Section 5.0 Assessment Methodology** of the Project Proposal and guidance in YESAB (2005) The assessment has been informed by input (e.g., TK, statistical, and other information) provided through consultation and engagement with government agencies, affected First Nations, and the public. Baseline data were also collected through reviews of online spatial information and YK online information.

Assessment methods for linked ICs and VCs are provided in those assessments.

3.0 EXISTING CONDITIONS

This section describes the existing conditions of the Land and Resource Use VC, including the regulatory context for the VC, based on TK, consultation, and baseline studies conducted during the Project's Feasibility Program, as well as from desktop research.

3.1 REGULATORY CONTEXT

Regulatory context is described below for the Land and Resource VC, as well as the non-Traditional Land and Resource Use and current traditional land and resource use subcomponents.

3.1.1 LAND AND RESOURCE USE

3.1.1.1 Yukon Environmental and Socio-economic Assessment Act

Under YESAA, an environmental assessment is required for any project or activity listed in the regulations that requires a permit or authorization, a transfer of land, or that utilizes federal funding (YESAB 2016). Purposes of the Act specifically applicable to Land and Resource Use include:

- Consider environmental and socio-economic effects prior to undertaking projects.
- Protect and maintain environmental quality and heritage resources.
- Protect and promote the well-being of Yukon First Nations persons, their societies and Yukon residents generally, as well as the interests of other Canadians
- Ensure that projects are undertaken in accordance with principles that foster beneficial socio-economic change without undermining the ecological and social systems on which communities, their residents, and societies in general, depend.

3.1.2 NON-TRADITIONAL LAND AND RESOURCE USE

In addition to YESAA, land and resource use in Yukon is guided by legislation for public lands, settlement lands, and municipal lands. The approval process for applications to YG for authorization for a specific land use or activity varies depending on the applicability of YESAA. The following discussion focuses on legislation specifically relevant to public and municipal lands, noting that the Project footprint does not overlap settlement land.

The regulatory context for the linked IC analyses and VC assessments is discussed in each section.

All uses on Crown land must apply for approval through a Land Application Process. Yukon Land Management Branch (LMB) within the Energy, Mines and Resources Department, administers the following acts and regulations on public land (excluding federal parks):

- *Lands Act*, RSY 2002, c. 132, and Regulations
- *Territorial Lands (Yukon) Act*, SY 2003, c. 17, and Regulations.

Guidance for applications is provided through several LMB policies and guidelines. The Permit and Authorization Guide for Yukon Activities (YG 2015a) summarizes the permits and authorizations required for different land use activities, including Land Use Dispositions (sale or lease), Land Use Permits, Park Permits, Quartz Mining Permits, Placer Mining Permits, and other mining and exploration authorizations. The LMB manages land applications pursuant to the *Lands Act* regulations for commercial, industrial, rural residential, and trapping leases, as well as for water lots, quarries, and enlargement of existing properties. In addition the LMB manages land use permitting pursuant to the *Territorial Lands Act* regulations for a variety of uses, including site clearing or earth works; constructing new roads, trails, or access; clearing or installing a utility right-of way; conducting geo-technical or hydrological studies; and temporarily using or occupying Crown land.

The Yukon Land Planning Branch reviews and makes decisions on applications in accordance with the *Subdivision Act*, RSY 2002, c. 209, and Regulations and the *Area Development Act*, RSY 2002, c. 10 and *Regulations*. It manages local area plans and zoning regulations, as well as subdivision requests outside of Whitehorse and Dawson. Whenever subdivision of land is required, land applications must go through the Subdivision Approval Process. Subdivision is required when:

- A parcel is divided into more than one parcel
- A parcel is created out of Yukon (public) land
- Two or more parcels are consolidated into a single parcel
- An existing parcel is enlarged.

Subdivision approvals outside of Dawson and Whitehorse are administered by the LPB. Within these municipalities, approval must also be obtained from the municipality (YG 2015b).

Local area planning is a form of land use planning for unincorporated areas of private and public land. Planning can also include Settlement Land if undertaken jointly with First Nations. Local area plans cover relatively small defined areas, are fairly detailed in nature, and primarily focus on rural settlement issues rather than resource management and landscape level issues that might be addressed in regional, sub regional, and district land use planning (YG 2016b). Local area plans are advisory documents that do have not legislative authority apart from their relationship to the *Subdivision Act,* and must be implemented through zoning regulations made pursuant to the *Area Development Act*, RSY 2002, c. 10.

Additional land and resource use legislation includes:

- *Land Planning and Development Act*, RSY 1982, c. 22
- *Municipal Act*, RSY 2002, c. 154
- *Economic Development Act*, RSY 2002, c. 60
- *Forest Protection Act*, RSY RSY 2002, c. 94
- *Forest Resources Act*, SY 2008, c. 15
- *Oil and Gas Act*, RSY 2002, c. 162
- *Placer Mining Act*, SY 2003, c. 13
- *Quartz Mining Act*, SY 2003, c. 14
- *Waters Act*, SY 2003, c. 19.

Selected legislation is described in more detail in **Sections 3.1.2.1** and **3.1.2.2**.

3.1.2.1 Land Planning and Development Act (Land Planning Act)

The *Land Planning and Development Act*, which can be cited as the *Land Planning Act*, governs land planning in Yukon through the Commissioner in Executive Council who may make regulations establishing land planning districts or other geographic areas for purposes related to the administration of the Act. Further, the Act establishes the Land Planning Board.

3.1.2.2 Resource Management

As noted earlier, resource activities are assessed under YESAA. Assessments are conducted by the arms-length YESAB or one of its six Designated Offices located throughout the Territory. They provide recommendations to the Yukon Government, who is the decision maker and responsible for regulating and enforcing permits and licences.

Regulation pursuant to the *Quartz Mining Act* and the *Placer Mining Act* guide the majority of mining activities within the RAA. The regulations consist of a classification system based on varying levels of specific activities. These threshold levels categorize exploration activities into four classes of operation; class 1 through class 4 represent activities with increasing potential to cause adverse environmental effects. Assessment by YESAB is not required for Class 1 activities.

The *Waters Act* establishes the Yukon Water Board. The objectives of the Board are to provide for the conservation, development, and utilization of waters to benefit residents of Yukon. Partially, the objectives of the Board are realized through the issuance of water licences.

3.1.3 CURRENT TRADITIONAL LAND AND RESOURCE USE

The following legislation and regulations are relevant to current traditional land and resource use subcomponent.

3.1.3.1 Umbrella Final Agreement

The UFA is a policy document that was established between the Government of Canada, Government of Yukon, and Yukon First Nations as represented by the Council of Yukon First Nations in 1993. This policy document was used by Yukon First Nations to support the negotiation of Final and Self-Government Agreements. The UFA is not a legally enforceable document itself; however, since all provisions are included in each First Nation Final Agreement, they have lawful effect (YG 2008). The potentially affected First Nations of TH, SFN, and FNNND have each signed a Final and Self-Government Agreement. Each Final Agreement is recognized as a treaty according to Section 35 of the *Constitution Act*, 1982, enacted as Schedule B to the Canada Act 1982, 1982, c. 11 (U.K.) (YG 2008).

More specifically, with respect to current traditional land and resource use and the settlement lands that overlap with the RAA, Chapter 9 of the UFA states that the objective of the settlement land amount is "…to recognize the fundamental importance of land in protecting and enhancing a Yukon First Nation's cultural identity, traditional values and life style, and in providing a foundation for a Yukon First Nation's self-government arrangements" (p.81).

Other key aspects of current traditional land and resource use identified in the UFA include Traditional Use (TU) and subsistence. Traditional use is defined in the UFA as "the use of Water, without substantially altering the quality, quantity or rate of flow, including seasonal rate of flow, by a Yukon Indian Person for trapping and non-commercial Harvesting, including transportation relating to such trapping and Harvesting or for traditional heritage, cultural and spiritual purposes" (p. 131). In Chapter 16 of the UFA 'subsistence' is defined as:

> a) the use of Edible Fish or Wildlife Products by a Yukon Indian Person for sustenance and for food for traditional ceremonial purposes including potlatches; and
> (b) the use by a Yukon Indian Person of Non-Edible By-Products of harvests under (a) for such domestic purposes as clothing, shelter or medicine, and for domestic, spiritual and cultural purposes; but (c) except for traditional production of handicrafts and implements by a Yukon Indian Person, does not include commercial uses of Edible Fish or Wildlife Products or Non-Edible By-Products. (p.155)

As signatories to the UFA, TH, SFN, and FNNND are able to draft legislation to manage fish and fish habitat on their Settlement Lands. To date, TH has drafted the *Tr'ondëk Hwëch'in Fish and Wildlife Act*.

For a list of fish and fish habitat related management boards and councils established under the UFA, please see **Appendix 14-B Fish and Fish Habitat Valued Component Assessment** (Table 3.1-1)**.**

3.1.3.2 Yukon Environmental and Socio-economic Assessment Act

As described in **Section 3.1.1.1,** according to YESAB, one of the purposes of YESAA is to respect the traditional economy:

- Recognize and, to the extent practicable, enhance the traditional economy of Yukon First Nations and their special relationship with the wilderness environment.

3.1.3.3 Constitution Act, 1982

White River First Nation has not signed a Final or Self-Government Agreement; therefore the Aboriginal interests of WRFN are considered as part of common law requirements related to existing Aboriginal interests in Canada according to Section 35 of the *Constitution Act, 1982.*

3.2 BACKGROUND INFORMATION AND STUDIES

3.2.1 TRADITIONAL KNOWLEDGE

Traditional Knowledge was used to inform and shape the current traditional land and resource use subcomponent. More specifically, TK was used to gain an understanding of how each First Nation defines current traditional land and resource use, as well as to understand the type of activities and values that each First Nation associates with current use. Secondary sources were used to identify TK, in addition to Project-specific TK and use reports, and primary data collection.

Primary and secondary data used to characterize and describe the existing traditional land and resource uses for each of the potentially affected First Nation, as well as support identification of potential Project-related effects, are listed in **Table 3.2-1.**

Table 3.2-1 Summary of Key Primary and Secondary Data Sources Used to Describe Current Traditional Land and Resource Use

Primary Data Sources
Traditional Knowledge and Land Use Studies Conducted for the Project Proponent: Please see Section 9.3.2 of **Appendix 18-A Socio-economic Baseline Report** for a detailed description of these studies. **Tr'ondëk Hwëch'in Traditional Foods and Traditional Economy Focus Group**: Please see Section 9.3.2 of **Appendix 18-A** for a detailed description of this focus group. **Tr'ondëk Hwëch'in Traditional Foods and Traditional Economy Foods Survey**: Please see Section 9.3.2 of **Appendix 18-A** for a detailed description of this survey. **Interviews**: Please see Section 12.3.2.1 of **Appendix 18-A** for a detailed description of these interviews.
Secondary Data Sources
• Bates, P., DeRoy, S., The Firelight Group, with White River First Nation. 2014. White River First Nation Knowledge and Use Study (For the Project Proponent, Kaminak Gold Corporation). • Calliou Group. 2012 Baseline Community Harvest Study 2011 – 2012 Foothills (TransCanada) Alaska Highway Pipeline Project, White River First Nation (Final Report, August 2012). • Calliou Group. 2012. Letter Report- Mini-Project-Specific Traditional Land Use Study: White River First Nation. Prepared for the Tarsis Resources White River Property ("Project"), June 15, 2012. • Dobrowolsky, D. 2014. Compilation of Information Relating to Coffee Creek/ White River Areas (January 2014). Prepared for The Project Proponent, Kaminak Gold Corporation. • DPRA Canada. 2010. Eagle Gold Project Socio-economic Baseline Report, Final Report. Prepared for Victoria Gold Corporation. • Easton, N.A., D. Kennedy, and R. Bouchard. 2013. WRFN: Consideration of the Northern Boundary (09 September 2013 Draft Report). • Mease, A.M. 2008. Once the Land is for Certain: The Selkirk First Nation Approach to Land Management, 1997-2007. M.A. Thesis, University of Saskatchewan, Saskatoon, Saskatchewan. • Tr'ondëk Hwëch'in. 2012a. Tr'ondëk Hwëch'in Resource Report - Appendix "C". Submitted to the Dawson Regional Land Use Planning Commission. Available at: http://dawson.planyukon.ca/index.php/publications/resource-assessment-report/appendices/186-appendix-c-tr-ondek-hwechin-in-resource-report/file. • Roburn, S., and Tr'ondëk Hwëch'in Heritage Department. 2012. Weathering Changes: Cultivating Local and Traditional Knowledge of Environmental Change in Tr'ondëk Hwëch'in Traditional Territory. Arctic 439–455. • Yukon Environmental and Socio-economic Assessment Board. 2012. Designated Office Evaluation Report: White River – Quartz Exploration Project Number: 2012-0080.

3.2.2 SCIENTIFIC AND OTHER INFORMATION

Secondary and primary research was used to describe existing land and resource use. Key secondary sources included research studies and technical reports prepared by the potentially affected First Nations, ethnographic literature, and relevant project reports and filings with YESAB. Publicly available data related to the current traditional land and resource use of potentially affected First Nations in the Project area are generally limited.

3.2.3 BASELINE STUDIES CONDUCTED DURING THE PROJECT'S FEASIBILITY PROGRAM

The Socio-economic Baseline Report (**Appendix 18-A**) describes the existing socio-economic and health conditions for the Project (**Table 3.2-2**). The baseline report was developed to support the assessment of potential Project-related socio-economic and health effects, including land and resource use. This

baseline report was informed by local secondary and primary data, as well as by consultation with regulators, First Nations, and communities. Primary research was conducted, where possible, to address data gaps and enhance desktop research results. Specific primary data collection methods included semi-structured information interviews, focus groups, which followed a semi-structured group interview format, and surveys.

Table 3.2-2 Summary of Desktop and Field Studies Related to Land and Resource Use

Study Name	Study Purpose, Duration and Spatial Boundaries
Socio-economic Baseline Report	The Socio-economic Baseline Report describes the existing socio-economic and health conditions for the Project. Through this report, the existing socio-economic and health landscape is introduced, and the Project's socio-economic and health IC (Demographics) and VCs (Economic Conditions, Social Economy, Community Infrastructure and Services, Education Services, Land and Resource Use) are described. The study began in December 2015 and was completed in April 2016. The non-traditional land and resource use studies relied on YG data bases to collate land use information. As noted in **Section 3.2.1**, TK and land use information sources from primary sources also informed the studies.

3.3 DATA LIMITATIONS

The availability of TK and TU data differed between potentially affected First Nations. No primary information was provided by SFN or FNNND with regards to TK or TU. Further, limited Project and site-specific data were available regarding the TK and TU of all potentially affected First Nations, especially with respect to the NAR. As a result, the following assessment is largely based on publicly available and general information. Goldcorp cautiously assumes that the historical interests and TU described in secondary sources reflect current traditional land and resource use. To facilitate an effects assessment of current traditional land and resource use for all potentially affected First Nations, the interests and rights of each potentially affected First Nation have been identified from their respective Final and Self-Governing Agreement or the *Constitution Act, 1982*, in cases where LAA-specific information was not available. Goldcorp acknowledges that an absence of data does not necessarily reflect an absence of value or protected rights for any of the potentially affected First Nations included in this assessment.

3.4 DESCRIPTION OF EXISTING CONDITIONS

This section describes the existing conditions of the subcomponents of the Land and Resource Use VC in the LAA and RAA. The discussion focuses on the topics described in **Section 1.1** for both non-Traditional Land and Resource Use, and current traditional land and resource use.

3.4.1 NON-TRADITIONAL LAND AND RESOURCE USE

The existing conditions for the non-traditional land and resource use subcomponent are described in this section. Depending on the topic and availability of data, information is either presented by LAA or RAA, or

described collectively for both to provide context. Non-traditional land and resource use topics discussed below include: land use planning and land use tenures; water licences; game management; guide outfitters; subsistence harvesting; parks and protected areas; resource development; utilities; and recreation and tourism.

Information regarding First Nations Traditional Territories and Settlement Lands is discussed in **Section 1.1**, and the areas are illustrated in **Figure 3.4-1.** As shown in the figure, Settlement Lands are not intersected by the Project footprint; however, there are lands within the LAA in the vicinity of the mine and near the Stewart River.

The majority of land in the LAA is Yukon Crown land, with the exceptions of privately held land in the Klondike Valley. Exceptions also include surveyed parcels located in the Project footprint and Project area (see **Section 4.1**).

3.4.1.1 Land Use Planning

Land use planning takes place at a territorial, regional and municipal level. The Yukon Land Use Planning Council is made up of three members who "promote an open, fair and public process carried out by all Yukoners, as set out in Yukon First Nation Final Agreement" (YLUPC 2015).

The Dawson and Northern Tutchone Regional Planning Areas overlap with the LAA and RAA (**Figure 3.4-1**). A planning commission is yet to be established for Northern Tutchone. The YG, TH, and the Vuntut Gwitchin Governments have mutually decided to suspend the Dawson Regional Land Use Planning process until the conclusion of the Peel Watershed Land Use Plan court hearing.

In addition to the municipal planning processes for Dawson and Whitehorse, the YG also prepares local area plans (LAPs). For the non-traditional land and resource use subcomponent, there are no LAPs within the LAA, and a portion of the Klondike Valley District Plan is within the RAA. Within the RAA for current traditional land and resource use subcomponent, LAPs have been prepared for the Community of West Dawson and Sunnydale, Beaver Creek, Klondike Valley District, and to the north and south of Whitehorse. Local area plans near Whitehorse include Plan Ibex, Hotsprings Road, Fox Lake (under development), Deep Creek Community Plan, Deep Creek Community Plan (Joint Management Region), Hamlet of Mount Lorne and Carcross Road, Golden Horn, and Marsh Lake (under development). Older plans, with limited application, such as for Beaver Creek, are still referenced in the absence of newer planning documents. The LAPs are implemented through the development of zoning regulations (T. Hagio,Personal Communication March 2017).

Tr'ondëk Hwëch'in Land Use Planning and Urban Planning Process

The TH are one of the three partners involved with the Dawson Regional Planning Commission. While the Dawson Regional Land Use Planning process is currently suspended, the TH Natural Resources

Department continues with land use planning activities, which include urban planning processes and settlement land planning (Interview 18, Personal Communication, 2016).

City of Dawson Planning

The City of Dawson's Official Community Plan (OCP) is the primary guidance document that directs the City's planning and land use management decisions and directions within the City of Dawson's municipal limits (Interview 7, Personal Communication, 2016, City of Dawson 2012). A portion of Dawson is within the RAA. Some of the long-term goals stated in the OCP (City of Dawson 2012) include:

- **Land Use**: Compact, efficient, compatible and sustainable land use
- **TH Lands**: Collaborate with the TH to ensure that land use plans are compatible.
- **Municipal Finance**: Enhance the financial sustainability of the municipality over the long-term
- **Municipal Infrastructure**: Ensure the provision and development of municipal infrastructure is effective and efficient
- **Housing:** Support the development of new housing and the adaptive reuse of existing buildings to meet the full continuum of housing needs in the community
- **Transportation Systems:** Maintain and broaden access to and through the community for all modes of travel).
- **Parks and Recreation:** Provide recreational resources that meet the needs of a diverse population in order to encourage a healthy and active community
- **Culture:** Celebrate, support and promote Dawson as the cultural capital of Yukon
- **Environmental Stewardship:** Minimize the environmental impacts of municipal regulations, programs, services, and projects
- **Food Security:** Work toward a more self-sufficient and reliable food supply for Dawson (City of
- **Heritage Preservation:** Protect and celebrate Dawson's heritage as a "living historical community" while allowing the community to evolve and prosper into the future

West Dawson and Sunnydale Local Area Plan

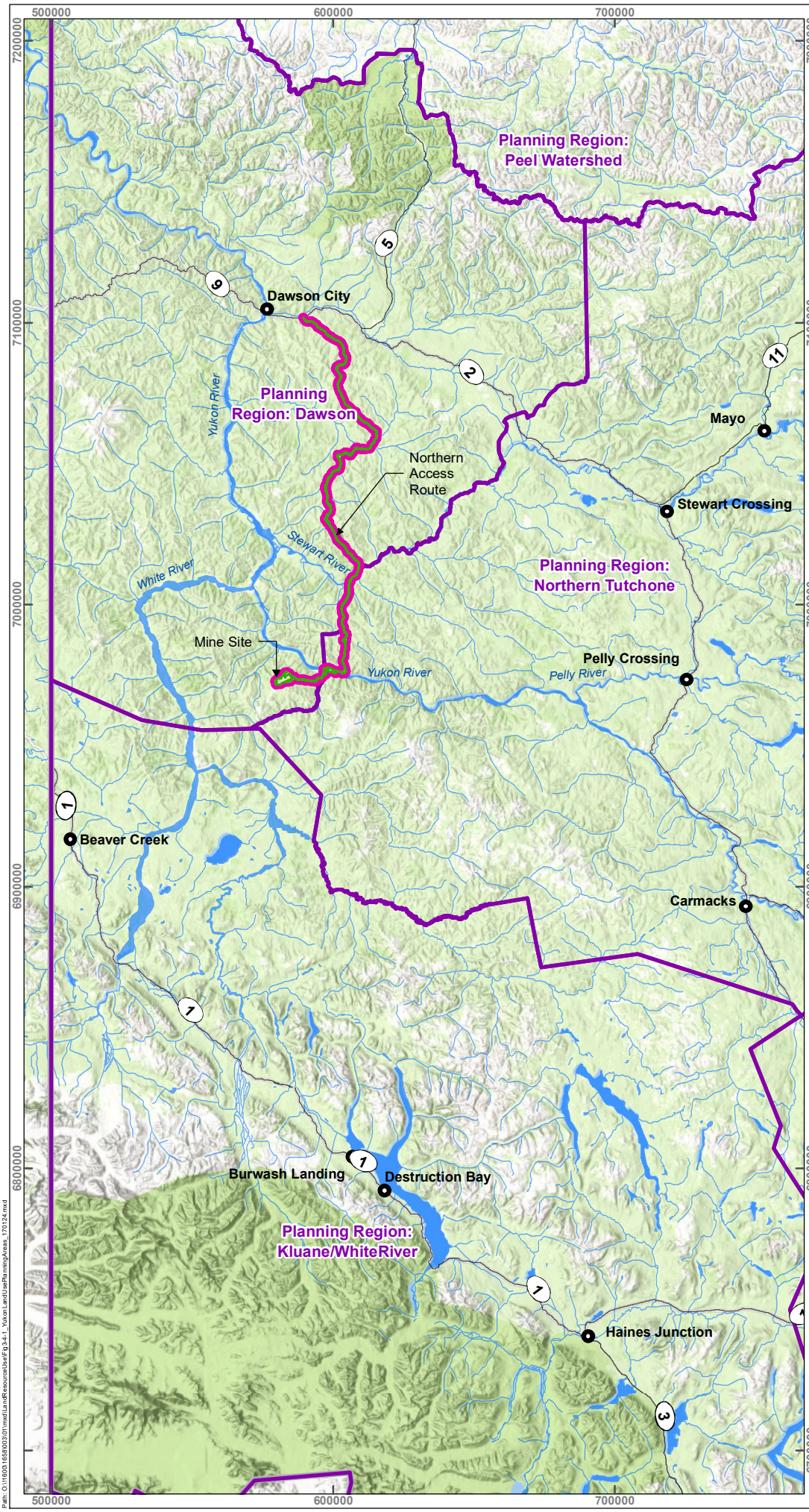
The YG partnered with TH to coordinate planning for public, private, and TH settlement land with the West Dawson and Sunnydale LAP, located west of Dawson. The goals for the LAP are to maintain the existing character and rural lifestyle, work with in the TH government and local area residents to identify lands suitable for development and conservation, and maintain and enhance the quality of the planning area's natural environment for present and future generations.

City of Whitehorse Official Community Plan

The vision for the City of Whitehorse in its 2010 OCP is for a well-planned, self-sustaining community that is a leader in energy conservation and innovation and maintains and conserves wilderness spaces for future generations. Whitehorse will continue to strive for a better quality of life, which is reflected in its vibrant economy and social life (City of Whitehorse 2013). Objectives for meeting community values in the OCP are presented under several main principles:

1. Thriving Environment: Stewardship of the natural environment and recognition of its intrinsic value and importance for quality of life.

2. Community Development: Decisions on development, land use, infrastructure, energy and transportation shall be integrated to minimize our ecological footprint.
3. Diverse Local Economy: A vibrant, diverse local economy that encourages self-sufficiency, uses resources efficiently, and creates inter-generational wealth.
4. Cultural Identity: We celebrate cultural diversity that strengthens the uniqueness of our northern community.
5. Equity: Value equity, fairness, and inclusiveness in our community relationships.
6. Leadership and Education: Long-horizon community leadership true to our principles of sustainable development and global responsibility. Empower every generation to entrench sustainability in education with the benefit of shared northern knowledge. (City of Whitehorse 2013)



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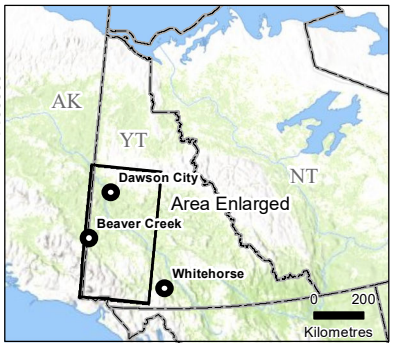
Yukon Land Use Planning Areas



Legend

- Highway
- Watercourse
- National/International Border
- Project Footprint
- Local Assessment Area
- Yukon Planning Region

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Planning areas from geomaticsyukon.ca, 2016.

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Figure 3.4-1	Date: Mar 21, 2017	Drawn by: JS	Reviewed: DP

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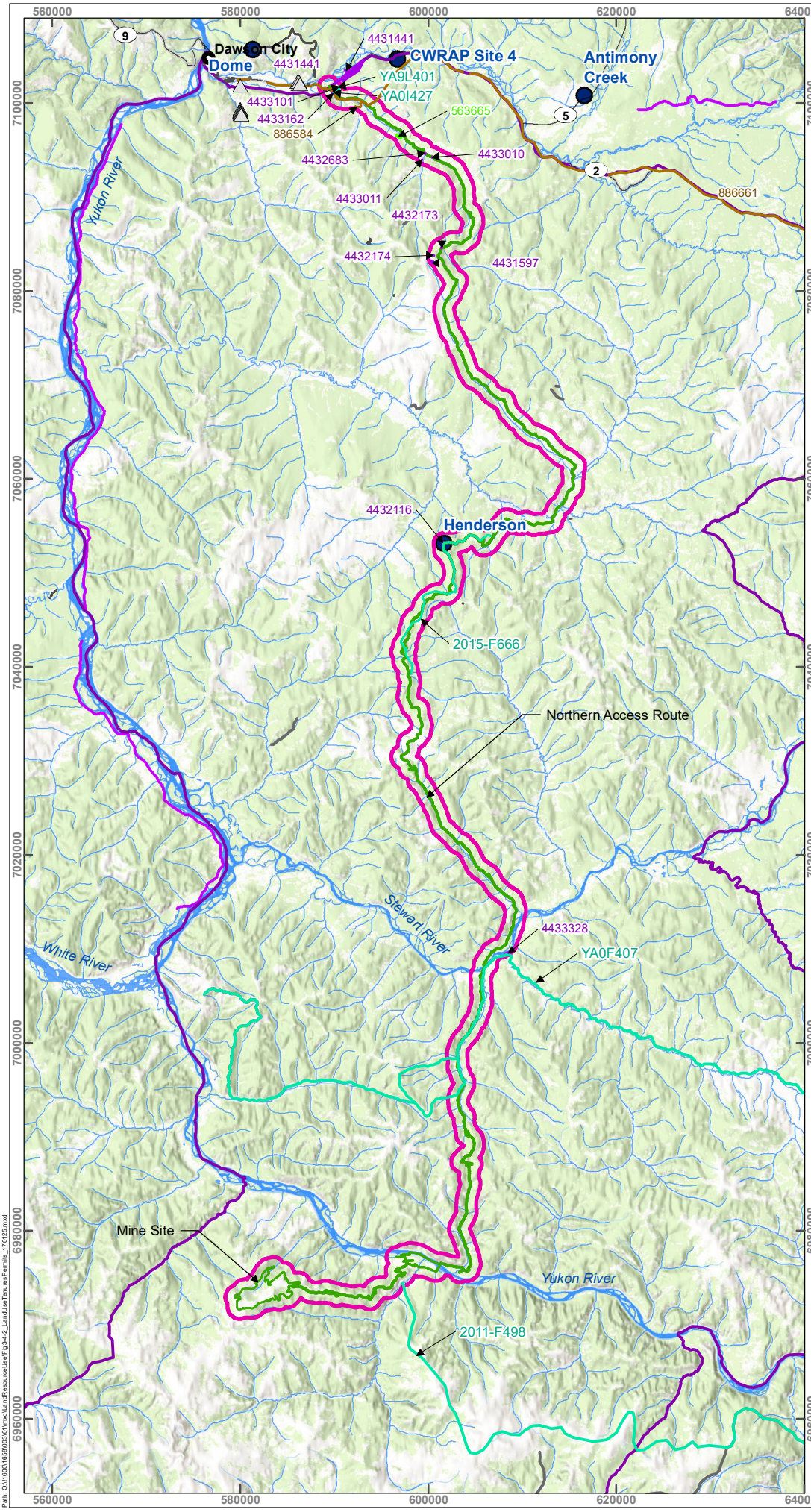
3.4.1.2 Land Use Tenures

Land uses on public land tenured under the *Lands Act* and *Territorial Lands (Yukon) Act* within the LAA are summarized in **Table 3.4-1** and shown in **Figure 3.4-2**.

Table 3.4-1 Land Use Tenures within the Local Assessment Area

Type of Land Tenure	Identification (Disposition) Number	Activity / Purpose	Description*
-	-	Transportation	North Klondike Highway
Land Disposition	2010-0841	Utility	Parcel of land 50 m south of Highway 2 and 400 m west of the NAR, and 500-m-long corridor at the NAR, 300 m south of Highway 2
Land Use Permit	105M12-069	Utility	Linear corridor parallels access road from Highway 2 to approximately 4.5 km
Land Disposition	2009-2821	Commercial	Communication site connected to 2010-0841 (Permit YA9L401), located 700 m east of the NAR and 650 m south of Highway 2
Land Disposition	2008-740	Rural Residential	Square of land west of existing access road and east of Hunker Creek
Land Disposition	2010-0841	Utility	Linear corridor connecting to existing road along Hunker Creek
Land Use Permit	YA01427	Powerline Construction	1-km-long linear corridor connecting 2010-0841 to a substation; overlaps with the NAR at 850 m south of Highway 2
Land Disposition	115O15-028	Residential – Commercial	Three squares of land adjacent to the NAR near Hunker Creek at 13 km south of Highway 2
Land Disposition	115O15-013	Environment	Square of land 23 m north of the NAR near Sulphur Creek 28 km south of Highway 2
Land Disposition	115O15-014	Utility	Rectangle of land 425 m northwest of the NAR near Sulphur Creek 29 km south of Highway 2
Land Disposition	115O15-022	Heritage	Square of land 800 m west of the NAR near Sulphur Creek, 30 km south of Highway 2
Land Use Permit	2015-F666	Roads (Private Construction)	Approximately 25-km-long road construction permit overlapping with the NAR, beginning at 74.5 km south of Highway 2
Land Disposition	115O11-001	Utility	Square of land north of the NAR and east of tributary to Steele Creek, 82 km south of Highway 2
Land Disposition	2003-0181	Recreational	Portion of land immediately east of Scroggie Creek and south of Stewart River, 140 km south of Highway 2
Land Use Permit	YA0F407	Roads (Private Construction)	Historical Land Use Permit (Closed) for private road construction from the NAR at the South Stewart River Barge Landing to Iron Creek (13 km length)
Land Use Permit	2011-F498	Roads (Private Construction)	Linear road corridor extending from the Freegold Road to south of Coffee Creek, 4 km south of the Yukon River

Notes: m - metre
All distances are approximate.
Source: YG 2011



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Land Use Tenures and Permits

Legend

- City/Town
- Wind Energy Location
- Highway
- Watercourse
- Project Footprint
- Local Assessment Area
- Non-Traditional Land and Resource Use Regional Assessment Area
- Land Use permits within 1km of the Project Footprint
- Land Use permits beyond 1km of the Project Footprint - Point
- Land Use permits beyond 1km of the Project Footprint - Linear
- Land Applications - Active
- Land Disposition[1]
- Land Licenses

Utilities

- Power Network Pipeline (None Shown on Map)
- Power Network Transmission line

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Land Use Permits from Geomatics Yukon 2016.

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Figure 3.4-2	Date: Mar 21, 2017	Drawn by: JS	Reviewed: DP

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The tenures are mainly for commercial, utility, and road construction, and are located in the LAA for the northern portion of the NAR. Utilities include a transmission line from the NAR to the Klondike Highway. Other roads intersect with the NAR.

Several wind monitoring sites are located near Dawson, and the Henderson site is located within the Project LAA (**Figure 3.4-2**). The YG has invested potential for wind energy development in Yukon, and has concluded that wind energy is greater at higher elevations, and in winter months. Several sites tested in the Whitehorse area are considered to have a suitable wind resource for a wind energy project.

3.4.1.3 Water Licenses

Under the Yukon *Waters Act*, the Yukon Water Board issues water use licences for various activities for the use of water and the deposit of waste to water. The Water Board Secretariat provides administrative support and works on behalf of the Yukon Water Board (YG 2014e). Water licences within the LAA are for the purposes of placer mining, with the exception of the water licence held by Kaminak Gold Corporation near the mouth of Coffee Creek for "municipal" purposes. The locations of the water licences are shown in **Figure 3.4-3,** and the water licenses located within the LAA are listed in **Table 3.4-2.**

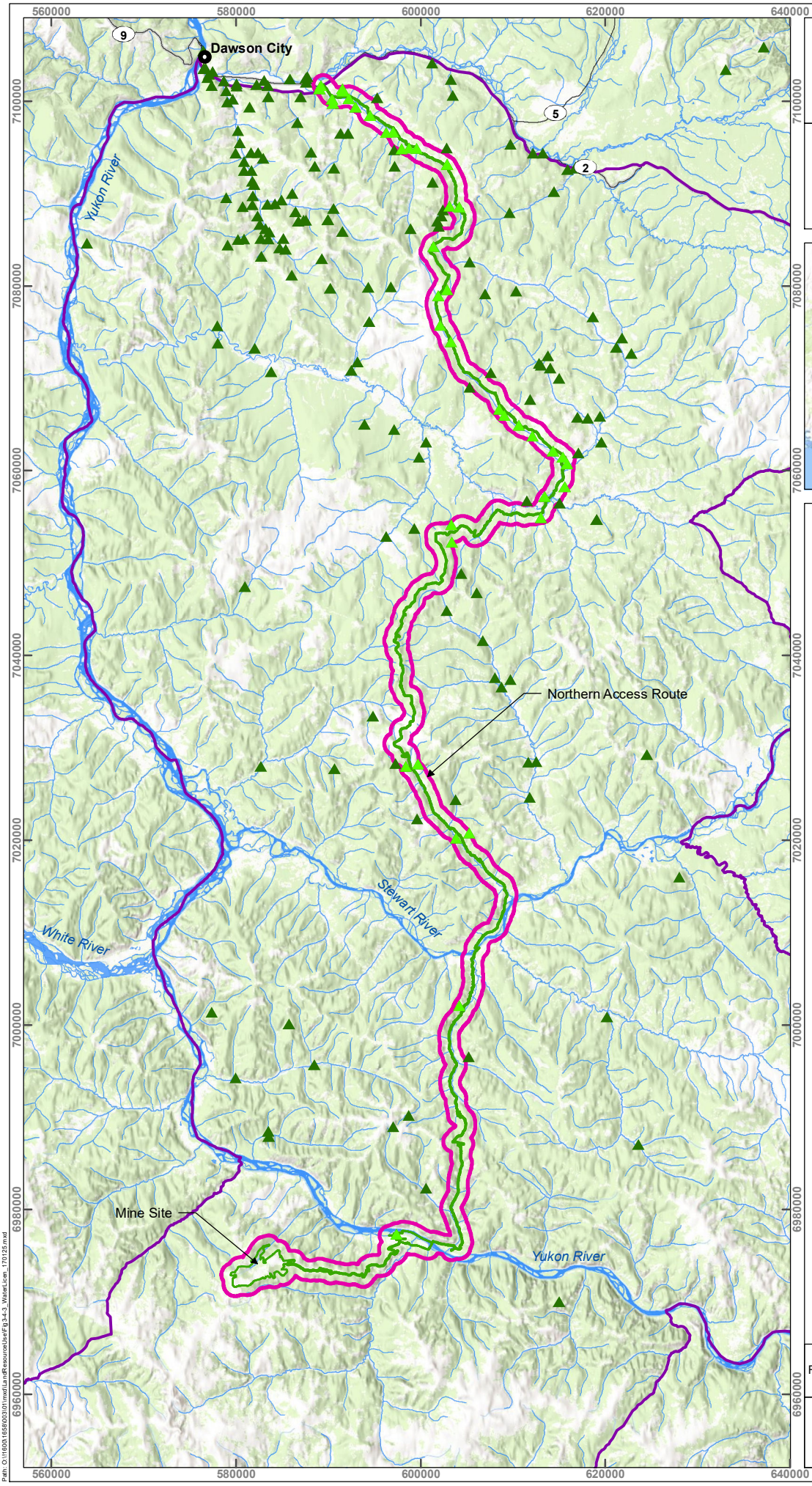
Table 3.4-2 Water Licences (Active) within the Local Assessment Area

Water Licence Number	Industry	Type	Waterbody	Watershed	First Nation Territories	Expiry
PM14-024	Placer Mining	B	Hunker Creek	Klondike River	TH	09/03/2024
PM09-649	Placer Mining	B	Henry Gulch	Klondike River	TH	01/29/2020
PM15-032	Placer Mining	B	Klondike River water table, Hunker Creek and Bergamin Gulch	Klondike River	TH	07/01/2025
PM13-022	Placer Mining	B	Hattie Gulch and Hunker Creek	Klondike River	TH	08/06/2023
PM14-023	Placer Mining	B	Hunker Creek	Klondike River	TH	10/31/2024
PM07-571	Placer Mining	B	Hunker Creek	Klondike River	TH	06/09/2018
PM07-552	Placer Mining	B	Hester Creek	Klondike River	TH	10/03/2017
PM03-338	Placer Mining	B	Independence Creek	Klondike River	TH	01/27/2020
PM09-654	Placer Mining	B	Hunker Creek	Klondike River	TH	03/05/2020
PM07-588	Placer Mining	B	Hunker Creek, Goldbottom, Soda, Ontario, 16 Below and 23 Gulch	Klondike River	TH	04/01/2018
PM13-023	Placer Mining	B	Hunker Creek	Klondike River	TH	07/03/2023
PM15-089	Placer Mining	B	Hunker Creek, Little Gem Gulch, Hunker Creek Groundwater	Klondike River	TH, FNNND	05/04/2026

Water Licence Number	Industry	Type	Waterbody	Watershed	First Nation Territories	Expiry
PM12-023	Placer Mining	B	Little Gem Gulch, Hunker Creek	Klondike River	TH	05/01/2022
PM07-549	Placer Mining	B	Hunker Creek	Klondike River	TH	09/16/2017
PM15-065	Placer Mining	B	Groundwater, Six Above Pup	Klondike River	TH	03/22/2026
PM13-016	Placer Mining	B	Gauvin Gulch	Klondike River	TH	06/04/2023
PM15-081	Placer Mining	B	24 Pup	Klondike River	TH, FNNND	02/02/2026
PM07-578	Placer Mining	B	Right Fork, Upper Hunker Creek	Klondike River	TH	07/09/2018
PM11-060	Placer Mining	B	Right Fork, Upper Hunker Creek	Klondike River	TH	05/01/2023
PM06-531	Placer Mining	B	Hunker Creek and Left Fork Hunker Creek	Klondike River	TH	06/01/2017
PM10-008	Placer Mining	B	Upper Dominion Creek	Indian River	TH	04/09/2020
PM07-570	Placer Mining	B	Green Gulch	Indian River	TH, FNNND	10/31/2018
PM15-027	Placer Mining	B	Sulphur Creek	Indian River	TH, FNNND	07/01/2025
PM09-657	Placer Mining	B	Sulphur Creek	Indian River	TH, FNNND	07/05/2020
PM15-016	Placer Mining	B	Friday Gulch, No-name Pup and Sulphur Creek	Indian River	TH, FNNND	08/05/2025
PM06-540	Placer Mining	B	Sulphur Creek	Indian River	TH, FNNND	05/31/2017
PM13-001	Placer Mining	B	Sulphur Creek	Indian River	TH, FNNND	06/04/2024
PM14-027	Placer Mining	B	Sulphur Creek	Indian River	TH, FNNND	09/03/2024
PM15-050	Placer Mining	B	No-name pup, Sulphur Creek and Sulphur Creek Dredge Ponds	Indian River	TH, FNNND	08/05/2025
PM07-591	Placer Mining	B	Sulphur Creek	Indian River	TH, FNNND	01/31/2018
PM11-017	Placer Mining	B	Sulphur Creek	Indian River	TH, FNNND	10/07/2021
PM15-026	Placer Mining	B	Dominion Creek and Dominion Miner's Ditch	Indian River	TH, FNNND	07/08/2025
PM14-046	Placer Mining	B	Dominion Creek	Indian River	TH, FNNND	05/01/2025
PM16-001	Placer Mining	B	Dominion Creek and Sulphur Creek Groundwater	Indian river	TH, FNNND	06/01/2026
PM13-032	Placer Mining	B	Lower Sulphur Creek Ponds	Indian River	TH, FNNND	09/12/2018
PM07-556	Placer Mining	B	Wounded Moose Creek	Indian River	TH, FNNND	10/15/2017
PM07-557	Placer Mining	B	Wounded Moose Creek	Indian River	TH, FNNND	10/15/2017
PM14-036	Placer Mining	B	Wounded Moose Creek	Indian River	TH, FNNND	02/03/2025
PM12-032	Placer Mining	B	UNLLT and UNTRTL of UNLLT	Indian River	TH, FNNND	07/31/2022
PM15-077	Placer Mining	B	UNLLT Indian River	Indian River	TH, FNNND	03/02/2026

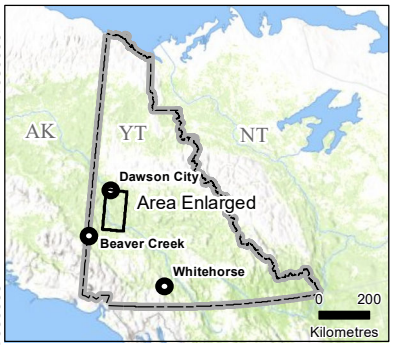
Water Licence Number	Industry	Type	Waterbody	Watershed	First Nation Territories	Expiry
PM06-536	Placer Mining	B	Left Fork Eureka Creek, 18 Pup and 13 Pup	Indian River	TH, FNNND	06/01/2017
PM94-091	Placer Mining	B	Maisy May Creek	Stewart River	TH, FNNND	04/09/2020
PM10-071	Placer Mining	B	UNLLT to Maisy May Creek (Art Pup)	Stewart River	TH	09/06/2021
PM13-052	Placer Mining	B	Maisy May Creek	Stewart River	TH	03/05/2024
PM10-022	Placer Mining	B	Maisy May Creek	Stewart River	TH	11/10/2020
PM15-076	Placer Mining	B	Barker Creek, Dixie Pup, Barker Creek, and Groundwater	Stewart River	TH, FNNND, SFN, WRFN	03/31/2026
MN16-034	Municipal	B	Yukon River at Coffee Creek Mouth	Yukon River	TH, SFN, WRFN	07/11/2026

Source: YG 2011



COFFEE GOLD MINE

Water Licenses



Legend

- City/Town
- Highway
- Watercourse
- Project Footprint
- Local Assessment Area
- Non-Traditional Land and Resource Use Regional Assessment Area
- Water Licenses within 1km of the Project Footprint
- Water Licenses beyond 1km of the Project Footprint

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Water License from Geomatics Yukon 2016.

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Kilometres

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Figure 3.4-3	Date: Mar 22, 2017	Drawn by: JS	Reviewed: DP

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3.4.1.4 Game Management Areas

Game Management Areas (GMAs) are defined by Environment Yukon as "legal boundaries that define an area within which big game management objectives can be met through the setting of area specific regulations. In other words, GMAs are used to manage Yukon wildlife species." (YG 2016a) The LAA falls within the Game Management Zone 3 subzones 307, 308, 310, 311, 312, and 313 to the north of the Yukon River, and Game Management Zone 5 subzone 502 to the south of the Yukon River (**Figure 3.4-4**), listed in **Table 3.4-3**.

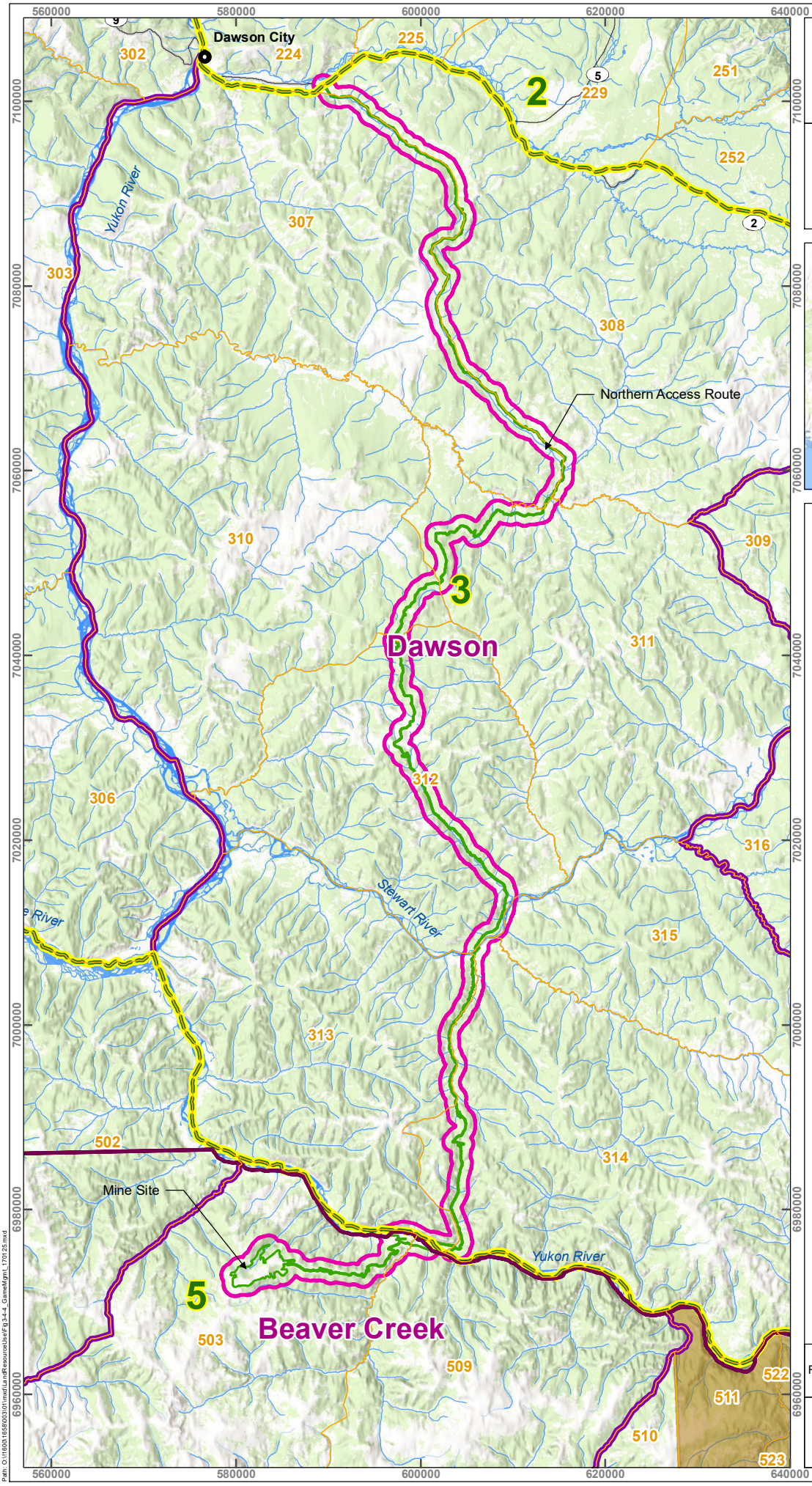
Table 3.4-3 Game Management Zones and Sub-zones Overlapping with the Project

Sub-Zones	Species Management Considerations	Species	Subzones	Limit
Game Management Zone 2				
24	Special area restrictions applying to use of roads and motor vehicles in subzones other than 2-24. Fortymile Caribou subzone 2-24 is closed to Caribou hunting.	Moose (Male)	All subzones	One
		Fortymile Caribou (Male)	2-24	CLOSED
		Sheep (Male)	All subzones	One
		Deer (Male)	All subzones	One - Permit hunt only
		Elk	All subzones	One - Permit required
		Black Bear	All subzones	Two per year
		Grizzly Bear	2-24	One every three years
		Wolverine	All subzones	One
		Wolf	All subzones	Seven (resident), two (non-resident)
		Coyote	All subzones	No limit
		Snowshoe Hare	All subzones	No limit
		Arctic Ground Squirrel	All subzones	No limit
		Porcupine	All subzones	No limit
		Spruce & Ruffed Grouse	All Subzones	10 daily, 30 possession
		Dusky Grouse	All Subzones	5 daily, 15 possession
		Sharp-tailed Grouse	All subzones	5 daily, 15 possession
		Ptarmigan	All subzones	10 daily, 30 possession
Game Management Zone 3				
07	There are no special area restrictions in Zone 3	Moose (Male)	All subzones	One
		Caribou (Male)	All subzones	CLOSED
		Bison	All subzones	One - Permit required
08		Sheep (Male)	All subzones	CLOSED
		Deer (Male)	All subzones	One - Permit hunt only
		Elk	All subzones	One - Permit hunt only
10		Black Bear	All subzones	Two per year

Sub-Zones	Species Management Considerations	Species	Subzones	Limit
		Grizzly Bear	All subzones	One every three years
11		Wolverine	All subzones	One
		Wolf	All subzones	Seven (resident), two (non-resident)
12		Coyote	All subzones	No limit
		Snowshoe Hare	All subzones	No limit
13		Arctic Ground Squirrel	All subzones	No limit
		Porcupine	All subzones	No limit
14		Spruce & Ruffed Grouse	All Subzones	10 daily, 30 possession
		Dusky Grouse	All Subzones	5 daily, 15 possession
15		Sharp-tailed Grouse	All subzones	5 daily, 15 possession
		Ptarmigan	All subzones	10 daily, 30 possession
Game Management Zone 5				
03	Special area restrictions applying to use of roads and motor vehicles in subzones other than 5-03 and 5-09.	Moose (Male)	5-03, 5-09	One
		Caribou (Male)	5-03, 5-09	CLOSED
		Bison	5-03, 5-09	One – Permit Required
		Sheep (Male)	5-03, 5-09	One
		Goat	All subzones	CLOSED
		Deer (Male)	All subzones	One – Permit hunt only
		Elk	5-03, 5-09	One – Permit Required
		Black Bear	All subzones	Two per year
		Grizzly Bear	All subzones	One every three years
09		Wolverine	All subzones	One
		Wolf	All subzones	Seven (resident), two (non-resident)
		Coyote	All subzones	No Limit
		Snowshoe Hare	All subzones	No limit
		Arctic Ground Squirrel	All subzones	No limit
		Porcupine	All subzones	No limit
		Spruce & Ruffed Grouse	All Subzones	10 daily, 30 possession
		Dusky Grouse	All Subzones	5 daily, 15 possession
		Sharp-tailed Grouse	All subzones	2 daily, 6 possession
		Ptarmigan	All subzones	10 daily, 30 possession

Source: Yukon Environment 2016

A fuller description of the existing wildlife conditions in the overlapping subzones is provided in **Appendix 16-A Wildlife Baseline Report**. Large game species harvest is summarized for Bear and Moose in the **Figure 3.4-5** . There is no harvest data for GMS 244, 314, 315, 503, and 509 (Moose and Bear); and the Bear harvest numbers include GMS 502 (outside LAA) as data was aggregated (Email Correspondence 1, 2016, Pers. Comm.)



COFFEE GOLD MINE

Game Management Areas

Legend

- City/Town
- Highway
- Watercourse
- Project Footprint
- Local Assessment Area
- Non-Traditional Land and Resource Use Regional Assessment Area
- Conservation Officer Subdistricts
- Game Management Zone
- Game Management Subzones
- Caribou 2015 Permit Hunt Authorization

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Game Management Zone and Caribou data from Geomatics Yukon 2016.

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Kilometres

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Figure 3.4-4	Date: Mar 22, 2017	Drawn by: JS	Reviewed: DP

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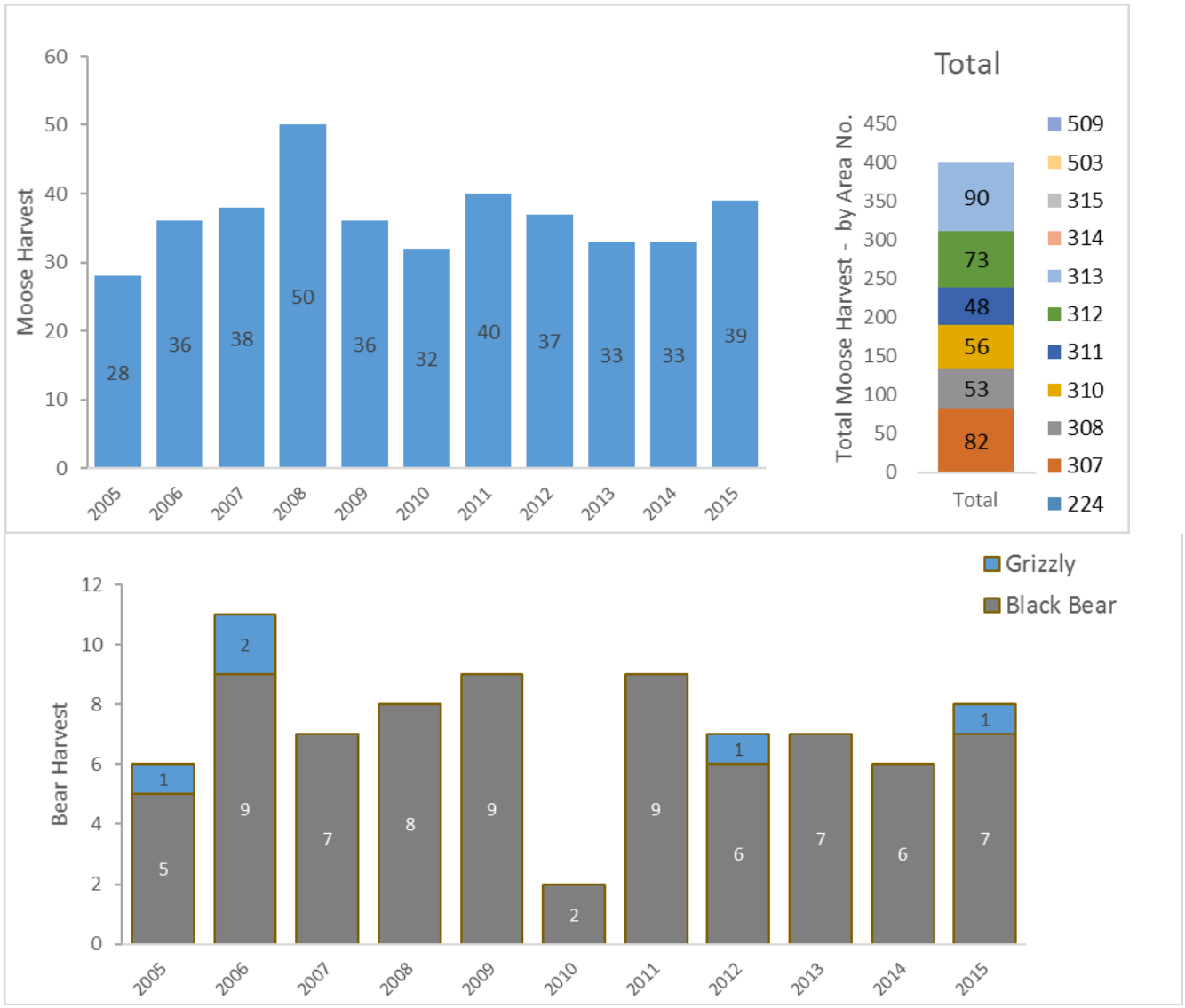
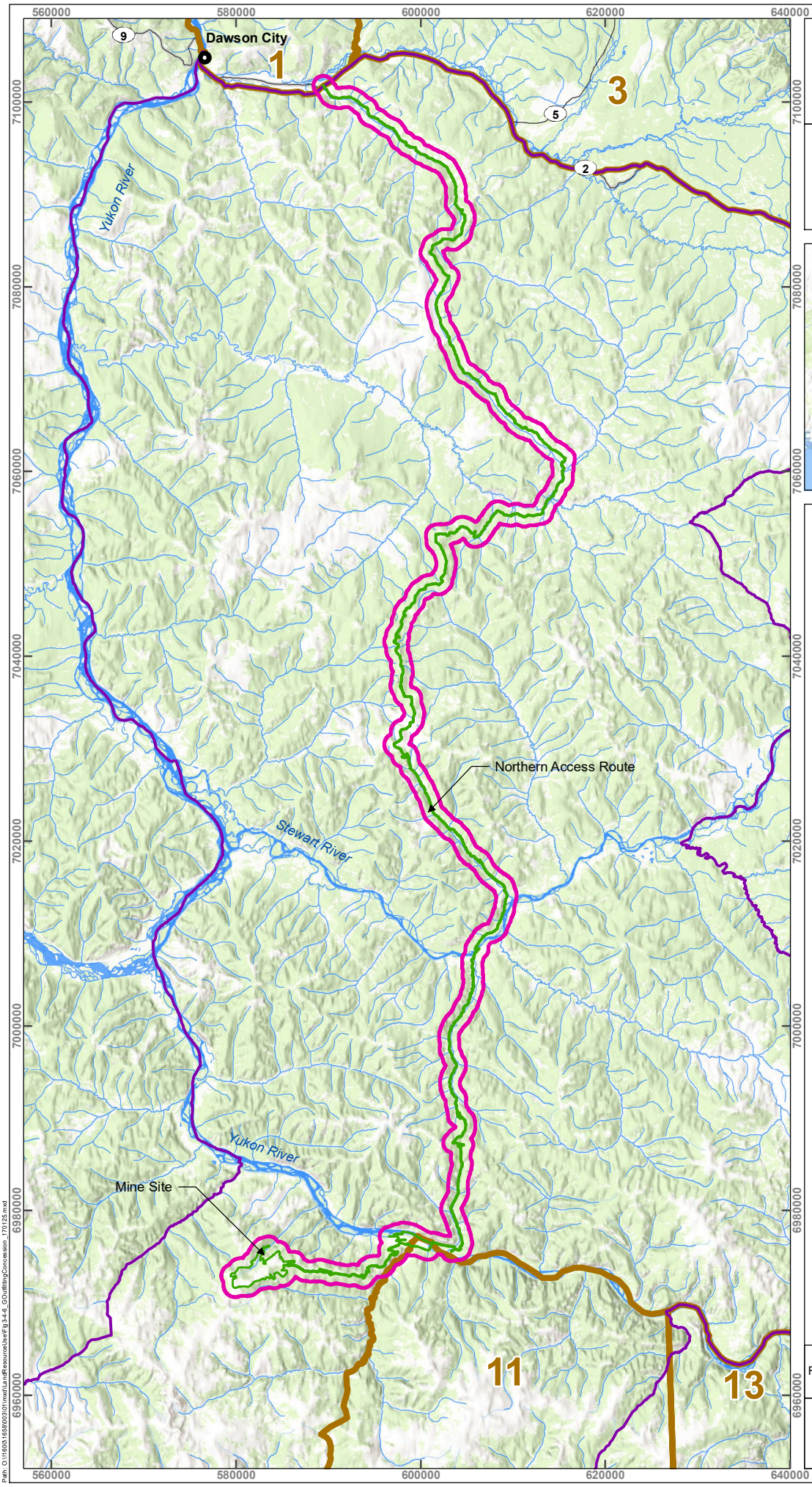


Figure 3.4-5 Large Game Species Taken in Game Management Areas 3 and 5; 2005 to 2015

3.4.1.5 Guide Outfitting

Enviroment Yukon defines Outfitter Concessions as: "…legal boundaries that define an area where the holder of the concession has the exclusive right to outfit non-residents for the purpose of hunting big game animals (excepting special guiding licenses). If a non-resident wishes to hunt in the Yukon they must do so accompanied by a Yukon resident – either a private individual who does this for free, or a commercial operator who does this as a business (an outfitter)" (YG 2016i).

There is no guide outfitting concession within the LAA, with the exception of a small area at the Yukon River. The LAA overlaps with guide outfitter concession area ID 11 at the barge crossing of the Yukon River and the winter ice road between the Yukon River and Coffee Creek **(Figure 3.4-6**).



COFFEE GOLD MINE

Game Outfitter Concession Areas

Legend

- City/Town
- Highway
- Watercourse
- Project Footprint
- Local Assessment Area
- Non-Traditional Land and Resource Use Regional Assessment Area
- Outfitting Concession

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Outfitting data from Envrionment Yukon 2016.

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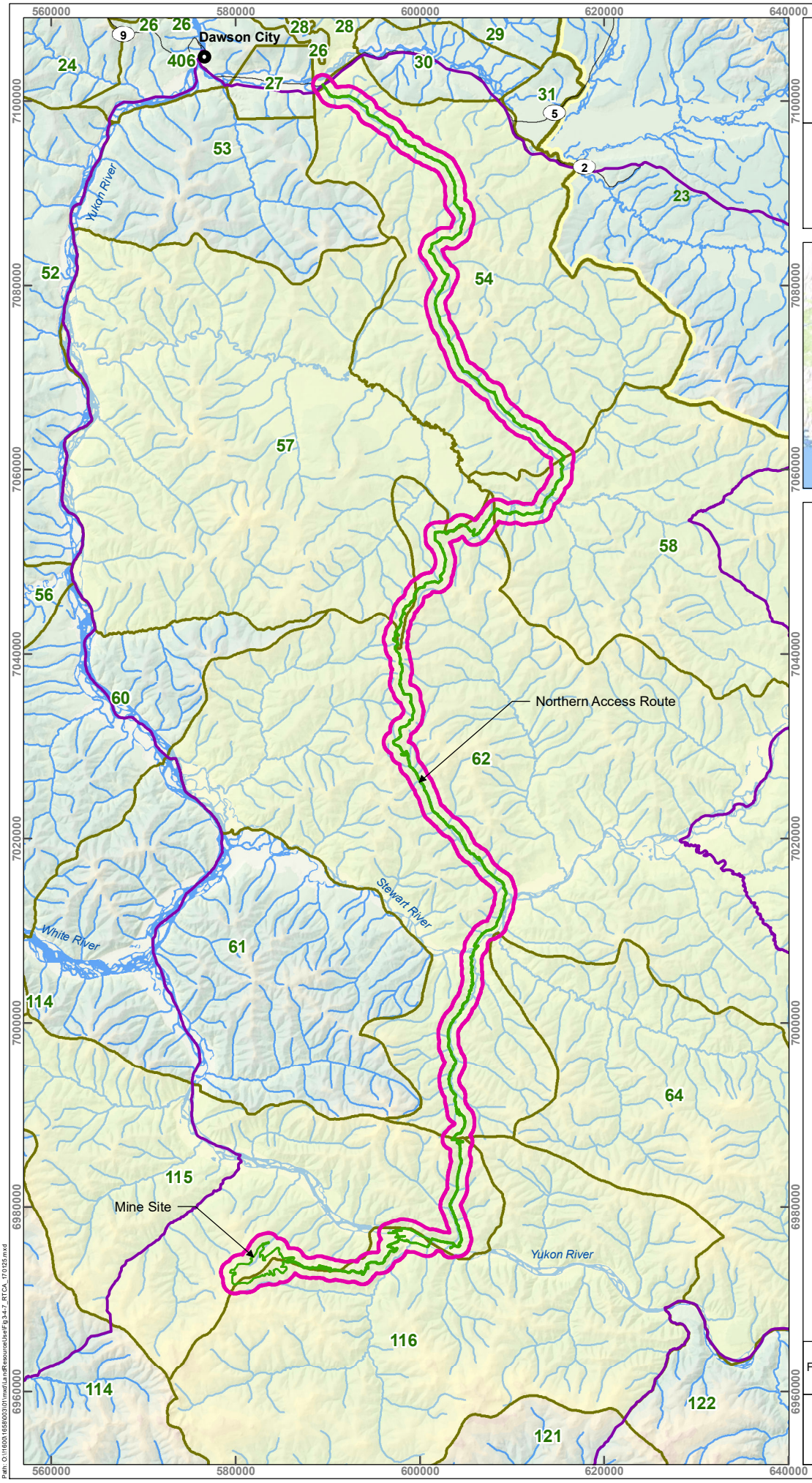
3.4.1.6 Trapping

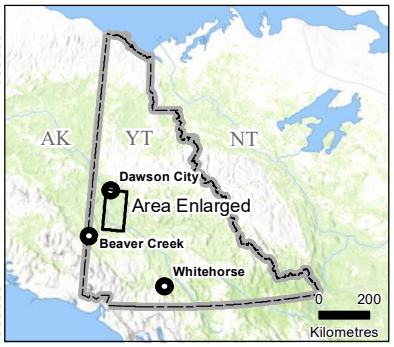
Environment Yukon defines Registered Trapping Concessions (RTCs) as: “legal boundaries that define an area where the holder of the concession has the exclusive right to trap furbearing animals” (Environment Yukon 2016) Seven RTCs overlap the LAA, specifically RTC 28, 54, 57, 58, 62, 115, and 116 (**Figure 3.4-7**).

Primary data collection indicated traplines provide income from furs, tourism, and meat. Some trapline holders indicated the trapline was their main source of income (Interview 22, Personal Communication, 2016). Traplines are held by families for several decades, and provide a means to teach inter-generational values (Interview 22, Personal Communications 2016, Interview 14, Personal Communication, 2016). While trapline harvest varies seasonally, harvest of furbearers can be in the order of 40 to 120 Marten per season (Interview 22, Personal Communication, 2016).



COFFEE GOLD MINE

Registered Trapline Concession Areas



Legend

- City/Town
- Highway
- Watercourse
- Project Footprint
- Local Assessment Area
- Non-Traditional Land and Resource Use Regional Assessment Area
- Single Registered Trapping Concession (shaded signifies overlap with project footprint)
- Group Registered Trapping Concession

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Trapping data from Environment Yukon 2016.

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Figure 3.4-7	Date: Mar 22, 2017	Drawn by: JS	Reviewed: DP

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3.4.1.7 Subsistence Harvesting

Subsistence harvesting consists of non-commercial harvesting of wildlife, fish, and edible plants and berries. Non-commercial wildlife harvesting regulated through the GMAs is discussed in **Section 3.4.1.4**. Subsistence harvesting as a current traditional land use is discussed in **Section 3.4.2.**

Hunting

The small game species currently listed in Environment Yukon's Regulation Summary for Yukon Hunting are: Snowshoe Hares, Arctic Ground Squirrels, and Porcupines. Game birds include: Spruce/Ruffed Grouse, Dusky (Blue) Grouse, Sharp-tailed Grouse, and Ptarmigans.

In Yukon, a valid Yukon hunting licence, and a federal Migratory Game Bird Hunting Permit with a Canadian Wildlife Habitat Conservation Stamp are required to hunt migratory game birds including Ducks, Geese, Rails, Coots, Sandhill Cranes, and Snipe.

Fishing

"Chum Salmon feeds lots of people in this area" (Interview 11, Personal Communication, 2016). Fishing takes place at Coffee Creek and Ballarat Creek. Species include Whitefish, Grayling, Pike, and Salmon. People fish for Salmon in eddies near the mouth of Ballarat Creek. Salmon that are fished and smoked are sent to family members far away (Interview 14, Personal Communication, 2016). A full description of the existing conditions for fish and fish habitat is included in the Fish and Fish Habitat Report (**Appendix 14-B**).

In Yukon, anglers must have a valid angling licence to fish, an additional sport fishing licence for means other than angling, and a Yukon Salmon Conservation Catch Care to fish for Salmon. Fishing regulations, including catch limits, are laid out in the Yukon Fishing Regulations Summary annually (YG 2016c).

Harvesting of Edible Plants and Berries

Morel mushrooms "tend to "fruit" in abundance in burned areas of coniferous forests in the spring following a summer fire" (YG 2016j) and are harvested commercially or recreationally. Significant wildfire disturbance occurred in 2004 (FRMP 2013) in close proximity to the LAA, indicating a potential for future wildfires that would subsequently support morel harvesting in close proximity. Primary data indicate berry picking by trapline holders (Interview 14, Personal Communication, 2016, Interview 22, Personal Communication, 2016). A full description of vegetation in the LAA and RAA is provided in **Appendix 15-B Vegetation Valued Component Assessment**.

3.4.1.8 Parks and Protected Areas

The YG can protect areas of natural and cultural importance through several legislative processes. Special Management Areas have been identified through land claims processes, subsequently

designated as Territorial Park, Habitat Protection Area, National Park, or National Wildlife Area. In addition, the YG can establish Territorial Parks through the *Parks and Land Certainty Act,* Habitat Protection Areas through the *Wildlife Act*, RSY 2002, c.229, and Historic Sites through the *Historic Resources Act*, RSY 2002, c. 109. Territorial Parks can be designated and managed as Ecological Reserves, Wilderness Preserve, Natural Environment Park, or Recreation Park. Other government levels and First Nations can also protect areas under their respective laws (YG 2016d).

There are no Territorial Parks within the RAA for the non-traditional land and resource use subcomponent. The closest Territorial Park to the RAA is Tombstone Park, to the north of Dawson (**Figure 1.3-1**)

Canadian Heritage Rivers are a part of a national program to recognize rivers for their natural, recreational, or cultural significance, and are managed by various agencies together. Outside of the RAA, Thirty Mile (Yukon River) is designated a heritage river, upstream of its junction with the Teslin River (Canadian Heritage Rivers System 2016).

3.4.1.9 Mineral Resource Developments

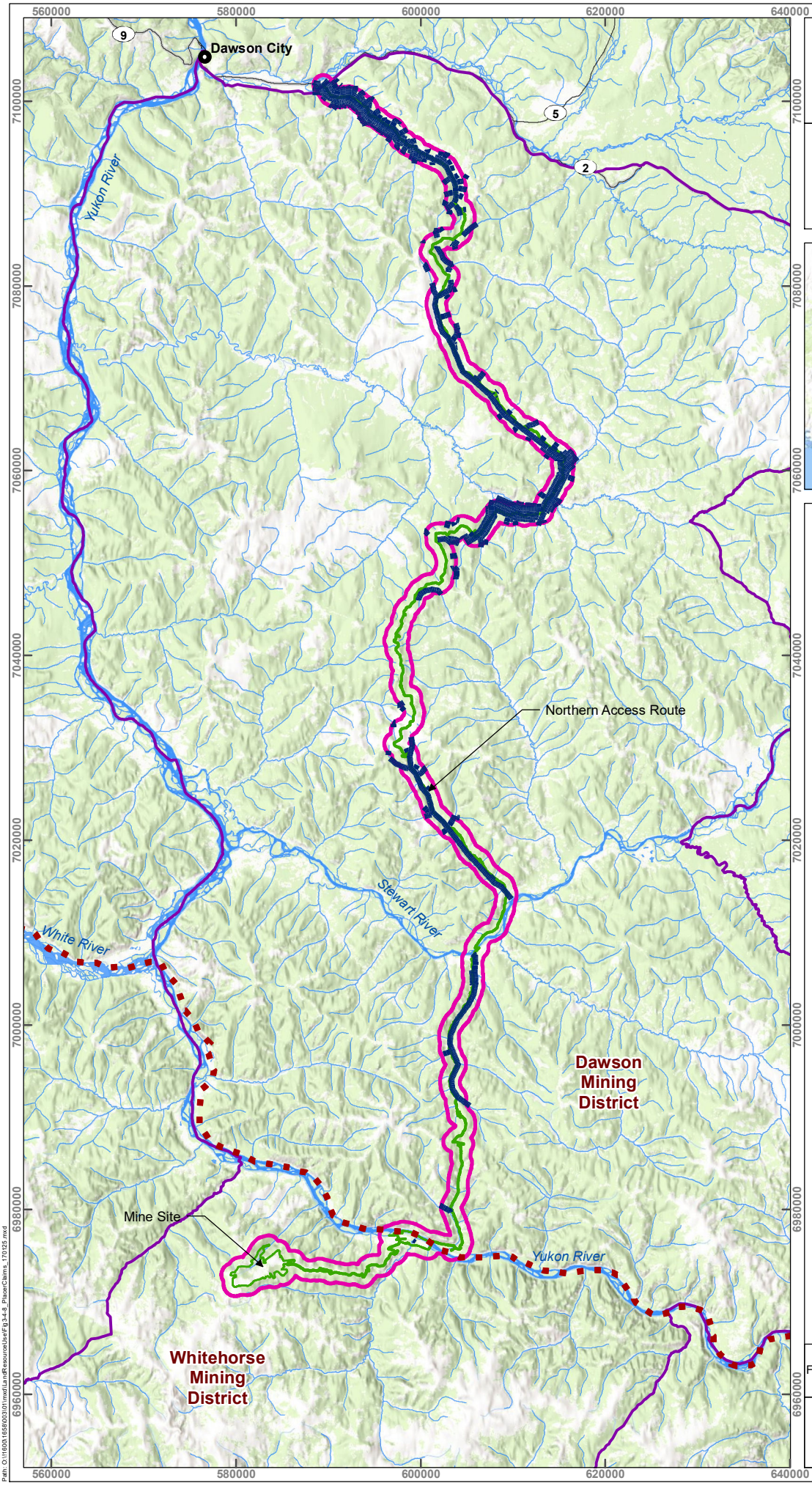
Yukon hosts deposits of copper, lead, tungsten, zinc, silver, and iron ore. There are also significant hard rock and placer gold deposits and important occurrences of asbestos, barite, and coal (YG 2016k). The NAR and Mine Site fall entirely within the Dawson Mining District. Within 1 km of the Project footprint there are currently 34 hard rock claimants (quartz) and 130 placer mine claimants.

Royalties are levied by the YG under both the *Quartz Mining Act* and the *Placer Mining Act*, and are paid to the YG. It has been noted that “significant results from current mining exploration in the region indicate a high potential for economic benefits and impacts on the Klondike” (KDO 2011c).

Placer Mining

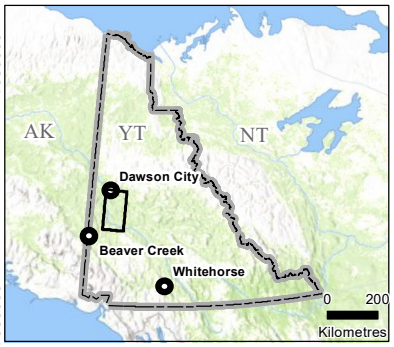
Placer mining is a specific technique in which gold is recovered from stream bed gravel. Placer deposits occur across Yukon; however, most are typically found around Dawson because of its unglaciated properties, which is favourable for placer deposits (YG 2015k).

Placer mining activity is focused in the northern portion of the RAA near Dawson, although it has also taken place throughout the LAA. Prospecting leases with applications for claims are situated along Coffee and Ballarat Creeks with the LAA near the Yukon River (**Figure 3.4-8**).



COFFEE GOLD MINE

Placer Mining Claims



Legend

- City/Town
- Highway
- Watercourse
- Project Footprint
- Local Assessment Area
- Non-Traditional Land and Resource Use Regional Assessment Area
- Mining Districts
- Placer Claim within 1km of the Project Footprint

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Placer claims from Geomatics Yukon 2016.

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Quartz Mining

Within Yukon, Minto is the only operating hard rock mine (copper, gold, silver). Located within the current traditional land and resource use RAA, the Bellekeno mine has suspended operation, Casino proposed mine is under assessment, Dublin Gulch/Eagle mine has been permitted and is undertaking an updated feasibility study, and the remainder of mining licences are for exploration (**Figure 3.4-9**; **Table 3.4-4**) (Yukon Geological Survey 2015). Within the LAA, there are four mining licences in the Dawson District (**Table 3.4-5)**.

Table 3.4-4 Quartz Mining Licences within the Regional Assessment Area for Current Traditional Land and Resource Use

Project	QML Number	Class	District	Ore Deposit	Method	Status*	First Nation Territories	Expiry
Base Metal	LQ00420	3	Mayo	Zinc, Lead	N/A	Exploration	FNNND, SFN	09/16/2019
Bellekeno	LQ00240	3	Mayo	Silver	Open Pit	Suspended Operation	FNNND	06/16/2018
Bettey-Hayes	LQ00423	3	Whitehorse	Gold	N/A	Exploration	TH, SFN	11/12/2019
Big Creek	LQ00386	3	Whitehorse	N/A	N/A	Exploration	SFN	08/21/2017
Blende	LQ00338	3	Mayo	Zinc, Lead, Silver	N/A	Exploration	FNNND	03/31/2017
Brewery Creek	LQ00364	4	Whitehorse	Gold	Open Pit	Care and Maintenance	TH, FNNND	12/31/2021
Burwash	LQ00259	3	Whitehorse	Nickel	N/A	Exploration	WRFN	05/14/2017
Canadian Creek	LQ00320	3	Whitehorse	Gold	N/A	Exploration	TH, SFN, WRFN	07/10/2021
Carmacks Copper	QML0007	5	Whitehorse	Copper, Gold and Silver	Open Pit	Active Mining	SFN	04/01/2034
Carmacks Copper	LQ00427	3	Whitehorse	Copper	N/A	Exploration	SFN	05/19/2020
Casino	LQ00414	3	Whitehorse	Copper, Gold, Molybdenum, Silver	Open Pit	Assessment & Permitting	TH, SFN, WRFN	03/18/2019
CD	LQ00436	3	Whitehorse	Copper	N/A	Exploration	SFN, LSCFN	02/22/2021
Clear Creek	LQ00337	3	Dawson	Gold	N/A	Exploration	TH, FNNND	06/27/2017
Clear Lake	LQ00263	3	Whitehorse	Zinc, Lead, Silver	N/A	Exploration	SFN	06/21/2018
Coffee Creek	LQ00312	4	Whitehorse	Gold	N/A	Exploration	TH, SFN, WRFN	07/11/2021
Connaught	LQ00410	3	Dawson	Silver	N/A	Exploration	TH	10/30/2018
Crag	LQ00314	3	Mayo	Gold	N/A	Exploration	FNNND	05/26/2021
Dime	LQ00335	3	Dawson	Gold	N/A	Exploration	TH	05/13/2017
Dominion	LQ00345	3	Dawson	Gold	N/A	Exploration	TH, FNNND	06/17/2017
Dublin Gulch/Eagle	LQ00303	3	Mayo	Gold	Open Pit	Assessment and Permitting	FNNND	05/10/2021
East Rackla River	LQ00361	3	Mayo	Gold	N/A	Exploration	FNNND	04/30/2017

Project	QML Number	Class	District	Ore Deposit	Method	Status*	First Nation Territories	Expiry
Einarson Lake	LQ00363	3	Mayo	Gold	N/A	Exploration	FNNND	05/13/2017
Eureka Creek	LQ00435	3	Dawson	Gold	N/A	Exploration	TH, FNNND	04/30/2021
Goz Creek	LQ00227	3	Mayo	Zinc	N/A	Exploration	FNNND	05/05/2017
Henderson	LQ00377	3	Dawson	Gold	N/A	Exploration	TH	07/19/2017
Inca	LQ00362	3	Mayo	Copper, Molybdenum, Silver	N/A	Exploration	FNNND	05/03/2017
J.A.E.	LQ00245	3	Dawson	Gold	N/A	Exploration	TH, FNNND	08/19/2017
Klaza	LQ00434	3	Whitehorse	Gold	N/A	Exploration	SFN	12/05/2020
Keg	LQ00318	3	Whitehorse	Silver	N/A	Exploration	SFN	06/14/2021
Keno Lightning	LQ00220	3	Mayo	Silver	N/A	Exploration	FNNND	09/18/2017
King Solomon's Dome	LQ00365	3	Dawson	Gold	N/A	Exploration	TH, FNNND	06/11/2017
Lonestar	LQ00430	3	Dawson	Gold	N/A	Exploration	TH, FNNND	07/08/2020
Loonie	LQ00393	3	Dawson	Lead and Silver	N/A	Exploration	TH	07/15/2018
Mactung	LQ00253	4	Mayo	Tungsten	Open Pit	Care & Maintenance	FNNND	12/20/2018
Marge	LQ00222	3	Mayo	Gold	N/A	Exploration	FNNND	10/30/2017
Mariposa	LQ00368	3	Dawson	Gold	N/A	Exploration	TH, SFN	07/15/2017
Mahtin	LQ00378	3	Mayo	Gold	N/A	Exploration	FNNND	03/14/2018
Meloy	LQ00445	3	Whitehorse	Tungsten	N/A	Exploration	WRFN	07/13/2021
Michelle	LQ00230	3	Mayo	Silver	N/A	Exploration	TH, FNNND	03/02/20018
Minto	-	-	Whitehorse	Copper	Open Pit	Active Mining	SFN	-
Money	LQ00351	3	Dawson	Gold	N/A	Exploration	TH	07/12/2017
Mount Hinton	LQ00242	3	Mayo	Silver	N/A	Exploration	FNNND	08/18/2017
Near Keno	LQ00409	3	Mayo	Silver	N/A	Exploration	FNNND	10/13/2018
North Rackla and Mount Good	LQ00419	3	Mayo	Gold	N/A	Exploration	FNNND	07/19/2019

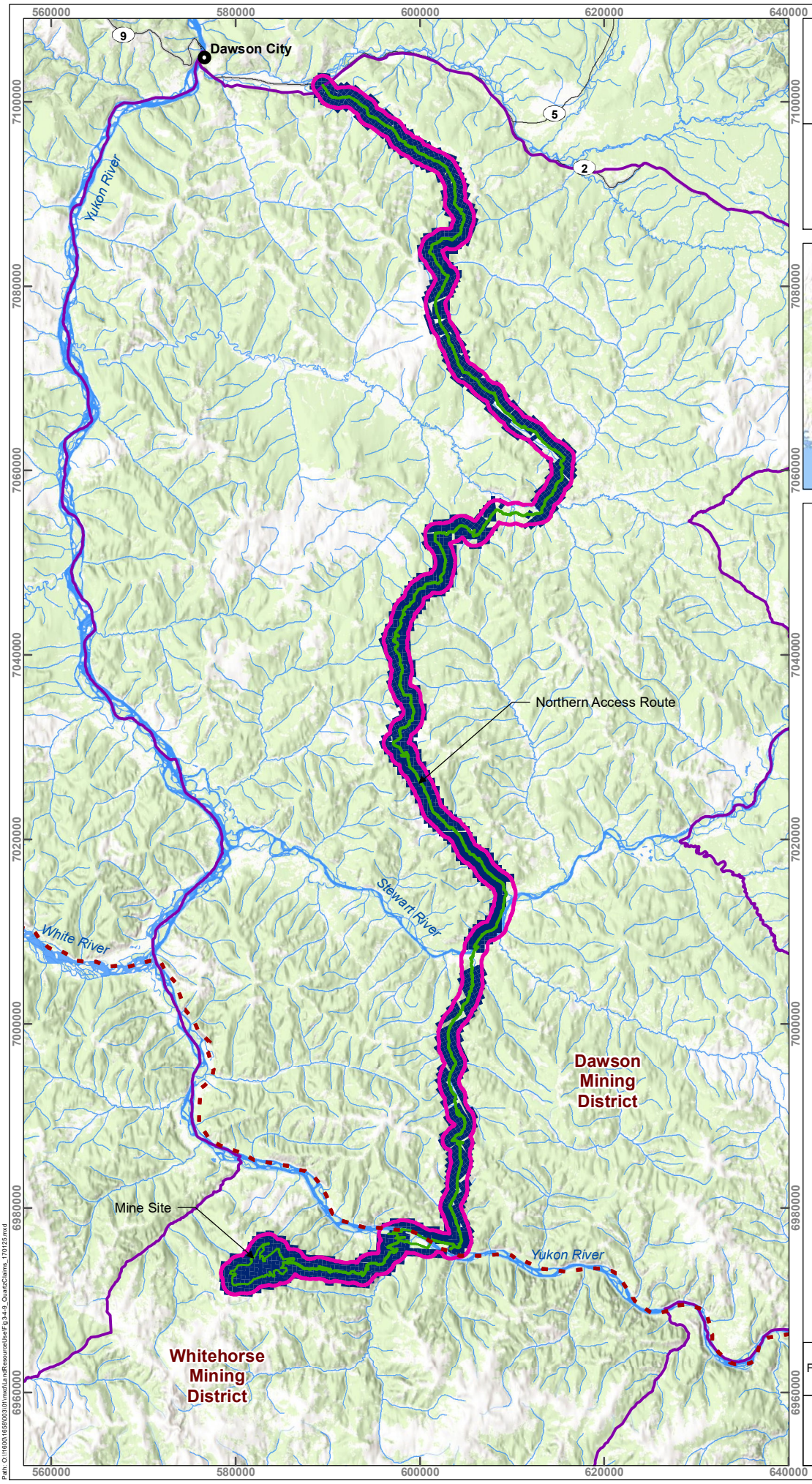
Project	QML Number	Class	District	Ore Deposit	Method	Status*	First Nation Territories	Expiry
OOO	LQ00450	3	Whitehorse	Gold	N/A	Exploration	SFN	07/13/2021
Plateau	LQ0048	3	Mayo	Gold	N/A	Exploration	FNNND, SFN	06/22/2021
QV Property	LQ00360	3	Dawson	Gold	N/A	Exploration	TH, SFN	07/10/2017
Rau	LQ00260	3	Mayo	Gold	N/A	Exploration	FNNND	08/13/2009
Red Mountain	LQ00442	3	Mayo	Gold	N/A	Exploration	FNNND	03/28/2021
Revenue	LQ00426	3	Whitehorse	Copper, Gold, Molybdenum	N/A	Exploration	SFN	06/28/2020
Rod	LQ00310	3	Mayo	Silver	N/A	Exploration	FNNND	05/14/2021
Rusty	LQ00375	3	Mayo	Silver	N/A	Exploration	FNNND	06/17/2017
Scheelite Dome	LQ00458	3	Mayo	Gold	N/A	Exploration	FNNND	09/12/2021
Seymour	LQ00417	3	Whitehorse	Gold	N/A	Exploration	SFN	06/03/2019
Sonora Gulch	LQ00321	3	Whitehorse	Copper, Gold, Molybdenum	N/A	Exploration	SFN	07/13/2021
Spy	LQ00441	3	Whitehorse	Platinum group metals, nickel and copper	N/A	Exploration	WRFN	07/04/2021
Squid East	LQ00391	3	Dawson	Gold	N/A	Exploration	TH	06/11/2019
STU	LQ00413	3	Whitehorse	Copper	N/A	Exploration	SFN	12/10/2018
Swede Johnson Creek	LQ00440	3	Whitehorse	Gold	N/A	Exploration	WRFN	06/29/2021
Tell	LQ00367	3	Mayo	Gold	N/A	Exploration	FNNND	05/30/2017
Tintina Hill	LQ00447	3	Whitehorse	Gold	N/A	Exploration	SFN	07/24/2021
Touleary	LQ00449	3	Dawson	Gold	N/A	Exploration	TH, SFN, WRFN	08/06/2026
Wellgreen	LQ00323	3	Whitehorse	Nickel	N/A	Exploration	WRFN	07/20/2021
White Gold	LQ00251	3	Dawson	Gold	N/A	Exploration	TH, SFN	04/06/2019
Wolf	LQ00389	3	Whitehorse	Gold	N/A	Exploration	WRFN	05/11/2018

Notes: QML – Quartz Mining Licence
Quartz mining licences in TH, FNNND, SFN, and WRFN Traditional Territories are included.
*__Source__: Yukon Geological Survey 2015
Source: YG 2012

Table 3.4-5 Quartz Mining Licences within the Local Assessment Area for Non traditional and Current Traditional Land and Resource Uses

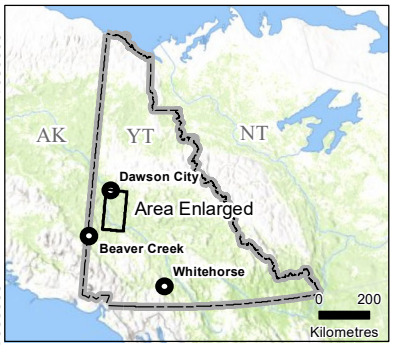
Project	QML Number	Class	District	Ore Deposit	Status	First Nation Territories	Expiry
Dominion	LQ00345	3	Dawson	Gold	Exploration	TH, FNNND	06/17/2017
Eureka Creek	LQ00435	3	Dawson	Gold	Exploration	TH, FNNND	04/30/2021
J.A.E.	LQ00245	3	Dawson	Gold	Exploration	TH, FNNND	08/19/2017
Touleary	LQ00449	3	Dawson	Gold	Exploration	TH, SFN, WRFN	08/06/2026

Note: QML - Quartz Mining Licence
Source: YG 2012



COFFEE GOLD MINE

Quartz Mining Claims



Legend

- City/Town
- Highway
- Watercourse
- Project Footprint
- Local Assessment Area
- Non-Traditional Land and Resource Use Regional Assessment Area
- Mining Districts
- Quartz Claim within 1km of the Project Footprint

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Quartz data from Geomatics Yukon 2016.

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Figure 3.4-9	Date: Mar 22, 2017	Drawn by: JS	Reviewed: DP

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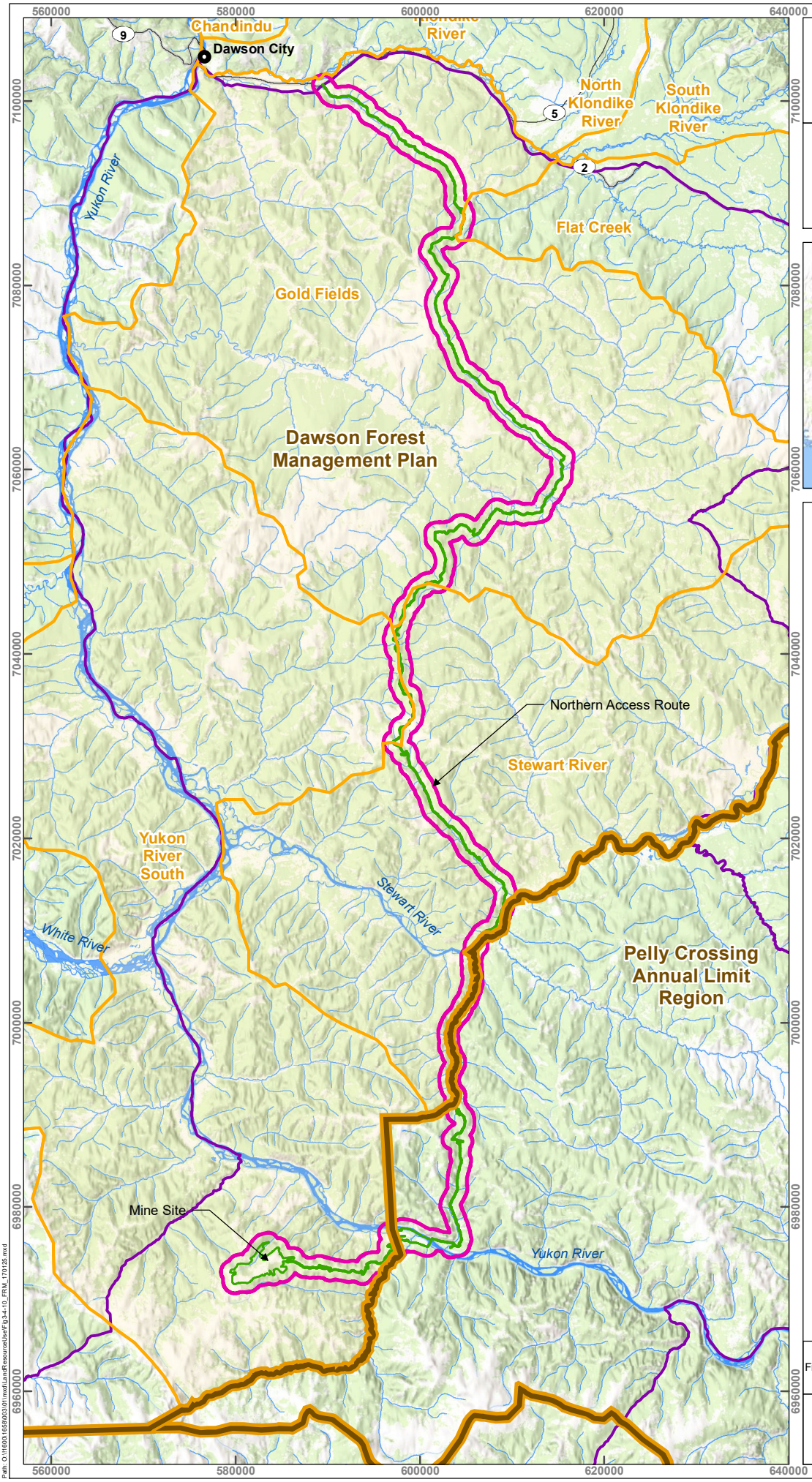
3.4.1.10 Forest Resources

Approximately 57 percent (%) of Yukon is covered by the boreal forest, of which 81,000 square kilometres (km^2) has tree cover that can support timber harvesting. White spruce and lodgepole pine dominate commercial tree species (YG 2015a).

The YG manages forestry resources within the territory, establishing three levels of Forest Planning: Forest Resources Management Plans (FRMPs), Timber Harvest Plans, and Site Plans. These plans range from over-arching landscape plans (e.g., FRMP), regional development plans (Timber Harvest Plans), to site-specific management plans (Site Plans) (YG 2016l).

The YG also utilizes the *Forest Resources Act* to ensure responsible forestry management. The *Forest Resources Act* and associated regulations provide conditions for tenures, planning, and compliance, as well as enforcement (Invest Yukon n.d.). The province also follows strict Annual Allowable Cut and Annual Limit zones that dictate the maximum harvest volume for a given time period (Invest Yukon n.d.).

The Project is located within the forest planning region of the Dawson FRMP and the Pelly Crossing Annual Limit Region (**Figure 3.4-10**). The Dawson FRMP is a joint effort between TH, the Dawson District Renewable Resource Council, and the YG. This region comprises approximately 34,000 km^2, and includes landscapes as forests, tundra, waterbodies, wetlands, exposed rock, and human developments (FRMP 2013). The timber and non-timber values that characterize this region are equally diverse. The forest productivity is classified as poor (46%), medium (28%), and good (6%). Good sites are usually located in riparian areas and south-facing upland slopes.



COFFEE GOLD MINE

Forest Resource Management

Legend

- City/Town
- Watercourse
- Highway
- Project Footprint
- Local Assessment Area
- Non-Traditional Land and Resource Use Regional Assessment Area
- Landscape Management Units (shaded signifies overlap with project footprint)
- Forest Resources Management

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Forest Resources data from Geomatics Yukon 2016.

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Figure 3.4-10	Date: Mar 22, 2017	Drawn by: JS	Reviewed: DP

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The FRMP region is divided into 17 landscape management units (LMUs) according to physiographic boundaries. A Forest Resource Use Designation is determined for each LMU, which is partly based on key concerns for the LMU. Draft strategic forest land use zones have been determined for the Dawson FRMP Land Use Management Zones as follows (Dawson FRMP 2013):

- Hinterland Forest Zone – not included in the timber supply analysis. Generally limited to associated resource developments
- Forest Resource Management Zone – location for most forest management activities
- Community Forest development Zone – municipal and other developed areas (not contributing to forest use).

The three FRMP LMUs that overlap with the Project are the Yukon River South, Stewart River, and Gold Fields; a summary of these landscape units is presented below in **Figure 3.4-10** and **Table 3.4-6.** Both the Yukon River South and the Stewart River were designated as Hinterland Forest Zones, and as having medium and low planning priority. However, the Gold Fields area has a high planning priority and is designated as Forest Resource Management Zone. This provides for a strategic overview including high conservation focus and general forest management activities with specific or special management guidelines for identified wildlife, ecosystem, habitat, and cultural-recreational values (FRMP 2013).

Table 3.4-6 Summary of Forest Resource Management Plan Landscape Units, Key Values, and Project Interaction

Landscape Unit Name	Key Values	Priority for Planning	Draft Strategic Forest Land Use Zone Designation	Interaction with the LAA
Yukon River South	• Yukon River corridor is a high-value heritage resource area • Visual quality • Significant wildfire disturbance in 2004 • Considerable placer claims and operations • Peregrine falcon and golden eagle key habitat on Yukon River • Barren-ground Caribou winter range • Raptor nest sites • High Moose density • Trapping concessions • Non-renewable resource activity.	• Medium	• Hinterland Forest Zone	• Overlaps with the Project claims block • Overlaps the NAR

Landscape Unit Name	Key Values	Priority for Planning	Draft Strategic Forest Land Use Zone Designation	Interaction with the LAA
Stewart River	• Significant wildfire disturbance in 2004 • Placer claims and operations, and considerable quartz claims • High Moose density • Whitehorse Dawson Overland Trail passes through the Landscape Unit • Historic resources related to early mining and the Overland Trail • TH settlement land parcels • Trapping concessions • Non-renewable resource activity.	• Low	• Hinterland Forest Zone	• Overlaps the NAR
Gold Fields	• Numerous heritage resources • Whitehorse Dawson Overland Trail passes through the Landscape Unit • Significant wildfire disturbance in 2004 • Numerous placer claims and operations; landscape has been significantly altered through industrial mining activity • Extensive quartz mining claims • Ridge Road Heritage Trail • Potentially high timber values in this area • Barren-ground Caribou winter range • Raptor nest sites • Key Beaver habitat (year-round) • Sharp-tailed Grouse key habitat (year-round) • Ungulate mineral licks • High Moose density • High visitor use area • Trapping concessions • Non-renewable resource activity.	• HIgh	• Forest Resource Management Zone	• Overlaps the NAR

Source: Adapted from the Dawson FRMP 2013

The Dawson FRMP also provides strategic directions for access and access management:

- Incorporate access management into development planning. The primary objective is to minimize creation of long-term access, and ensure that deactivation and decommissioning of access is addressed.
- When possible utilize existing access and integrate with other forest land users (i.e., mining sector, tourism).
- Consider available methods of access control and management to minimize indirect negative impacts (i.e., gates, natural barriers, hunting restrictions, and seasonal access).

Currently, Pelly Crossing has no FRMP and is considered an Annual Limit Region with as assigned annual cut limit, which is decided through the Forest Resources Regulation as follows:

- 5,000 cubic metres per year (m^3/year) coniferous trees
- 2,000 m^3/year deciduous trees.

3.4.1.11 Oil and Gas

While there is a potential for future production of oil and gas in Yukon, in northern Yukon and the southeast corner, there is no known potential in the the LAA or RAA..

3.4.1.12 Recreation and Tourism

Recreation in the LAA has been identified as an important economic opportunity for the community by the Klondike Development Organization, stating the "importance of quality and variety of recreation opportunities in attracting and retaining residents as a key part of community economic development" (KDO 2011c). The 2011 Klondike Development Organization Household Survey found recreation (18%) was the second priority change recommended to improve the Dawson area, after improved housing (KDO 2011c). A full description of current recreation and leisure activities in the LAA and RAA is provided in **Appendix 22-A Community Infrastructure and Services Valued Component Assessment**.

Tourism plays a key role in community economic development. Yukon Visitor Information Center Statistics indicate that visitors to Dawson vary by year. Between 2012 and 2013 the number of visitors in Dawson increased from 24,060 (2012) to 32,930 (2013). In 2014, the number of visitors decreased to 29,544, and in 2015 increased to 37,569. (Yukon Department of Tourism and Culture 2014).

The Tr'ondëk Hwëch'in Resource Report (2012a) discusses the potential for tourism and states that the tourism industry provides a natural fit to a modernized traditional economy. The range of tourism products include: eco-tourism, cultural tourism, health-oriented products, and recreational events: "it is good to show people the land and to tell our stories…" (TH 2012a). The report also identifies the need for careful attention paid to safety for both people and the land when considering any tourism development. "Elders feel that any new developments must be small-scale and leave a small footprint." (Tr'ondëk Hwëch'in 2012a).

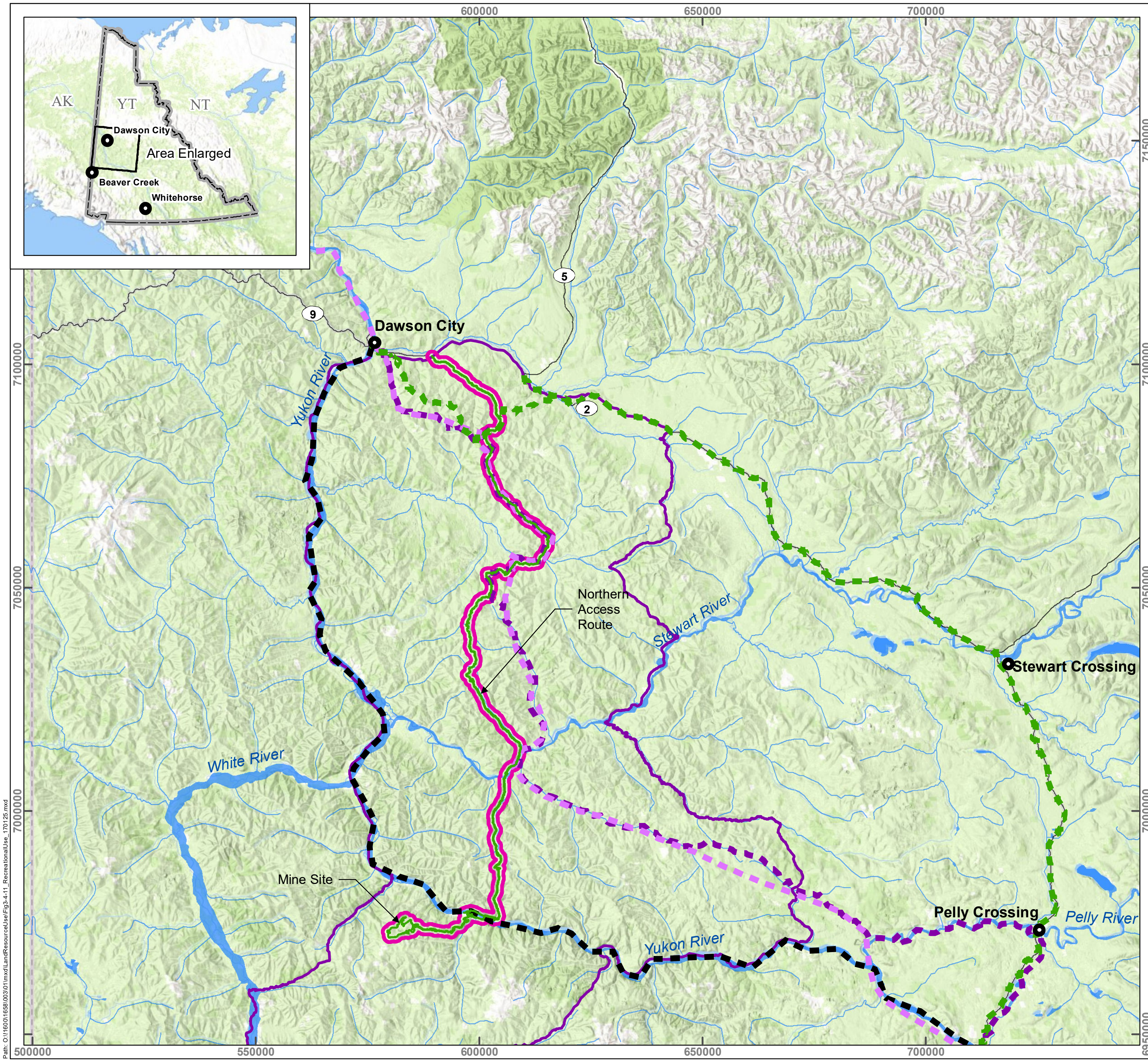
In addition to considering new tourist opportunities, annual races are held within the LAA and RAA, which attract local and international participants (**Figure 3.4-11**). These events include:

- Yukon River Quest (summer race): World's longest canoe/paddle race (716 km) from Whitehorse to Dawson, Yukon
- Yukon Quest Sled Dog (winter race): A 1,600-km sled-dog race from Fairbanks, Alaska to Whitehorse, Yukon
- Yukon Arctic Ultra (winter race): Takes place on the Quest Trail from Whitehorse to Dawson.

In addition, there are tourist attractions including the Trans Canada Trail following the Klondike Highway and commercial operators offering Yukon River canoe tours (YWA n.d.).

Primary data collection describes international participation at all events and tourist attractions; approximately 80% of Yukon Wide Adventure's clients are Europeans from Germany, Austria, and Switzerland, while tourists from Australia and Asia are increasing (Interview 29, Personal Communication, 2016). This is similar to the Yukon River Quest where 12 countries are represented in the 2016, including, Australia, Africa, and Europe (Interview 30, Personal Communication, 2016). Both the Yukon River Quest and Yukon Wide Adventures will be increasing outreach services and opportunities to overseas markets.

Currently, the Trans Canada trail is well used by local residents; however, primary data indicates the trail is potentially not well used outside of Dawson municipal limits as it crosses challenging terrain; people would use the Quest Trail, if they wanted to use a winter trail (Interview 25, Personal Communication, 2016).



COFFEE GOLD MINE

Recreational Trails in the Local Assessment Areas

Legend

- City/Town
- Watercourse
- Highway
- Project Footprint
- Local Assessment Area
- Non-Traditional Land and Resource Use Regional Assessment Area
- Trans Canada Trail
- Yukon Quest Trail
- Yukon River Quest Route
- Yukon Arctic Ultra Route

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Route data interpreted from descriptive or conceptual route maps.

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Figure 3.4-11	Date: Mar 22, 2017	Drawn by: JS	Reviewed: DP

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3.4.1.13 Access

Access to and within the RAA is by road, air, water, and non-road access with all-terrain vehicles (ATVs) and snowmobiles. Existing transportation for the RAA and LAA is described in the transportation section in the Community Services and Infrastructure Report (**Appendix 22-A**). In winter within the LAA, there is vehicular access on the existing road for approximately 15 km south from the Alaska Highway (maintained by YG), and snowmobile access south to the Mine Site, assuming crossing of the frozen Stewart and Yukon Rivers and suitable weather conditions. In summer, there is vehicular access on the existing road to within several kilometres of Stewart River, as well as Yukon River access by boat, from the north (Dawson) and from the east. During freeze / thaw periods, vehicular access is available on the existing road to Sulphur Creek on sections maintained by YG, and access on non-maintained roads is limited. No river access is available during this period, and snowmobiles and ATVs have limited access depending on specific weather conditions. There is air access to the Mine Site in all seasons.

3.4.2 CURRENT TRADITIONAL LAND AND RESOURCE USE

This section describes the existing conditions for the current traditional land and resource use subcomponent for TH, SFN, FNNND, and WRFN. For detailed information regarding these First Nations, please refer to **Appendix 18-A Socio-economic Baseline Report**. For each First Nation, the following information (as available) is provided:

- Habitation –
  - short-term habitation
  - long-term habitation
  - gathering places
- Transportation –
  - overland transportation
  - waterways
  - traditional methods of transportation
- Subsistence activities –
  - hunting
  - fishing
  - trapping
  - plant harvesting
- Cultural and spiritual values –
  - transmission of TK
  - connection with the land
- Environmental values.

The assessment incorporates information gathered through consultation with regulators, First Nations, stakeholders, and community members to inform the identification of issues and guide the assessment process (See **Section 3.0 Consultation**, **Table 3.2-1)**. This consultation and engagement process has included a TWG established with TH, government departments, community meetings, one-on-one and small group meetings, and ongoing communications such as print communication, newsletter, and website updates, including specific presentations and discussions regarding key themes of interest and exploration of candidate VCs to represent the themes. As described in **Section 3.0 Consultation** and **Appendix 3-A First Nation Consultation Records and Materials**, Goldcorp has also established an Exploration Cooperation Agreement with TH (May 2013), and a Communication and Cooperation Agreement with WRFN in June 2014. Further, Goldcorp has funded Project-specific TK and TU studies with WRFN and TH.

3.4.2.1 Tr'ondëk Hwëch'in Traditional Land and Resource Use

The existing condition of TH traditional land and resource use is described based on information that was available through publicly available sources, provided by TH, or consultation. This information reflects the inseparable nature of each First Nations culture**,** heritage and other traditional land and resource uses.

The traditional land and resource uses described for TH should not be considered as an exhaustive description, rather a description based on available and provided information.

Habitation

The TH have used their Traditional Territory for habitation-related purposes for thousands of years (Ecofor 2012). Coffee Creek was an important gathering place for Tr'ondëk Hwëch'in in the past (Yukon River CFA and TH 1997). Tr'ondëk Hwëch'in citizens continue to live on the land at different times of the year and in areas that overlap the LAA (Interview 14, Personal Communication, 2016, Interview 22, Personal Communication, 2016). There are cabins (i.e., long-term habitation) and known camps in close proximity to the LAA beside the Yukon River (Interview 14, Personal Communication, 2016; Interview 22, Personal Communication, 2016).

Transportation

Efficient transportation is an integral part of a functioning economy, including the TH traditional economy (TH 2012a). Historically, TH are known to have used the rivers, creeks, and overland routes across their Traditional Territory to travel in accordance with the season and conduct different subsistence activities (Dobrowolsky and Hammer 2001). The area along the Yukon River close to Coffee Creek area is valued by TH, in part because it contributes to an extensive traditional transportation network (TH 2012b).

Today, TH citizens tend to travel by motor vehicles, snow machines, and boats (Interview 22, Personal Communication, 2016; Interview 14, Personal Communication, 2016, Tr'ondëk Hwëch'in 2012a). Most contemporary traditional land and resource use tends to occur in accessible areas along roads and rivers (Tr'ondëk Hwëch'in 2012a). More specifically, river corridors, including the Yukon and Stewart, as well as traditional trails were identified as being of high value to TH, for transportation-related purposes (Tr'ondëk Hwëch'in 2012a). One TH citizen shared how in areas currently without roads, it is preferred to use boats in the summer to bring supplies and materials, as it is more economical than by snowmobile since you can bring more materials per trip (Interview 14, Personal Communication, 2016).

Subsistence Activities

The land and resources across TH's Traditional Territory have been providing for their subsistence needs for thousands of years (Ecofor 2012) through seasonal hunting, trapping, fishing, and plant gathering. In he summer and fall, people would work to gather and preserve food for the winter, including fish and berries (Dobrowolsky 2014).

Hunting, trapping, fishing, and plant gathering activities are described in more detail in the following sections.

Hunting

Moose are currently hunted by TH citizens in the Coffee Creek area (Interview 14, Personal Communication 2016). Moose are more than just a food source to TH; they are also used to provide traditional supplies, tools, and clothing. Being able to hunt Moose not only affects the traditional diet of TH citizens, it also affects their ability to maintain their traditional lifestyle, identity, and culture (TH 2012a).

Sheep are currently present in the Coffee Creek area, though the TH citizen who shared this observation noted that they do not hunt Sheep themselves (Interview 14, Personal Communication 2016). Both Grizzly and Black Bears are currently present in the Coffee Creek area, as well as Caribou (Interview 14, Personal Communication 2016).

Additional species which are currently hunted in the Coffee Creek area include small game (e.g., porcupine and Beaver) (TH 2012b). In a paper by Kristensen and Whalen (Kristensen and Whalen 2012 in TH 2012b) a list of currently hunted wildlife species in the Coffee Creek area included: Fortymile Woodland Caribou, Moose, Wolves, Bears, Thinhorn Sheep, and Ptarmigan (TH 2012b).

Trapping

Trapping is a TU activity that continues to be of importance to TH, who use traps and snares for trapping. The method of trapping used depends, in part, on personal preference as well as the type of trapping being conducted (Interview 22, Personal Communication, 2016).

Tr'ondëk Hwëch'in citizens may trap furbearers for subsistence and/or material-related purposes. Some furbearers such as Foxes, Otters, and Lynx were only eaten by TH people during times of hunger (Dawson Indian Band 1988). Though not all TH citizens who trap eat the meat from furbearers, many Elders still enjoy eating this traditional food today (Interview 22, Personal Communication, 2016).

Trapping season is influenced by warming weather conditions currently experienced in the north. One TH citizen notes that trapping is conducted from approximately November to January, depending on such factors as cold snaps and snow. An indicator used by trappers to demark the beginning of trapping season is freeze-up, as access is increased once freeze up occurs (Interview 22, Personal Communication, 2016). The quality of fur is related to the diet of the furbearer as well as how cold the winter weather is: the colder the winter, the better the fur (Interview 22, Personal Communication, 2016).

Though trapping may be conducted in the winter, trapping-related activities are conducted year-round by TH citizens. One trapping concession holder shared how in the summer they spend time cutting trails for trapping, monitoring conditions and spending time on the land as part of their trapping activities (Interview 14, Personal Communication, 2016).

Tr'ondëk Hwëch'in citizens are known to currently and historically use the Coffee Creek area for trapping (Interview 14, Personal Communication, 2016, Dobrowolsky 2014, TH 2012a). In a paper by Kristensen and Whalen (2012) a list of wildlife species that continue to be traditionally and currently used from the Coffee Creek area included the following species of interest to trappers: Lynx, Snowshoe Hares, Martens, Muskrats, and Rabbits (TH 2012b). Species currently trapped by TH citizens in the Coffee Creek area include Martens, Lynx, and Wolverines (Interview 14, Personal Communication, 2016).

Currently, TH citizens have RTCs that overlap with the LAA (including the access road). These citizens have shared that in addition to trapping-related value, their trapping concessions are of significant value to them because of the land, culture, and heritage that these areas represent (Interview 14, Personal Communication, 2016). Some of the species currently hunted by TH citizens include Martens (or Sables), Beavers, Lynx, Foxes, Wolves, and Weasels (Interview 22, Personal Communication, 2016).

Fishing

Fish and fishing have always been central components of TH culture and identity (Dawson Indian Band 1988). King (Chinook) Salmon and Dog (Chum) Salmon were recognized in the past as one of the most important and prized food resources of the Hän, though Grayling, Northern Pike and Burbot were also important (Mishler and Simeone 2004, Dobrowolsky and Hammer 2001, Dawson Indian Band 1988).

Coffee Creek is well known for being a historically important fishing location. Elders share that Coffee Creek is an important Salmon spawning area, and that in the past people were able to drive boats up and down the creek (TH 2012b). Tr'ondëk Hwëch'in people would travel to Coffee Creek to fish Chinook and

Chum Salmon, Whitefish, and Grayling (TH 2012b). The fish camp was historically located above the mouth of Coffee Creek (TH 2012b).

Salmon (both Chinook and Chum) remain a valuable resource to TH. Every summer TH families go to their family fishing location and work together to harvest Salmon. It is a busy time of year which citizens look forward to; though the current quality and quantity of Salmon is a concern of TH citizens (TH 2012b).

Tr'ondëk Hwëch'in citizens currently fish and have fish camps close to Coffee Creek and other sections of the Yukon River (Interview 22, Personal Communication, 2016, Interview 14, Personal Communication, 2016). Species fished by TH citizens in the Yukon River and waterways in the Coffee Creek area include Salmon, Whitefish, Grayling, and Pike (Interview 14, Personal Communication, 2016). One of the features in the Yukon River that makes the Coffee Creek an attractive area to fish are the eddies located in the area (Interview 14, Personal Communication, 2016).

Plant Gathering

Plants are currently used by TH citizens for subsistence, medicinal, and material-related purposes (Interview 14, Personal Communication, 2016, Interview 22, Personal Communication, 2016). Traditional medicines are currently used by TH citizens, and are preferred over western medicines by many Elders (TH 2012b).

Plants are an important part of the current TH traditional diet (Dobrowolsky and Hammer 2001). Edible plants harvested in the past, as well as present, from the Coffee Creek area include Blueberries, Kinnikinnick (Bearberries), Crowberries, and Labrador Tea (Kristensen and Whalen 2012 p.6, in TH 2012b). Additional types of berries identified by citizens as being currently picked in the Coffee Creek area include Blackcurrants, Raspberries, High-bush Cranberries, Lowbush Cranberries, and Strawberries (Interview 14, Personal Communication, 2016). TH citizens also report picking berries in the Solomon Dome area (Interview 22, Personal Communication, 2016).

Medicinal plants are also currently gathered by TH citizens in the Coffee Creek area (Interview 14, Personal Communication, 2016). This includes such medicinal plants as Caribou Moss (also known as Reindeer Lichen) (Interview 14, Personal Communication, 2016).

Cultural and Spiritual Values

The culture and spirituality of TH has been intrinsically connected to their Traditional Territory for thousands of years (Ecofor 2012). The Coffee Creek valley was suggested by TH to be considered by as a protected corridor, in part, because of the cultural value that it reflects (TH 2012b). This is demonstrated in a multitude of ways, including a TH traditional song about Coffee Creek (TH 2012b).

Coffee Creek continues to be of cultural and spiritual importance to TH, as it is known as a birth and burial place for many citizens. Several contributors to the *Coffee Creek Traditional Knowledge Survey* recounted the names of friends and family who are buried at Coffee Creek (TH 2012b).

Living and spending time on the land is a lifestyle choice that some TH citizens continue to choose today (Interview 14, Personal Communication, 2016). Spending time in a specific area over several years, and from generation to generation contributes to the significance that these areas represent from a cultural and spiritual perspective (Interview 14, Personal Communication, 2016). Traditional land and resource use is also important to the health and well-being of TH citizens. One TH citizen shared that being able to go out on the land, harvest traditional foods, practice all the knowledge and skills that his parents taught him, and share that knowledge with younger members of his family all contribute to the well-being of TH citizens (Interview 22, Personal Communication, 2016).

Coffee Creek and the surrounding area continue to be a place of cultural and spiritual importance to TH citizens. A TH citizen explained that their RTC[1] is an area that is sacred to them (Interview 14, Personal Communication, 2016). TH citizens shared how the practice of conducting TU activities fostered important time spent together as a family. Whether working together to process meat and materials from animals, sharing traditional knowledge with family members, or teaching children traditional skills and values out on the land, traditional land and resources are an integral current cultural value (Interview 14, Personal Communication, 2016, Interview 22, Personal Communication, 2016).

Environmental Values

Tr'ondëk Hwëch'in environmental values are intrinsically linked to their worldview and appreciation for the holistic, interconnected environment across their Traditional Territory's landscape.

Environmental integrity is very important to TH. One TH citizen notes that in the winter, when they go out on the land to trap, the land does not appear disturbed even though they are trapping in a historically disturbed placer mining area. They explain that the land is quiet and not disturbed (Interview 22, Personal Communication, 2016). One TH citizen shared that when the land is disturbed it affects the desirability to continue using that area (Interview 14, Personal Communication, 2016). Current anthropogenic activity on the land has been observed by TH citizens to be affecting the health of animals. This includes such observations as the noise from helicopters disturbing cow Moose with calves (TH 2012b).

The environmental health and abundance of fish and wildlife are important values of TH citizens. From the information shared by TH citizens involved with this study, animals were noted to be in good health and abundance. Further, TH citizens explained how they actively manage the land and resources in areas that they use (such as traplines) in accordance with traditional land management practices and

[1] TH citizens currently hold RTCs overlapping the LAA, used for both trapping and other purposes.

values taught to them by their parents and family members (Interview 22, Personal Communication, 2016). The management practices influence the number and species of animals harvested each year.

The integrity of inorganic environmental components is also valued by TH. One TH Elder shared that water is considered the most sacred of medicines, and that streams are not isolated but are a living body that cover the whole earth. This TH Elder shared that when they were younger they used to be able to stop and drink from any stream in the bush and now they can't. This is something that the next generation has lost, they shared (Interview 6, Personal Communication 2016).

As TH citizens are highly aware of the holistic nature of the environment and the complex relationships that characterize it, they value key habitat areas that support wildlife. For example, one TH citizen shared that they value Caribou Moss (also known as Reindeer Lichen) because it is a valuable food source for Caribou (Interview 14, Personal Communication, 2016). Other TH citizens shared that Willow is valued because it is an important food source for Moose (TH 2012b).

As explained in Section 9 of **Appendix 18-A Socio-economic Baseline Report**, TH citizens do not think of the resources on their Traditional Territory in terms of their monetary value; however, TH citizens do view the animals on their territory as an economic resource that supports their traditional lifestyle and economy (TH 2012b). Harvesting activities have been identified as important components of the "modernized traditional economy" (TH 2012). In the past, Caribou would cross the Yukon River in the area around Coffee Creek (TH 2012b).

Tr'ondëk Hwëch'in claim that the fisheries, wildlife, and vegetation resources of Coffee Creek are of environmental value to them (TH 2012b).

3.4.2.2 White River First Nation Traditional Land and Resource Use

Habitation

The mouth of Coffee Creek is an important habitation area where WRFN ancestors are known to have lived and gathered (Bates et al. 2014, Easton et al. 2013, TH 2012b, Yukon River CFA and TH 1997), including both permanent dwelling sites and temporary camping locations (Bates et al. 2014). Coffee Creek was an important place where people would come to trade (TH 2012b). One of the busiest times of year at Coffee Creek was in the late summer when people would come to the area to fish Salmon (Easton et al. 2013).

Multiple influencing factors have contributed to Coffee Creek being used less as a current habitation site and/or gathering, including the construction of the Alaska Highway in 1942 and the reduced use of steamboats on the Yukon River (Bates et al. 2014). White River First Nation members explicitly expressed that Coffee Creek's current level of use as a habitation and/or gathering place does not reflect

the value of this area. Coffee Creek remains as an important area for its habitation value, and is an area that WRFN members have expressed interest in potentially using in the future (Bates et al. 2014).

Transportation

The network of overland and water routes that connect Coffee Creek to other settlements, gathering areas, use areas, and/or important sites, is one of the features that contributed to its importance as a habitation and gathering place for First Nations people (Bates et al. 2014, Easton et al. 2013). "There was trails everywhere. Just everywhere. The far end connects to mountain trail or a water route, or something … because all trails are connected. W04 18-Aug-2014" (Bates et al. 2014). One Elder shared that "…the trail continued from Coffee Creek all the way down to Dawson area would up to Coffee Creek in the wintertime…" (TH 2012). In addition to overland routes, WRFN people were known to travel by canoe to and from Coffee Creek (Easton et al. 2013). Traditional trails and travel routes contribute to WRFN's current collective understanding of their sense of place (YESAB 2012).

Several WRFN members who contributed to the 2014 White River First Nation Knowledge and Use Study indicated that several overland trails connected Coffee Creek to other important places across the landscape. An Elder shared:

> we live around Snag in spring and we travel through the trail that goes all the way down to Yukon River. We travel through that river and into that Coffee Creek. And uh, so it's as I was growing up I'm always walking and hillsides, over the mountains, over the hill and across the river, 'cross the creek, everywhere, just used to be like that, eh… (TTH 2012b).

As WRFN were historically nomadic people, these transportation linkages played a central role in facilitating the seasonal round, as well as other cultural and spiritual activities:

> …Oh, yeah. My dad... The people there, yeah, they walked all over. They traveled. If they wanted to see anything they had their mind set on, they'd just go traveling. W04 19-Aug-2014… (Bates et al. 2014).

The Yukon River was an important component of water routes mapped by WRFN members (Bates et al. 2014). These water routes were important travel corridors, connecting places across the landscape:

> … In my dad's days, he makes a raft all the time … Oh, out of the biggest logs they can find, and then dry wood. And like I remember him telling me stories. From Snag he used to float down to Dawson City. W03 19-Aug-2014 (Bates et al. 2014).

Though the overland and water routes around the Coffee Creek area are not currently used as readily as they were in the past, WRFN members identified that they remain of "crucial cultural importance to WRFN members" because of the access that they facilitate to important cultural sites and to the connection that they promote between WRFN members and the environment; travelling by traditional methods across the

landscape allows members to relate to the environment in a way that is not possible by car or plane (Bates et al. 2014). In summary, the Coffee Creek area's current transportation-related value is intrinsically linked to the cultural and heritage values that it also represents (Bates et al. 2014).

Currently, the most common mode of transportation used by WRFN members to access the land and resources for traditional purposes is personal vehicles (e.g., truck or car). The second most common mode of transport was a combination of personal vehicle and walking to site. Thirdly, WFRN members report that a combination of cars, trucks, vans, other motorized vehicles (e.g. ATVs and snowmobiles), and watercraft (e.g., canoes and motorboats) were used. The WRFN 'Band Van' was also identified as a mode of transportation used by members to provide transport (Calliou Group 2012b).

A Community Harvest Study conducted in 2012, reported that the majority of subsistence harvesting activities occurred in accessible areas in close proximity (35 km) of Beaver Creek, such as along the Alaska Highway. Subsistence harvesting activities also occurred in areas further away from Beaver Creek, however. (Calliou Group 2012b).

Subsistence Activities

Subsistence harvesting continues to be an important value of WRFN today, as it was in the past, and contributes to their current collective understanding of their sense of place (YESAB 2012). A 2012 Community Harvest Study also found that WRFN continue to exercise their Section 35[2] rights to conduct such subsistence harvesting activities as hunting, trapping, fishing, and gathering (Calliou Group 2012b). Further, participants in the 2014 White River First Nation Knowledge and Use Study shared subsistence harvesting is integral to food security, as well as cultural continuity and identity (Bates et al. 2014). As stated by a WRFN citizen, "I am not trying to stop progress or anything, but I am more protective about the animals and stuff. If the Moose all died off, what am I going to survive on? That is my main meal." (Campbell 2012).

The level of subsistence harvesting conducted by WRFN members varies by season. The spring (31%) and summer (34%) are the busiest seasons for WRFN, as this is a time when fishing, gathering, and hunting are conducted. The fall is also a busy season for WRFN, with 27% of all harvesting activities being conducted during this time. Winter is the quietest time of year for WRFN, with members primarily focused on trapping during this time (Calliou Group 2012b).

Hunting

White River First Nation members hunt for both subsistence and cultural purposes, and hunting has been identified as "integral to WRFN food security and cultural continuity" (Bates et al. 2014). In 2012 Community Harvest Studies it was reported that approximately 90% of study participants hunted over the

[2] Section 35 of the *Constitution Act, 1982* recognizes and affirms Aboriginal rights by the Canadian Government; however the Act does not define what these rights are.

course of the 13-month study (Calliou Group 2012b). Species currently hunted by WRFN members include (but are not limited to): Beavers, Moose, Porcupines, Rabbits, Ducks, Geese, Grouse, Ptarmigans, Thinhorn Sheep, and Wolves. Of these species Grouse (34%), Ducks (31%) and Moose (19%) were the three most commonly hunted species by WRFN members, though Moose (85%) were the most pursued species (Calliou Group 2012b).

Moose are a species of particular importance to WRFN members, though Beavers, Muskrats, Geese, Ducks, Caribou, and Bears are further examples of species that have historic and current importance. Moose are used by WRFN not only as a food resource, but their hides are also used for a variety of purposes, including clothing and drums. Historically, Moose hides were used by WRFN people to make boats (Bates et al. 2014).

Due to conservation considerations, some species such as Caribou are currently voluntarily not hunted by WRFN members (Bates et al. 2014, Calliou Group 2012b). As the abundance and conservation considerations of certain species changes, WRFN members adapt by adjusting their practices. For example, as Caribou have declined, members have increased their focus on hunting Moose (Bates et al. 2014):

> …Well, we don't [hunt Caribou], just because we protected our Shoshone Caribou herd, and the numbers are so low … For us, it's more the moose now. … [In the past] we needed Caribou for warmth and for food and everything that it offered. So, certainly warmer than, like, a moose hide. So, because now the whole culture has changed. They just don't utilize it as much. But the main reason for us is, like, the Shoshone Caribou herd is protected. … like Mom said in her generation, she lost the taste for it. ... She lost the taste for it. So now it's moose, moose, moose. W08 21-Aug-2014 (Bates et al. 2014 p.41).

> …One of the things that stuck with me all the time is that when I was — he [his father] always told me, he says, "You got a big store out there free." He says, "You want to eat Grayling, go fish it." He says, "Catch it and throw it in the frying pan. You want fresh chicken, shoot it." W03 19-Aug-2014" (Bates et al. 2014, p. 39).

Some of these listed species are eaten, while others are used for different purposes. For example, WRFN members note that Bear is not eaten due to cultural protocols (Bates et al. 2014).

Locations

White River First Nation members report hunting in a variety of locations, though the majority of hunting currently occurs within an area 35 km north and 25 km south of Beaver Creek and concentrated along the Alaska Highway (Calliou Group 2012b). Though this 2012 Community Harvest Study found that the majority of current hunting activities occur around Beaver Creek it has been identified that the Coffee Creek area was an area that was historically used by WRFN to hunt Moose and Caribou (Bates et al. 2014). An Elder shared that when she spent time in Coffee Creek with her family they would hunt for Gophers, Beavers, Muskrats, Rabbits, and Grouse (TH 2012b). Another respondent shared that people hunted Moose around Coffee Creek and Caribou in the higher areas (TH 2012b, p.22).

Seasonality

Hunting activity varies by season. The majority of species were hunted by WRFN members in the fall (46%) followed by the spring (32%), winter (18%), and summer (4%), though the highest number of hunting attempts[3] were made in the summer (40%) (Calliou Group 2012b).

Trapping

Trapping is an important part of WRFN culture, identity, and lifestyle (Bates et al. 2014). Furbearers are trapped by WRFN members for their furs and for the meat that they provide (Bates et al. 2014). In a 2012 Community Harvest Study it was reported that approximately 30% of study participants trapped over the course of the 13-month study (Calliou Group 2012b). Species currently hunted by WRFN members include (but are not limited to): Beavers, Martens, Muskrats, Rabbits and Wolves (Bates et al. 2014, Calliou Group 2012b). The most common species trapped were Muskrats (47%), Martens (30%), and Beavers (15%):

> …We caught Marten, and Lynx. Wolverines. Wolves, some wolves. Muskrats, beaver … Yeah, we ate lynx … Lots of rabbits and stuff like that. Well, we lived off the land, you know … I never saw a tomato or cucumber until I was nine years old. W02 18-Aug-2014" (Bates et al. 2014).

Muskrats (20%) were the most pursued furbearer by WRFN members in a 2012 Community Harvest Study, followed equally by Beavers (5%), Marten (5%), Rabbits (5%), and Wolves (5%). All trapping trips reported during the course the 2012 trips yielded animal(s) (Calliou Group 2012b).

Locations

White River First Nation members may trap in a variety of locations, but in a 2012 Community Harvest Study it was found that the majority of trapping activity was focused along the Alaska Highway from the U.S. border to Andrew Lake. More specifically, Andrew Lake and the area between Snag Junction and the Dry Creek intersection with the Highway were found to be areas that were frequently trapped by those members participating in the study (Calliou Group 2012b).

White River First Nation members have historically trapped in the Coffee Creek area as reflected by the numerous trapping concessions held by WRFN members in the late 1940s and early 1950s (Bates et al. 2014, Dobrowolsky 2014). Participants in the 2014 White River First Nation Knowledge and Use Study identified that Martens, Minks, Foxes, Wolverines and Lynx were species trapped in the Project footprint in the past. One Elder from Beaver Creek shared that her dad used to trap for Beavers around the Coffee Creek area in the spring (TH 2012b). More specifically, the ridges surrounding Coffee Creek and the northern bank of the Yukon River across from Coffee Creek were important trapping areas (Bates et al. 2014).

[3] A hunting attempt is when hunting activities were conducted by no animal(s) were yielded (Caillou Group 2012b).

Seasonality

White River First Nation members trapping activities vary significantly according to season. It was reported that 94% of all trapping activity is conducted by WRFN members during the spring (March to May) followed by the winter (6% from December to February) (Calliou Group 2012b).

Fishing

Fishing is identified as an important traditional activity for both cultural and food security reasons (Bates et al. 2014). In a 2012 Community Harvest Study it was reported that approximately 95% of study participants fished over the course of the 13 month study (Calliou Group 2012b). Species currently fished by WRFN members include (but are not limited to): Grayling, Lingcod (also known as Burbot), Pike, Trout, and Whitefish. Of these species, the most commonly harvested fish were: Whitefish (54%), Grayling (43%), Trout (2%), Pike (1%), and Lingcod (less than 1%) (Bates et al. 2014, Calliou Group 2012b). It is noted that those species reported as being most commonly fished reflect such influences as the time of year when fish camps were conducted and the number of WRFN members who attended those camps:

> …Yeah, trout, Whitefish, everything — even ling cod. Ling cod is the best-tasting fish. It's just like cod... There used to be an abundance and abundance of fish, I mean, lots. My dad came back with a toboggan that's from here to the wall, and it would be full of fish... Yeah, or on the lake, anywhere, because I remember all of the families from Snag would come in the wintertime with dogsleds, and they would set out their ice fishing nets. That's how they caught their supply of fish in the wintertime with dog teams. W07 19-Aug-2014 (Bates et al. 2014).

The most commonly pursued types of fish were Grayling (75%), trout (55%), and Whitefish (50%) (Calliou Group 2012b).

Locations

Fishing is currently conducted by WRFN members in a variety of locations. In a 2012 Community Harvest Study it was found that participants concentrated fishing in areas along the Alaska Highway, particularly within 15 km south and 35 km north of Beaver Creek.

The mouth of Coffee Creek at the Yukon River confluence is known as a historically important Salmon fishing area to WRFN (Bates et al. 2014, Easton et al. 2013). White River First Nation members explain that their family members used to fish in this area with nets and fish wheels. One WRFN member shared that Coffee Creek used to have deeper water than it currently has, and that in the past a boat could be driven up the creek (TH 2012b). Another WRFN member shares:

> …And they would get their Salmon there [Coffee Creek], dry it, they could catch it there, they would come in to where they were from. That was a yearly thing. W04 19-Aug-2014… (Bates et al.).

Other species known to have been fished in the Yukon River near Coffee Creek by WRFN members include Grayling and Jackfish (Bates et al. 2014, TH 2012b).

Seasonality

The fall season (September to November) is when 43% of WRFN's total annual fishing activity is conducted, and is when approximately 70% of the year's total Whitefish harvest is caught. Summer (June to August) is the second busiest fishing season of the year (33% of all fishing activity is conducted), followed by spring (23% of total activity occurring from March to May) and then winter (less than 1% from December to February). Seasonal variations influenced what types of fish were caught when. Grayling were most commonly fished in the spring, Whitefish in the fall, and trout in the spring. It was reported that pike were only fished in the fall and lingcod only in the spring (Calliou Group 2012b).

Plant Harvesting

Plants are currently harvested by WRFN members for many purposes including food, materials, and medicines. In a 2012 Community Harvest Study it was reported that approximately 70% of study participants gathered plants over the course of the 13-month study (Calliou Group 2012b). Types of plants harvested by WRFN members include (but are not limited to): Blackberries, Blueberries, High-bush Cranberries, Lowbush Cranberries, Raspberries, Soapberries, Salmonberries, Bear Root, Caribou Horns, Caribou Leaf, Fireweed, Labrador Tea, various Mushrooms, Pineapple Weed, Spruce Gum, and Wild Rhubarb (Bates et al. 2014, Calliou Group 2012b). White River First Nation members report being unsuccessful in harvesting the following plants during the course of a 2012 Community Harvest Study: Black Currants, Cloudberries, Gooseberries, Raspberries, and Strawberries.

The most common types of berries pursued by WRFN members participating in a Community Harvest Study were: Lowbush Cranberries (60%), High-bush Cranberries (30%), and Blueberries (20%). The most common types of food plants (not including berries) pursued by WRFN members were: Spruce Gum (20%), Caribou Horns (10%), Caribou Leaf (10%), Labrador Tea (10%), orange top Mushrooms (10%), and wild Rhubarb (10%) (Calliou Group 2012b).

Berries and Food Plants

Berries and food plants are also an important part of the WRFN traditional diet.

> …We eat berries all the way [when travelling]. We're full of berries by the time we get to the end. Raspberry, blueberries, blackberries, … salmonberries, everything... I guess that's why the native people was healthy a long time ago…They lived to be 100 and — Mom died when she was 101... So that — when I grew up, they just — on all those berries, the — like, bear root. You call bear — the root you pull out, it's like a carrot. You eat that, too. And they're all medicine… (W06 19-Aug-2014 in Bates et al. 2014).

Medicinal Plants

Medicinal plants are of importance to WRFN members. One WRFN member shared that "…they're all medicine. W06 19-Aug-2014" (Bates et al. 2014 p. 40).

"Some of the leaves are good, certain leaves are good for medicines … some, you make salves. Some are plants. Some are the flowers and all that. W01 18-Aug-2014" (Bates et al.). One WRFN member shared that in the past they would harvest pitch from trees in the Coffee Creek area for medicinal purposes (TH 2012b).

Plants for Materials

White River First Nation members use plants for materials to make such things as tools, baskets, sleds and snowshoes (Bates et al. 2014). With respect to the Coffee Creek area, one WRFN member described how their mother would collect birch bark in this area to make baskets (Bates et al. 2014).

Locations

A 2012 Community Harvest Study found that WRFN members currently conduct the majority of their plant harvesting activities within a 35-km radius of Beaver Creek.

With regards to the LAA, WRFN members reported picking Blueberries, High-bush Cranberries, and Blackberries in the area (Bates et al. 2014). A respondent also shared that High-bush and Lowbush Cranberries were two types of plants historically harvested in the Coffee Creek area (TH 2012b).

Seasonality

The majority of plant harvesting takes place in the summer (June to August) followed by the fall (September to November) and then spring (March to May). No plant harvesting is reported to occur in the winter (December to February) according to Calliou Group (2012b). From the 2012 Community Harvest Study it was noted that particular types of plants are pursued only at specific times of year. For example, Blackberries and Soapberries were only gathered in the summer, whereas Blueberries, High-bush Cranberries, and Raspberries were only gathered in the summer and fall. Of the species identified by Calliou Group (2012b) only Lowbush Cranberries, Caribou Leaf, and Labrador Tea were reported to be harvested throughout the spring, summer, and fall (Calliou Group 2012b).

Cultural and Spiritual Values

The land and resources across WRFN's territory facilitate the transmission, practices, and knowledge of integral WRFN values and practices, includes the transmission of language, knowledge, stories, traditional values, and cultural practices (Bates et al. 2014). The cultural significance of the Coffee Creek area to WRFN is reflected by all the site-specific values associated with this specific area (Bates et al. 2014). In addition to such previously described values related to habitation, transportation, and subsistence, Coffee Creek is also culturally valued because of other cultural activities, which are known to

have taken place here. These cultural activities include potlatches, ceremonies, and other cultural events (Bates et al. 2014, Easton et al. 2013). Certain qualities have been identified by WRFN as being important to maintaining an area's cultural and/or spiritual integrity; this includes maintaining "…undisturbed, peaceful state" (Bates et al. 2014).

The Coffee Creek area is considered by the WRFN to have spiritual value because this was a birth and burial place for some WRFN ancestors, as well as other activities such as marriage and baptism ceremonies (Bates et al. 2014).

Photo 1 **Map of Trapping Concessions in the Coffee Creek Area, Estimated Date between 1948 and 1955 (From Bates et al. 2014)**

White River First Nation asserted Traditional Territory comprises the land base that WRFN members use to transmit, teach, and share such integral cultural values as language, knowledge, stories, values, and practices (Bates et al. 2014). White River First Nation members identified that access to the land and areas of historic importance of key to enabling the younger generations to learn about these values:

> …You know, we have to have clear access to these important areas if it's cultural or to — you know, ceremonial or historical or heritage sites or whatever. We have to have access. That's — no question, that's our within our rights. … It wasn't that long ago that it was utilized as a seasonal round. It was only a few generations. ... We have a right, as indigenous people, First People, to have access to that, to do what we feel we need to do to keep the culture going… W08 21-Aug-2014 (Bates et al. 2014).

Environmental Values

White River First Nation people value the environment and the rich, diverse resources that it supports; this includes inorganic components of the environment. In a YESAB 2012 report, it was described that WRFN members are "…concern[ed] for the integrity of the water quality, describing the value of water and noting the pristine quality of the water that currently exists. The pristine water quality is part of 'sense of place'" (YESAB 2012).

The Coffee Creek area has environmental value to WRFN because it is a part of the land base that is inherently linked to all other aspects across the landscape. In interviews conducted with WRFN members for the Tarsis Resources White River Property Project, the importance of wildlife trails and travel corridors to species such as Moose (Calliou Group 2012a) was noted. Specific environmental values related to the Coffee Creek area include Bear habitat on the north side of the Yukon River bank across from Coffee Creek, and Caribou habitat on the ridges surrounding the Project facility (Bates et al. 2014).

3.4.2.3 First Nation of Na-cho Nyäk Dun Traditional Land and Resource Use

> …We value our natural environment with healthy fish and wildlife populations, clean water, clean air and the natural state of the land. The Na-Cho Nyäk Dun Traditional Territory is the headwaters for rivers flowing to the Arctic as well as the Pacific Ocean. It is part of the migratory corridor for the Porcupine Caribou and home to a diversity of fish and wildlife populations. Historically it was traveled far and wide by NND ancestors who lived off the land… (FNNND 2008).

The current traditional land and resource uses practised by FNNND provide both tangible and intangible value to citizens today, as they have historically since time immemorial. These values are described in the following section with respect to the following values: habitation, transportation, subsistence, cultural and spiritual values, and environmental values.

Habitation

Coffee Creek was an important gathering place where ancestors of FNNND would historically stop during their seasonal round (TH 2012b).

Transportation

Traditionally, FNNND people would travel long distances in accordance with the seasonal round to conduct different subsistence activities (InterGroup Consultants Ltd. 2009). This included following such important food sources as Moose, Caribou, and Mountain Sheep (InterGroup Consultants Ltd. 2009).

Subsistence Activities

Traditional foods harvested from the land have always maintained a central role in the diet of FNNND citizens, though it has been noted that development on FNNND's Traditional Territory and an increased local population has influenced FNNND's TU activities and patterns (Access Consulting 2008; DPRA 2010). Today, traditional foods continue to comprise a significant portion of FNNND citizen's diet and contribute to FNNND culture (DPRA 2010). Further, subsistence related activities support the traditional land and management system of FNNND citizens, as spending time on the land conducting traditional activities contributes to their ability to monitor environmental conditions (DPRA 2010).

Subsistence is an important value of FNNND citizens because of the nutritional and medicinal qualities of traditional foods, as well as the economic and food security related contributions that they make to FNNND citizens way of life.

Though FNNND citizens currently conduct such traditional activities as trapping, it has been documented that barriers are influencing the proportion of FNNND citizens who conduct these activities; these barriers include (but are not limited to): high cost of gas, decreased interest, and regulatory challenges to obtain a trapline (DPRA 2010). To support citizens in overcoming these challenges, the FNNND Government provides a Traditional Pursuits Fund, for which citizens residing in the Yukon can apply twice a year to financially support their traditional pursuits (FNNND 2015).

Hunting

Hunting wildlife contributes to the current subsistence lifestyle of FNNND citizens (Access Consulting 2008). Moose, Caribou, Sheep, Deer, small game, Grizzly Bears, Black Bears, and birds (e.g., tarmigans, Grouse, Ducks) are examples of some of the species that FNNND citizens have historically and presently use for subsistence related purposes (DPRA 2010, InterGroup Consultants 2009).

Moose are a highly valued species and are important for social, cultural, and economic reasons (InterGroup Consultants 2009, Access Consulting 2008). Moose are often hunted in the late summer and early fall, because this is when Moose were in their best condition (McClellan 1987). Elders from FNNND report that the Moose population is declining in some areas on their Traditional Territory, and the noise and activity related to placer and quartz mining activities have been identified by FNNND citizens as being a probable cause (DPRA 2010).

Woodland Caribou (aka Northern Mountain Caribou) abundance varies across the FNNND Traditional Territory. In some areas a voluntary no-hunt policy is in place (at Ethel Lake), and in others citizens are able to harvest (eastern portion near Mount Patterson and the Wernecke Mountains). The abundance of some animals, like deer, have been observed as increasing (DPRA 2010).

Trapping

Trapping is an important TU activity of FNNND, which is valued because of the economic, culturals and social benefits that it supports (DPRA 2010, InterGroup Consultants Ltd. 2009, Leary 2009). Through trapping, FNNND citizens are able to transmit the knowledge and practice of this traditional activity (DPRA 2010). Trapping concessions contribute to FNNND citizen's TU of the area by providing employment benefits and contributions to the sustenance lifestyle (Access Consulting 2008). Key species that FNNND trap include: Lynx, Martens, Wolves, Wolverines, and Rabbits (InterGroup Consultants Ltd. 2009, Leary 2009).

Fishing

Fish are an important part of the FNNND traditional diet and culture, and contribute to the current subsistence lifestyle of citizens (Access Consulting 2008, DPRA 2010). Fishing is an activity which FNNND citizens conduct all year. From April to June, citizens are focused on fishing Grayling. The summer fishery is characterized by Salmon; the Chinook runs happen first followed by the Chum. In the winter, FNNND citizens focus on resident fish populations, such as Grayling, Trout, Whitefish, and Jackfish (McClellan 1987).

The most commonly fished species on FNNND Traditional Territory include Chinook Salmon, Lake Trout, lake Whitefish, Northern Pike, Arctic Grayling, and Inconnu (InterGroup Consultants 2009). Families from FNNND spend several weeks each year at their fish camps where they catch and dry fish to be used year-round. The Stewart River is a waterway that has historically been, and still is currently, used by generations of FNNND families for fish camps (DPRA 2010).

Salmon, Arctic Grayling, and Pike are some of the fish species used by FNNND citizens (DPRA 2010, Access Consulting 2008). More specifically, Salmon were identified as an important species for both subsistence and cultural reasons; as described in a 2009 report it stated how Salmon fishing plays an important role in bringing people together (InterGroup Consultants Ltd. 2009).

Plant Harvesting

First Nation of Na-cho Nyäk Dun citizens use plants for both food and medicinal purposes, which contributes to the subsistence lifestyle of citizens (Popadynec 2009, Access Consulting 2008, DPRA 2010). According to the DPRA 2010 report, FNNND citizens use many types of plants and berries, and that "plants, berries and medicines are an important part of the traditional diet" (DPRA 2010). Some of the plants currently harvested for consumption include Lowbush Cranberries, Blueberries, Black Currents, Raspberries, Stone Berries, and High-bush Cranberries (InterGroup Consultants 2009).

Medicinal plants gathered by FNNND citizens across their Traditional Territory include yarrow, spruce, pine, balsam, Labrador Tea, Caribou horn (lichen), and puffballs (fungi) (Mayo Renewable Resources Council 2009 in InterGroup Consultants 2009). In addition, bear root (*Hedysarum alpinum)* and spruce gum is also used by FNNND citizens for medicinal purposes. Bear root is an edible root that can be harvested throughout the year, and provides a rich source of nutrients. Spruce gum (also known as pitch) is used internally to treat colds and externally on cuts and to remove slivers (Popadynec 2009).

Also noted in the DPRA report (2010), FNNND citizens tend not to harvest plants in areas historically disturbed by mining activities.

Cultural and Spiritual Values

Traditional use activities conducted across FNNND Traditional Territory are of cultural importance, in part because of the socio-cultural ties that they support; this includes the actual harvesting of traditional foods, as well as the act of sharing and consuming them (DPRA 2010). Through harvesting traditional foods, FNNND citizens spend time on the land with their family and community members, practicing and sharing TK and skills (DPRA 2010). Spending time on the land is key to the transmission of TK and to the development of healthy communities (DPRA 2010). In addition to the cultural values that traditional foods and medicines support, they also inherently provide an important link between FNNND citizens and their culture: "…while away from home, many people will use food as way of maintaining contact with their culture…" (DPRA 2010).

Important cultural values are taught and demonstrated through FNNND traditional land and resource use. Sharing the harvest of traditional foods is one example that demonstrates this FNNND cultural value. To FNNND citizens, the act of sharing is important as it shows that citizens are taking care of one another as well as sharing the "gifts from the land" (DPRA 2010). As noted by Leary (2009), FNNND citizens "…always share food with Elders" and that citizens "…need to respect every animal [taken] from the land and be thankful (Leary 2009).

The traditional foods and medicines harvested from the land through traditional land and resource use in itself contributes to the vitality of FNNND culture. Citizens recount how it is challenging for them to balance such cultural values as respecting the earth and protecting the water, while working jobs in the natural resource development sector. They explain that such "contradictions" challenge citizens to reconcile their heritage with best practices (FNNND 2008).

Environmental Values

For FNNND, environmental values are intrinsically linked to cultural values and practices. As described in Popadynec (2009), FNNND citizens share how "…we only dug up one plant today because we shouldn't take too many. It shows respect not to take more than you can eat" (Popadynec 2009). FNNND citizens share an inseparable connection and relationship with their Traditional Territory, and the lands and resources that characterize it. Maintaining and enhancing the environmental health of their Traditional Territory is an important current environmental value of FNNND. Stewardship and responsible management of the land are two values identified as being important to FNNND (FNNND 2008). In addition, FNNND report that traditional forms of land management have evolved and now integrate aspects of contemporary land management as well (FNNND 2008).

Protecting environmental integrity is a priority of FNNND that is explicitly identified in its 2008 *Guiding Principles Towards Best Practices Codes for Minerals Interests within First Nation of Na-cho Nyäk Dun Traditional Territory.* In this document, FNNND advises potential mining proponents that it expects that they will acknowledge that "…traditional culture is linked to nature and its strength is drawn from that relationship. It is further acknowledged that stewardship of the land and its resources is an integral part of culture and community well-being" (FNNND 2008).

One initiative that reflects FNNND's environmental values is the 2008 to 2013 Fish and Wildlife Management Plan that was prepared with the Mayo District Renewable Resource Council and the YG. The objective of this monitoring initiative was to document and address different concerns related to fish and wildlife management (DPRA 2010).

3.4.2.4 Selkirk First Nation Traditional Land and Resource Use

As described by Klohn Crippen Berger (KBH), SFN citizens conduct TU activities across their Traditional Territory throughout the year (KBH 2013). One of the reasons that these activities continue to be valued by SFN is that they contribute to their ability to maintain their connection with the land and water (KCB 2013).

Habitation

Coffee Creek was historically an important place where SFN ancestors would gather and live (Easton et al. 2013, Yukon River CFA and TH 1997, TH 2012b). One Selkirk First Nation citizen remembered a village that used to exist in the Coffee Creek area before the highway was constructed (Yukon River CFA and TH 1997). Elders from SFN described how many people lived at Coffee Creek in the 1930s, since at the time it was home of an active trading post (TH 2012b). One Elder recalled personally travelling by foot via an overland route between Fort Selkirk and Coffee Creek (TH 2012b).

A Selkirk First Nation Elder shared that during her mother's seasonal travels, she would stay at Coffee Creek (TH 2012b). She further shared that when she was young, she would raft down the Yukon River to Dawson to go to school; She and her sibling would stop at Coffee Creek on their way (TH 2012b):

> …we stopped at Coffee Creek and [he]said, um, to us on the raft, he said "oh, hope it," we were cold and tired, drifting every day, all the way from here, down the Pelly and then down the Yukon and then when we got to Coffee Creek we were, we were cold and hungry and [he] said "I hope they invite us in," they didn't even ask us to come in….No. So we, old [name redacted] said "there's a little campground up the river from here, you can go up there and camp," she said. And her with a nice, big house… - Ibid (TH 2012b).

One Selkirk First Nation Elder used to spend summers with his family at Coffee Creek and winters at Kirkman Creek (Pearse and Weinstein 1988).

Transportation

Selkirk First Nation Elders described how many people lived at Coffee Creek in the 1930s, since at the time it was home of an active trading post (TH 2012b). One Elder recalled personally travelling by foot via an overland route between Fort Selkirk and Coffee Creek (TH 2012b). Citizens from SFN would travel across the land by water, trail, and dogsled in accordance with the seasonal round, and to visit with friends and family (Pearse and Weinstein 1988). Another Elder used to travel by boat on the Yukon River to Coffee Creek in the summer, and would travel by dogsled to the area in the winter.

Subsistence

Northern Tutchone people use a diverse area of plants and animals to support their subsistence needs. Traditional land and resource use by SFN has historically and currently remains a central component of SFN culture. As a Northern Tutchone people, SFN is known for using a diverse range of plants, animals, and resources across the First Nation's Traditional Territory. Traditionally, winters were spent trapping, hunting Moose, and fishing. Some people settled in groups at specific locations for the winter, whereas others continued to travel across the territory conducting various TU activities. During the spring, people tended to occupy valley and lowland areas as they hunted and trapped. The summer months of July and

August were often spent fishing Salmon together in groups at rivers, and gathering plants. The fall was known as a time when game were plentiful; thus efforts were focused on these activities (Castillo 2012).

Hunting

Animal species hunted by SFN include such big game as Moose, Caribou, Mountain Sheep, and Black Bear, as well as such waterfowl as Ducks, Geese, Swans, and Sandhill Cranes (Castillo 2012, Pearse and Weinstein 1988). Small game was also hunted, including Ptarmigans, Blue Grouse, Ruffed Grouse, and Sharp-tailed Grouse (Pearse and Weinstein 1988). Elders from SFN remember that Coffee Creek was an area historically known for Moose hunting, and in the higher-elevation areas around Coffee Creek for Caribou hunting (TH 2012b). An Elder remembered Coffee Creek as one of the areas that his family would travel to in order to hunt in the fall (Pearse and Weinstein 1988).

Hunting in the summer season was focused on Moose, Grouse, and Beavers (Pearse and Weinstein 1988). An Elder shared that she used to travel to Coffee Creek with her sister and husband to hunt for Moose each fall (TH 2012b). Other SFN citizens also identified Coffee Creek as an area that they would travel to each fall to Moose hunt, as Coffee Creek was a good Moose hunting area (TH 2012b). The mountains or higher elevations surrounding the Coffee Creek area were also known for their Caribou use (TH 2012b). Game not only provided meat to SFN citizens, it also provided other valuable resources such as lard and skins (McClellan 1987).

Trapping

Several types of fur bearers are trapped, including Beavers, Lynx, Muskrats, Foxes, Wolves, Martens, Minks, Wolverines, Coyotes, Red Squirrels, Otters, and Weasels (Pearse and Weinstein 1988). Small game species may also be trapped such as Snowshoe Hares and Ground Squirrels or gopher s(Pearse and Weinstein 1988).

The Coffee Creek area is a part of a larger area known by SFN citizens for its productive trapping habitat. More specifically, the headwaters of Coffee Creek were considered to be Marten homeland (Pearse and Weinstein 1988).

Fishing

Fishing is an integral part of SFN culture, providing more than subsistence needs; fishing also supports the continuity of culture and tradition (Morrell 1991). Working together at seasonal fish camps to catch and dry fish brings families together, and facilitates the transmission of traditional knowledge as well as traditional practices and values.

Fish are also an important component of the SFN traditional diet. As explained by Morrell (1991), fishing provided food security. People knew that if they were unsuccessful in other pursuits such as Moose hunting, they would be able to catch enough fish to provide for their subsistence needs. Several types of

fish are used by SFN. Some of these are fished seasonally, whereas other resident species can be fished year around. Species fished include Lake Trout, King Salmon (Chinook Salmon), Dog Salmon (Chum Salmon), Grayling, Inconnu, Whitefish, Pike, Sucker, and Ling Cod (or Burbot) (Castillo 2014, Pearse and Weinstein 1988). More specifically, King Salmon, Broad Whitefish and Lake Whitefish have been identified as the most important fisheries of the Pelly River system (Morrell 1991).

Coffee Creek was a well-known, historical, fishing area for the SFN people (Yukon River CFA and TH 1997). One SFN Elder explained how the sloughs and sandbars around the Coffee Creek and Yukon River confluence contributed to the quality of the fishing area (Yukon River CFA and TH 1997). People would travel to Coffee Creek to fish for two months each summer until the end of June (Yukon River CFA and TH 1997). Selkirk First Nation citizens currently fish on the Yukon River by boat (Interview 14, Personal Communication, 2016).

Plant Harvesting

Berries and plants were harvested by SFN citizens as they travelled across the territory and settled in different areas (Pearse and Weinstein 1988). A 2013 report by KCB identified current harvesting of medicinal plants by SFN citizens. It explained that the harvesting of medicinal plants involved considerations of particular practices and values, including the practices related to the traditional Dooli Law[4]. Such medicinal plants include (but are not limited to) spruce pitch and Labrador Tea (KCB 2013).

Cultural and Spiritual Values

Cultural and spiritual values held by SFN citizens continue to be rooted in tradition today as they have been in the past. More specifically, Dooli Law continues to guide and influence contemporary values and activities as demonstrated by the role that Dooli played in shaping aspects of the 2013 Minto Phase V/VI Socio-economic Study (KCB 2013).

Cultural activities continue to contribute to the Nation's social cohesion and community well-being (KCB 2013). Such activities include (but are not limited to): family meetings, TU activities, potlatches, and community events and activities like the Selkirk Spirit Dancers, community hand game tournaments, and the community garden (KCB 2013). Other important cultural activities conducted by SFN included tanning Moose hides and furs, making tools and sewing clothes (Castillo 2012).

In the past, Selkirk people used to gather and conduct such important cultural and spiritual activities as potlaches at Coffee Creek (Easton et al. 2013, TH 2012b). The predominant language historically used in the Coffee Creek was Northern Tutchone , the traditional language of several First Nations including SFN (Easton et al. 2013). This area also represents cultural and spiritual value because it is known as a

[4] Dooli Law are the sacred and spiritual laws unique to Northern Tutchone peoples, which provide guidance as to what people should and should not do (Mease 2008).

resting place for some SFN citizens. Two SFN Elders shared that their grandmother and other community members are thought to be buried at Coffee Creek (Easton et al. 2013, TH 2012b).

Environmental Values

The health of the environment has been identified as a component of SFN's community well-being (KCB 2013). The environment is highly valued by SFN and its citizens, and sustaining a healthy environment is of upmost importance (KCB 2013). As identified in a 2013 report, SFN citizens described how environmental changes being observed on their Traditional Territory were causing concern. This included such changes as changes to vegetation, the appearance of non-native plant species, changes to water, as well as changes to the animals living on their Traditional Territory (KCB 2013).

4.0 ASSESSMENT OF PROJECT-RELATED EFFECTS

This section describes the potential interactions between Project activities and the non-traditional land and resource use and current traditional land and resource use subcomponents, and the resulting potential effects of the interactions. Mitigation measures to avoid or reduce potential effects, as well as resulting residual effects and their determined significance, are also described.

4.1 POTENTIAL PROJECT INTERACTIONS WITH THE LAND AND RESOURCE USE VALUED COMPONENT

Interactions may occur between Project activities and the subcomponents non-traditional land and resource use and current traditional land and resource use during the Construction, Operation, and Reclamation and Closure Phases of the Project. The intention of this section is to focus the assessment on interactions most likely to interact adversely with the Land and Resource Use VC. To accomplish this task, the potential for interactions between the VC and identified Project activities are considered. Each potential interaction is rated using the terms provided in **Table 4.1-1**.

Table 4.1-1 Potential Project Interactions with Land and Resource Use Subcomponents

Term	Definition
No Interaction	Project activity will not interact with the Land and Resource Use VC or its subcomponents; the assessment will not be considered further.
Negligible Interaction	Interaction with the Project activity will not have a substantive influence on the short- or long-term integrity of the VC (i.e., not measurable / not detectable using the identified indicator); the assessment will not be considered further.
Potential Interaction	Interaction between the Project activity and the VC may have a substantive influence on the short- or long-term integrity of the VC (i.e., measurable or detectable using the identified indicator). The potential effect(s) of the interaction is considered further in the effects assessment.

Potential Project-related effects to land and resource uses may occur across Project phases as the Project influences responsible for these effects are the same. For example, a Project-related increase in demand for goods and services may contribute to a population increase, which may begin during Construction and continue through Operation. If an interaction is anticipated to change between Project phases, the supporting rationale for this change is clearly described.

During the Post-closure Phase, long-term monitoring is the only activity anticipated to occur. Due to limited Project activities, no interaction between Land and Resource Use and long-term monitoring are expected, and potential effects identified for earlier Project phases are expected to have ceased. **Table 4.1-2** and **Table 4.1-3** summarize potential Project interactions with non-traditional land and resource use, and current traditional land and resource use.

The existing land and resources uses may change for reasons outside of the Proponent's control and influence in the future (e.g., climate change, etc.). These potential influences on Land and Resource Use are not considered as part of this assessment.

Table 4.1-2 Summary of Potential Project Interactions with the Non-traditional Land and Resource Use Subcomponent

Project Component	Project Activities Description	Interaction Rating	Nature of Interaction and Potential Effect
Non-traditional Land and Resource Use			
Construction Phase			
All Project activities and work conducted during construction		Potential Interaction	Construction activities may change the current socio-environmental setting where current non-traditional land use is conducted. These changes may result in changes in access to land and resources, effects to sensory conditions while conducting non-traditional use activities, the availability of the land for non-traditional uses, and the quality of the land and resources.
Operation Phase			
All Project activities and work conducted during operation		Potential Interaction	Operation activities may change the current socio- environmental setting where current non-traditional land use is conducted. These changes may result in changes to access to land and resources, effects to sensory conditions while conducting non-traditional use activities, the availability of the land for non-traditional uses, and the quality of the land and resources.
Reclamation and Closure Phase			
All Project activities and work conducted during reclamation and closure		Potential Interaction	Reclamation and Closure activities may change the current socio-environmental setting where current non-traditional land use is conducted. These changes may result in access changes to land and resources, effects to sensory conditions while conducting non-traditional use activities, availability of the land for non-traditional uses, and the quality of the land and resources.
Post-closure Phase			
No interaction		No interaction	All potential Project-related interactions identified in early Project phases are expected to cease; thus, no interaction is anticipated.

Table 4.1-3 Summary of Potential Project Interactions with Current Traditional Land and Resource Use Subcomponent

Project Component	Project Activities Description	Interaction Rating	Nature of Interaction and Potential Effect
Current Traditional Land and Resource Use			
Construction Phase			
All Project activities and work conducted during construction		Potential Interaction	Construction activities may change the current socio-environmental setting where current traditional land and resource use is conducted. Habitation, transportation, subsistence activities, culture and heritage, and/or the environment may change, resulting from changes to access to land and resources, effects to sensory conditions while conducting traditional uses, the availability of the land for traditional use activities, the quality of the land and resources, and effects to the quality of intangible cultural and spiritual resources.
Operation Phase			
All Project activities and work conducted during operation		Potential Interaction	Operation activities may change the socio-environmental setting where traditional land and resource use is currently conducted. Habitation, transportation, subsistence activities, culture and heritage, and/or the environment may change, resulting from changes to access to land and resources, effects to sensory conditions while conducting traditional uses, the availability of the land for traditional use activities, the quality of the land and resources, and effects to the quality of intangible cultural and spiritual resources.
Reclamation and Closure Phase			
All Project activities and work conducted during reclamation and closure		Potential Interaction	Reclamation and Closure activities may influence the socio-environmental setting where traditional land and resource use is currently conducted. Habitation, transportation, subsistence activities, culture and heritage, and/or the environment may change, resulting from changes to access to land and resources, effects to sensory conditions while conducting traditional uses, the availability of the land for traditional use activities, the quality of the land and resources, and effects to the quality of intangible cultural and spiritual resources.
Post-closure Phase			
No interaction		No interaction	All potential Project-related interactions identified in early Project phases are expected to cease; thus, no interaction is anticipated.

4.2 POTENTIAL PROJECT-RELATED EFFECTS

Potential Project-related effects resulting from the interactions of the Project activities with the non-traditional land and resource use and current traditional land and resource use subcomponents **(Section 4.1**) are described in this section. The potential effects are described with the indicators listed in **Table 1.2-3.**

The following potential effects during the Construction, Operation, and Reclamation and Closure Phases are addressed.

Non-Traditional Land and Resource Use:

- Decrease in availability of land and resources
- Increase in access to lands and resources
- Effects to sensory conditions
- Decrease in quality of land and resources.

Current Traditional Land and Resource Use:

- Decrease in availability of land and resources
- Increase in access to lands and resources
- Effects to sensory conditions
- Decrease in quality of land and resources
- Effects to the quality of intangible cultural and spiritual resources.

4.2.1 NON-TRADITIONAL LAND AND RESOURCE USE

This subsection describes the nature of potential effects considered for the non-traditional land and resource use subcomponent. Mitigation measures for each potential effect are described in **Section 4.3**.

4.2.1.1 Potential Decrease in the Availability of Land and Resources

Project-related land use will adversely affect the amount of land and resources for non-traditional purposes. This direct effect is considered to occur from Construction through to Operation. Some effects will reverse at the completion of the Reclamation and Closure Phase. The potential effect is presented for the entire Project footprint, and assessed once in the Construction phase, when effects are estimated to be the most pronounced.

The Project will affect less than 10% of most of identified land uses and tenures; in many cases, less than 1% (**Table 4.2-1**). The estimate is conservative, as the Project footprint has been broadly defined, and the analysis does not address the area already disturbed by the existing road and other activities. The Project layout has intentionally utilized the existing road tenures, where available. The residential/commercial and environment tenures are adjacent to the existing road, and it will be largely possible to avoid further disturbance of these tenures within the broadly defined Project footprint (500 m either side of the centre line). Placer claims were grouped in the analysis because of their large number and small size. Given the small size and progressive nature of the development of placer claims, such claims may be disturbed by the NAR footprint or their ability to develop constrained by a permanent road location.

Table 4.2-1 Land Uses in the LAA and Project Footprint

Tenure ID/ Management Area	Land Use	Total Area (ha)	Area in LAA (ha)	Percentage of Land & Resource Use in LAA (%)	Area in the Project Footprint (ha)	Percentage of Area of Land and Resource Use in Project Footprint (%)
Land Dispositions						
2010-0841	Utility	3.05	3.05	100.0	0.14	4.6
105M12-069	Utility	1322.43	42.14	3.2	5.33	0.4
2009-2821	Commercial	0.11	0.11	100.0	0.00	0.0
2008-0740	Rural Residential	1.92	1.92	100.0	0.00	0.0
YA01427	Powerline Construction	1.06	1.06	100.0	0.09	8.5
115O15-028 (3 parcels)	Residential - Commercial	1.95	0.89	45.6	1.38	70.8
115O15-013	Environment	1.50	1.50	100.0	0.52	34.7
115O15-014	Utility	0.91	0.91	100.0	0.00	0.0
115O15-022 (3 parcels)	Heritage	10.1	4.04	40.0	0.00	0.0
2015-F666	Private Road Construction	12.79	12.79	100.0	5.63	44.0
115O11-001	Utility – Wind Monitoring	1.00	1.00	100.0	0.001	0.1
2003-0181	Recreational	12.18	11.01	90.4	0.00	0.0
YA0F407*	Private Road Construction	229133m	19936m	8.7	8234m	3.6
2011-F498*	Private Road Construction	150536m	297m	0.2	0.0	0.0
Game Management						
Zone 3	Subzone 07	124029	7088	5.7	435.9	0.4
Zone 3	Subzone 08	138204	6641	4.8	238.5	0.2
Zone 3	Subzone 10	140335	1781	1.3	98.6	0.1
Zone 3	Subzone 11	112387	4354	3.9	220.0	0.2
Zone 3	Subzone 12	83397	8651	10.4	452.8	0.5
Zone 3	Subzone 13	97807	3432	3.5	206.0	0.2
Zone 3	Subzone 14	172639	5359	3.1	234.5	0.1
Zone 3	Subzone 15	90718	245	0.3	0.0	0.0
Zone 5	Subzone 03	139311	7038	5.1	1506.8	1.1
Zone 5	Subzone 09	102769	723	0.7	10.0	0.0

Tenure ID/ Management Area	Land Use	Total Area (ha)	Area in LAA (ha)	Percentage of Land & Resource Use in LAA (%)	Area in the Project Footprint (ha)	Percentage of Area of Land and Resource Use in Project Footprint (%)
Guide Outfitting and Trapline Concession Areas						
ID 11	Guide Outfitting	903539	724	0.08	10.0	0.00
RTC 28	Trapline	45603	189	0.4	1.98	0.00
RTC 54	Trapline	99471	12501	12.6	606.9	0.61
RTC 57	Trapline	145695	1090	0.8	68.37	0.05
RTC 58	Trapline	104213	2605	2.5	131.7	0.13
RTC 62	Trapline	285489	17579	6.2	897.0	0.31
RTC 115	Trapline	108402	6823	6.3	1123.2	1.04
RTC 116	Trapline	146543	4691	3.2	575.0	0.39
Placer Mining						
All placer Mining claims		191511	12584	6.57	917	0.48
Quartz Mining						
Quartz mining land use planning permits						
LQ00345	Dominion Project	21317	2238	10.5	96	0.45
LQ00435	Eureka Creek Project	3417	25	0.73	0	0
LQ00245	J.A. E. Project	700	464	66.2	29	4.14
LQ00449	Touleary Project	15893	1615	10.16	92	0.58
Quartz claims**	All quartz claims	6108507	41338	0.67	3204	0.05
Forestry Resources						
Dawson Forest Resource Management Plan		4893459	37746	0.8	3095	0.06

4.2.1.2 Potential Effect from Increase in Access to Land and Resources

Access to land-based non-traditional land and resource uses may be increased by the development and maintenance of road access to the Mine Site during the Construction and Operation Phases.

Vehicular access to land and resource uses may be increased through upgrades, increased winter maintenance, and increased connectivity of the NAR north of Stewart River during winter and summer months. The main improvements will occur between the Stewart River and the southern end of the existing paved road. Only Project-related vehicles will have access to the Stewart River crossings in winter and summer; therefore, access south of the Stewart River will not change. Access from the improved portion of the NAR to adjacent areas in the RAA will also improve, generally due to the

increased ability to transport all-terrain vehicles to areas of use. Access to and through the Mine Site (via boat on the Yukon River to the NAR) will be controlled for health and safety reasons, so access on the south side of the Yukon River beyond the mine airstrip will not improve.

For most of non-traditional users with tenure and other land use permits in the portion of the NAR with improved vehicular access (such as quartz exploration, placer mining), the improvements may be considered beneficial. Within the portion of the NAR with improvements, the YG forestry management zone was classified as Hinterland Forest Zone; based on this classification increased forestry use is not considered likely. Existing users for resource harvesting (recreational and subsistence hunting and fishing, guide outfitting and trapping) may consider the improvements as either beneficial (increased access to the activity) or adverse (increased access disturbing present activities). During consultation, the user perspective on adverse versus beneficial effects varied between individuals and within user groups.

Increased access may result in pressure for increased resource harvest levels (consumptive use) (e.g., for hunting and fishing) in the improved portion of the NAR; however, such activities and harvest levels are managed in a sustainable manner by the YG, as summarized in **Section 14.0 Fish and Fish Habitat**, and **Section 16.0 Wildlife and Wildlife Habitat** of the Project Proposal. With this ongoing YG management, it is not likely that increased access will result in effects to harvested populations, and potential effects from harvesting are not carried forward.

4.2.1.3 Potential Effects to Sensory Conditions

Sensory conditions include air quality, visual conditions, and noise conditions. A change in sensory conditions may affect the desirability of potentially affected areas for activities related to harvesting and subsistence activities. Guide outfitters, trappers, placer miners, and recreationists may also consider that changes in these conditions affect the desirability of potential areas for use.

Residual adverse changes identified in linked IC reports are summarized below and discussed with respect to effects to sensory conditions.

Air Quality

Potential adverse residual changes to air quality during the Construction, Operation, and Reclamation and Closure Phases include generation of dust in Open Pits, Waste Rock and Ore Stock Piling or Depositions areas, and emissions from internal combustion engines (**Section 9.0 Air Quality and Greenhouse Gas Emissions Analysis** of the Project Proposal). Dust generation may expose the public to suspended particulates in air in areas adjacent to the mine. The primary air quality contaminants of potential concern from combustion include criteria air contaminants for which Yukon Ambient Air Quality Objectives exist, including carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), fine

particulate matter ($PM_{2.5}$, PM_{10}), and total suspended particulates. The major conclusions based on completion of the Human Health Risk Assessment (**Appendix 18-B**) for air quality are as follows:

- None of the Criteria Air Contaminants (CACs) are likely to exceed their respective Yukon Ambient Air Quality Objectives for areas where the public might be exposed.
- None of the volatile to semi-volatile organic contaminants that are a priority for health concerns are likely to exceed or approach relevant health-based thresholds of effects.

The HHRA indicates that human health risks associated with air quality during the peak operational period in areas around the Mine Site (within 500 m) where people might focus their activities will be acceptably low.

Changes to air quality indicators in the atmosphere are typically short in duration: modelling results show that effects within the Project footprint are expected to dissipate within 24 hours of the activity ceasing. Modelling results also show that cumulative changes in air quality indicators will be negligible for the majority of the Regional Study Area, and will dissipate within 24 hours of the cessation of Project activities. With the implementation of the mitigation measures, human health risks from changes to air quality are low, and sensory disturbance is anticipated to be negligible for non-traditional uses.

Noise

Potential changes in noise levels are presented in the Project Proposal **Section 10 Noise Analysis**, and discussed further in the Community Health and Well-being assessment **(Appendix 25-A**). For all areas adjacent to the proposed Mine Site (i.e., as represented by focal areas of interest such as the Yukon River), noise levels associated with Construction or Operation activities are not expected to be easily distinguishable from the background wilderness-type noise environment. In addition, noise at all modelled locations will be far lower than authoritative health effects thresholds relating to sleep disturbance or speech interference.

The highest predicted continuous sound level offsite was 28 dBA during peak operation at a location near the centre of the Yukon River, approximately 10 km downriver from the mouth of Coffee Creek. It is conceivable that people will be able to faintly detect noise from mine operation when the ambient noise levels are very low (infrequent periods when background sound levels are less than 25 dBA; e.g., during low wind conditions and in the absence of wildlife or personal sounds), especially given the different frequency and tonal characteristics of Project-related noise over natural sounds. Project-related noise levels are far lower than levels associated with high annoyance (and stress), sleep disturbance, or speech interference. The Project is not likely to result in any noise-related human health risks.

Noise sensitive activities and land uses include hunting, trapping, commercial guide outfitting, recreational uses, and subsistence activities. Potential effects to these activities from sensory disturbance from noise

are predicted to be limited in extent and duration and likely to cause negligible effects to non-traditional land and resource users.

Visual Conditions

As presented in **Appendix 24-B Visual Analysis**, residual effects to visual quality are not expected to be significant during Operation from the viewpoint locations analyzed in the vicinity of the Mine Site from the Yukon River. Visual effects are not likely in Coffee Creek valley, due to the relative location of the Project components and visual screening by trees, with the exception of the Coffee Creek bridge that will likely be visible in the immediately vicinity of the bridge but screened by vegetation within a short distance. Visual effects were not assessed for the Construction Phase, as they will be less than for Operation. Project related changes to visual condition are therefore not likely to cause adverse effects in other VCs, including the potential effect to sensory condition for non-traditional land and resource users conducted in the same area as the described viewpoints.

4.2.1.4 Decrease in Quality of Land and Resources

Project-related changes to environmental conditions may adversely affect the quality of resources currently used for non-traditional purposes. Linked biophysical technical reports, which support an assessment of changes in the land quality, include reports on Surface Water Quality (**Section 12.0**), Vegetation (**Section 15.0**), Fish and Fish Habitat (**Section 14.0**), Wildlife and Wildlife Habitat (**Section 16.0**), and Birds and Bird Habitat (**Section 17.0**). Residual adverse effects identified in these linked VC reports are summarized below and discussed with respect to effects on the quality of land and resources.

Groundwater and Surface Water

As described in **Section 7 Groundwater Analysis**, mitigation measures included as part of the Project design will avoid or minimize potential changes to groundwater. No residual changes are anticipated. As described in **Section 12 Surface Water Quality Assessment**, overall, residual Project-related effects following mitigation are predicted to occur in Latte Creek, YT-24 Tributary, and Halfway Creek. No residual effects are predicted to occur in Coffee Creek, downstream of the Latte Creek confluence, or in the Yukon River. Overall, residual effects from total uranium (T-U) in Latte Creek, total arsenic (T-As) in YT-24, and nitrate, T-U, and total zinc (T-Zn) in Halfway Creek were identified but are considered not significant.

The Project is most likely to affect surface water quality in Halfway Creek; however, no licenced water uses have been identified (**Figure 3-3**).

Vegetation

As described in **Appendix 15-B Vegetation Valued Component Assessment**, Project-related effects on vegetation are limited to the Project's footprint due to clearing, and adjacent vegetation due to dust deposition. The vegetation found in the footprint and the Vegetation LAA are common in the area, and there are no known rare, threatened, or unique ecological communities. Residual effects are anticipated to include habitat loss, changes in distribution of invasive plant species, and change in vegetation health as a result of roadside dust, but none of these effects was significant. No effects to the non-TU of vegetation are expected.

Fish and Aquatics:

Appendix 14-B Fish and Fish Habitat Valued Component Assessment states that the mine footprint will not affect fish habitat, since stream reaches directly affected by mine infrastructure are not fish bearing. As a result of Construction and Operation, residual effects to the habitat for Arctic Grayling in Latte, Halfway, YT-24 creeks were assessed as not significant, except in the drainages located downstream from the Mine Site (i.e., Yukon River and Coffee Creek). With respect to the NAR, a residual effect to fish and fish habitat for Arctic Grayling, Chinook Salmon, and Chum Salmon was identified and rated as not significant during the Construction Phase only, as a result of expected habitat alteration and encroachment near the barge landings and road along the back channel of the Stewart River.

Residual effects to the non-traditional use of fish are rated neutral, since no significant effects to fish and fish habitat were identified, and residual effects assessed as not significant are very localized, and not likely to affect non-traditional fishing activities.

Wildlife and Wildlife Habitat, Birds and Bird Habitat:

As described in **Appendix 16-B Wildlife and Wildlife Habitat Valued Component Assessment**, no significant adverse effects were identified for any of the wildlife and wildlife habitat subcomponents at the regional level. A detectable/measurable residual effect may occur at the individual level if Project activities resulted in habitat loss and reduced habitat effectiveness due to sensory disturbance, and to mortality risk and altered movement to some subcomponents; however, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire wildlife population at the regional level. As described in **Appendix 17-B Birds and Bird Habitat Valued Component Assessment**, following the successful application of proposed mitigation measures, detectable or measurable Project-related residual effects are only anticipated to occur from direct loss of habitat and sensory disturbance. In addition, no significant adverse effects were identified for any of the bird-related subcomponents at the regional level. Although a detectable or measurable effect may occur at the individual level if Project activities resulted in direct habitat loss or sensory disturbance, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire bird population at the regional level.

Based on the results of these two VC Assessment Reports (**Appendix 16-B** and **Appendix 17-B**), Project-related effects are not expected to result in a residual adverse effect to the non-traditional use of wildlife.

4.2.2 CURRENT TRADITIONAL LAND AND RESOURCE USE

The Project may affect the current traditional land and resource uses of the TH, SFN, FNNND, and WRFN First Nations. Each First Nation may identify and interpret the term current traditional land and resource use differently, as well as potential Project interactions. Aspects of current traditional land and resource use may not be fully represented where secondary or primary data specific to each LAA and RAA First Nation was not readily available or provided to the Proponent.

This subsection describes the nature of potential effects considered for the subcomponent current traditional land and resource use. Mitigation and enhancement measures for each potential effect are described in **Section 4.3.**

4.2.2.1 Potential Decrease in the Availability of Land

Project-related disturbance to lands and their resources by the Project footprint may adversely affect land and resource use by decreasing the availability of land. This direct effect will occur during the Construction Phase, although there will be some disturbance of land during the Operation Phase, which will continue until completion of the Reclamation and Closure Phase. The potential effect is presented for the entire Project footprint, and assessed once in the Construction Phase.

The Project footprint will have a direct effect on availability of land for current traditional land and resource uses for the TH, SFN, and FNNND (**Table 4.2-2**). The Project footprint may have an effect on the availability of land for WRFN's asserted territory, however not for the currently recognized territory. The estimated area of land disturbed by Project activities is a conservative estimate because it includes land areas already disturbed by existing activities (e.g. the existing road); further, the Project footprint has been broadly defined and is therefore greater than the anticipated final footprint. While the area comprises a very small percentage of the asserted and Traditional Territory areas, the loss of availability of the land base may affect traditional uses.

Table 4.2-2 Availability of Land for the Current Traditional Land and Resource Use Subcomponent in the Local Assessment Area

Traditional Territory	Total Area (ha)	Area in LAA (ha)	Percentage of Territory in the LAA (%)	Area in the Project Footprint (ha)	Percentage of Territory in Project Footprint (%)
Tr'ondëk Hwëch'in	6,398,328	45516	0.7	3404	0.05
White River First Nation Recognized Territory	3,333,403	-	0.0	-	0.0
White River First Nation – Asserted Territory	5519713	25475	0.5	2418	0.04
Selkirk First Nation[2]	3,955,083	7770	0.2	308	0.007
First Nation of Na-cho Nyäk Dun	13,156,776	13118	0.1	665	0.0

Notes: The Project footprint avoids Category B lands held by the Selkirk in the vicinity of the Yukon River crossing (Figure 1.3-2).

4.2.2.2 Potential Effect from Increase in Access

A change in access may affect land-based current traditional land and resource uses, including such subsistence activities as hunting, trapping, fishing, and plant harvesting, as well as other current uses such as (but not limited to) wood cutting, preparing harvested food from the land, sharing resources harvested from the land, and passing on TK through land-based experiences and teachings. Changes in access are expected to affect different individuals and First Nations differently. Vehicular access to and through the LAA will improve along the northern portion of the NAR between the existing YG road and the Stewart River through upgrades, increased winter maintenance, and increased connectivity of the NAR. As only Project-related vehicles will have access to the river crossings in both winter and summer conditions, access south of the Stewart River will not change. Access from this portion of the NAR to adjacent areas in the RAA, generally by increased ability to transport ATVs closer to areas of use, will also improve. Access to and through the Mine Site will be controlled for health and safety reasons; therefore, access on the south side of the Yukon River will not be increased. Current traditional users may consider that the improvements are either beneficial (increased opportunity for traditional uses) or not beneficial (increased human presence).

The discussion below has assumed that the First Nations are utilizing the entire NAR for access to traditional uses, regardless of whether the improved access is in their territory.

Tr'ondëk Hwëch'in

Tr'ondëk Hwëch'in citizens currently access their Traditional Territory through a variety of means including motorized vehicles, boats, snowmobiles, and ATV or four-wheelers (Interview 14, Personal Communication, 2016; Interview 22, Personal Communication, 2016; TH Traditional Foods and Traditional Economy Survey, Personal Communication, 2016). Changes in access to the TH Traditional

Territory are expected to occur during the Construction Phase and Operation Phase in the LAA as a direct result of Project activities as follows.

At the community level, some citizens described increased access to their Traditional Territory as a positive Project-related effect. Increased options to access the land (e.g., a closer overland access route from Dawson to the Stewart River) were seen as facilitating traditional land and resource use (TH Traditional Economy and Traditional Foods Focus Group, Personal Communication, 2016). Other citizens said a change in access could displace subsistence activities from current or future TU sites. Increased human presence facilitated by changes to access was seen as affecting TU activities through decreased animal abundance (Interview 14, Personal Communication, 2016). For individuals who may be displaced, engaging in traditional harvest activities may become more expensive, time-consuming, or generally more challenging. (TH Traditional Foods and Traditional Economy focus group, Personal Communication, 2016).

During Reclamation and Closure, upgrades to existing portions of the NAR will remain as a Project legacy (new sections will be decommissioned and reclaimed). A positive or neutral effect may be experienced by individuals whose access to conduct traditional land and resource use is enhanced by the permanently upgraded sections of the existing NAR, although limited by potential discontinuities in access following decommissioning. These individuals may continue to be able to access areas to conduct traditional use activities more readily than they could before the Project was built.

In conclusion, the potential effect to TH current traditional land and resource use in the LAA and RAA during Construction and Operation Phases as a result of a Project-related change in access is likely to be positive and adverse. During the Reclamation and Closure Phase, potential effects to TH current traditional land and resource use are likely to be positive or neutral in the permanently upgraded sections of the NAR.

White River First Nation

Secondary sources show that WRFN members use various modes of transportation to access their Traditional Territory for traditional land and resource use related purposes including ATVs, WRFN's "Band Van", vehicle, canoe or boat, snowmobile, and walking (Calliou Group 2012a). Changes in access to WRFN asserted Traditional Territory are expected to occur during the Construction and Operation Phase in the LAA as a direct result of Project activities. These changes will likely be experienced and characterized differently by different members at the community level as follows.

For some, a Project-related change in access will facilitate positive changes to the type or amount of traditional land and resource use activities being conducted, especially where members prefer to hunt by road. A 2012 Harvest Study with WRFN identified that hunting activities were primarily conducted by members along highway corridors (Calliou Group 2012a).

Changes to access may have a neutral effect on the current land and resource use of those WRFN members, if specific or preferred areas for conducting traditional land and resource use activities do not interact with this Project activity. A 2012 Harvest Study showed that WRFN members conducted the majority of harvesting activities in an area within 35 km of Beaver Creek along the Alaska Highway (Calliou Group 2012a). For these individuals, who may not necessarily represent all WRFN members who engage in traditional land and resources use activities, changes to access in the LAA and portions of the RAA during the Construction Phase and Operation Phase are likely to be neutral.

It is possible that a change in access will have an adverse effect on traditional land and resource use by some WRFN individuals who may be currently conducting or may wish to conduct particular activities in their Traditional Territory in the future. No primary data were available to confirm or update the results of the 2012 Harvest Study. These potential adverse effects include making it more expensive, time-consuming, and generally more challenging to access different areas for various traditional economic activities.

Following Reclamation and Closure some individuals' access to traditional land and resource use enhanced by the new sections of the NAR will no longer be available.

In conclusion, the potential effect to WRFN current traditional land and resource use in the LAA and RAA during the Construction and Operation Phases as a result of a Project-related change in access is likely to be positive and adverse. During the Reclamation and Closure, potential effects to WRFN current traditional land and resource use within WRFN asserted Traditional Territory are expected to revert to pre-Project conditions with the decommissioning of new southern portions of the NAR.

Selkirk First Nation

Secondary data show that SFN citizens are currently accessing their Traditional Territory for traditional land and resource use purposes (KCB 2013; Easton et al. 2013; TH 2012; Castillo 2012; Pearse and Weinstein 1988). Changes in access to the SFN Traditional Territory are expected to occur during the Construction and Operation Phase in the LAA as a direct result of the Project. These changes will likely be experienced and characterized differently by different citizens at the community level.

Some citizens' access to the SFN Traditional Territory will improve if they plan on using an increase in access as an opportunity to conduct more traditional use or subsistence activities. Though no primary or secondary data were identified to describe how SFN citizens may experience either a positive or adverse effect as a result of a Project-related change in access, the Project study team cautiously assumes that SFN citizens share similar position to TH citizens and WRFN members. Some described improved road access as an opportunity to conduct traditional land and resource use activities in an area of their Traditional Territory.

Other citizens may characterize an increase in access to the SFN Traditional Territory as an adverse effect. Changes in access may displace individuals from the sites where they are currently conducting or may wish to conduct particular TU activities in the future. For these individuals who may be displaced, engaging in traditional harvest activities may become more expensive, time-consuming, or generally challenging.

At the time of Reclamation and Closure, some individuals' access to traditional land and resource use in their Traditional Territory may be indirectly permanently enhanced by the upgraded sections of the existing NAR; however, following Reclamation and Closure some individuals' access to traditional land and resource use enhanced by the new sections of the NAR will no longer be available.

In conclusion, the potential effect to SFN current traditional land and resource use in their territory in the LAA and RAA during the Construction and Operation Phase from a Project-related change in access is likely to be positive and adverse. During the Reclamation and Closure Phase, potential effects to SFN current traditional land and resource use are expected to be positive or neutral in the LAA and RAA.

First Nation of Na-cho Nyäk Dun

Secondary data shows that FNNND citizens are currently accessing their Traditional Territory for traditional land and resource use purposes (FNNND 2015; TH 2012b; DPRA 2010; InterGroup Consultants Ltd. 2009; Leary 2009; Popadynec 2009; Access Consulting 2008; McClellan 1987). Changes in access to the FNNND Traditional Territory are expected to occur during the Construction and Operation Phase in the LAA as a direct result of Project activities, and will likely be experienced and characterized differently by different citizens at the community level as follows.

Some citizens' access to the FNNND Traditional Territory will improve if they plan on using an increase in access as an opportunity to conduct more traditional use or subsistence activities. Though no primary or secondary data were identified to describe how FNNND citizens may perceive increased access, Project study team cautiously assumes that FNNND citizens share similar position to TH citizens and WRFN members, in that some citizens may use the increased access as an opportunity to conduct traditional land and resource use activities in an area of their Traditional Territory, which was previously inaccessible by personal vehicle year-round. Some citizens may characterize an increase in access to the FNNND Traditional Territory as a negative Project-related effect. Some individuals may be displaced from current or future TU sites, making it more expensive, time consuming, or generally challenging to access different areas for various traditional economic activities.

At the time of Reclamation and Closure, access to traditional land and resource use areas will be permanently enhanced by the upgraded sections of the existing NAR. These individuals may be able to access areas to conduct traditional use activities more readily than they could before the Project was built; however, decommissioning new sections will revert access to pre-Project conditions. These

individuals may be able to indirectly access their territory from the northern portion of the NAR to conduct TU activities more readily than they could prior to Project construction.

In conclusion, the potential effect to FNNND current traditional land and resource use in their territory within the LAA and RAA during the Construction and Operation Phase from a Project-related change in access is likely to be positive and adverse. During the Reclamation and Closure Phase, potential effects to FNNND current traditional land and resource use are likely to be positive or neutral in the LAA and RAA.

4.2.2.3 Potential Effects to Sensory Conditions

Sensory conditions include visual conditions, noise, and air quality. A change in sensory conditions may affect different individuals and First Nations differently. A change in sensory conditions can affect the desirability of conducting current traditional land and resource uses, including hunting, trapping, fishing, and plant harvesting, as well as wood cutting, preparing harvested food from the land, sharing resources harvested from the land, and passing on TK through land-based experiences and teachings.

The following ICs are linked with potential changes in sensory conditions perceived during current traditional land and resource uses: **Section 9.0 Air Quality and Greenhouse Gas Emissions Analysis**; **Section 10.0 Noise Analysis**; **Appendix 24-B Visual Analysis**; and **Section 25.0 Community Health and Well-being**. If residual adverse changes are identified in any one of the listed sections, then related residual adverse effects are also likely to be identified with respect to sensory conditions.

Potential effects to air quality, noise, and visual resources are summarized in **Section 4.2.1.3**. The potential for changes to these linked ICs to influence the locations and activities for current traditional land and resource uses is discussed below for each First Nation.

Tr'ondëk Hwëch'in

Changes in characteristic sensory conditions may affect the desirability and experience of conducting current traditional land and resource uses.

Visual changes related to Project development may affect current traditional land and resource users. Focus group participants said disturbances that can be visually identified (e.g., where machines have been or where roads are located) influence where traditional land and resource users choose to conduct different activities (TH Traditional Foods and Traditional Economy focus group, Personal Communication, 2016). Interviewees said that observing visual changes related to development has an effect on well-being (Interview 10, Personal Communication, 2016). Changes to sensory conditions are expected to vary by season, and by traditional land and resource use activity. One TH current traditional land and resource user said that their trapping concession is located in an area that is highly disturbed by placer mining; however, they noted that in the winter they do not consider their trapline to be disturbed as

everything is covered in snow, the road is closed, and there is no one out using the land at that time (Interview 22, Personal Communication, 2016). Thus, for this particular traditional land and resource user, changes to visual condition that are apparent in the winter season will have a greater effect than changes that may be apparent during other times of year.

For First Nation citizens who may require or prefer a certain distance from such anthropogenic disturbances as roads and traffic, the Project-related change in noise and air quality may be experienced as an adverse effect. Elders from TH said they perceived noise and dust from traffic as negatively affecting the TH Traditional Territory (TH Traditional Foods and Traditional Economy Focus Group, Personal Communication, 2016). Another TH citizen cited traffic noise as a concern. The citizen expressed concern that the noise from winter traffic would cause furbearers to move away (Interview 22, Personal Communication, 2016).

As the Project is decommissioned, it is expected that the land will return to baseline sensory conditions.

In conclusion, the potential effect to TH current traditional land and resource use in the LAA during Construction and Operation as a result of changes to visual conditions is likely to be neutral to adverse, depending on the specific area, time of year being considered, and individual perspective. The Visual Analysis (**Appendix 24-A**) concludes that no significant adverse effects are anticipated from the selected viewpoints near the Mine Site from the Yukon River; thus, in this area of the LAA changes to the visual condition are expected to have a neutral effect to TH current land and resource use. Primary data shows that changes to sensory conditions along the road during winter may be an adverse Project-related effect.

The Project's noise analysis concluded that no adverse residual changes to focus areas are expected; thus, potential effects to TH current traditional land and resource use in the LAA during the Construction and Operation Phases as a result of Project-related changes to noise are expected to be neutral. Changes to baseline noise conditions are expected to be temporary, short-term, and localized.

The Project will comply with relevant air quality objectives and guidelines beyond the Project footprint, with small areas of predicted temporary exceedance of particulate matter indicator concentrations mainly within the Project area in the vicinity of the Mine Site. A potential effect would be adverse to the extent that TH current traditional land and resource use overlaps in time with these short-lived, very localized changes.

White River First Nation

Changes in characteristic sensory conditions may affect the desirability and experience of conducting current traditional land and resource uses.

Visual changes related to Project development may also affect traditional land and resource users. A 2012 WRFN report found that visual disturbances related to natural resource development may affect

or interrupt traditional pursuit activities (YESAB 2012). White River First Nation traditional land and resource users said that changing the visual characteristics of the land can affect heritage resources and setting, "…reduc[ing] the quality of…experience by affecting the wilderness character [or aesthetic] of the region" (YESAB 2012). These findings are further supported by a 2014 report conducted with WRFN: "a potential reduction in the connection WRFN members feel toward the landscape in general due to changes in the character and feel of the landscape, due to visual pollution…" (Bates et al. 2014). Specific to the Coffee Creek area, WRFN members described how visual changes related to the Project could contribute to effects on their sense of connection with the land and the tranquility and spirituality that WRFN members identify with the site (Bates et al. 2014). Sensory conditions are expected to vary by season, and by traditional land and resource use. No WRFN-specific primary data were obtained to support this statement. The assessment assumes that changes described in TH primary data reflect a shared position with other potentially affected First Nations.

Activities conducted during Construction and Operation are expected to result in changes to noise and air quality in the LAA. These Project-related sensory changes may be characterized as undesirable. Though no WRFN-specific primary data were obtained to support this statement, the assessment assumes that TH primary data reflects a position shared by with other potentially affected First Nations.

As the Mine Site and NAR are decommissioned during the Reclamation and Closure Phase, the land will likely return to baseline sensory conditions.

In conclusion, the potential effect to WRFN current traditional land and resource use in the LAA during Construction and Operation as a result of a Project-related changes to visual conditions is likely to be neutral to adverse, depending on the specific area and time of year. As concluded in the Visual Analysis (**Appendix 24-A**), no significant adverse effects are anticipated from the selected viewpoints near the Mine Site from the Yukon River; thus, in this area of the LAA changes to the visual condition are expected to have a neutral effect to WRFN current land and resource use. In those areas along the NAR, changes to visual conditions during the winter season and in currently undeveloped sections of the NAR, may be experienced as an adverse Project-related effect.

The Project's noise analysis concluded that no significant adverse residual changes to noise conditions in focus areas are expected to result from Project activities; potential effects to WRFN current traditional land and resource use in the LAA during Construction and Operation as a result of changes to noise are expected to be neutral. Neither a worsening nor improvement from baseline noise conditions is expected given the Project's temporary, short-term, localized changes to sound.

The Project will comply with relevant air quality objectives and guidelines beyond the mine area, with small areas of predicted exceedance of particulate matter indicator concentrations mainly within the Project area. A potential effect would be adverse to the extent that WRFN current traditional land and resource use overlaps in time with these short-lived (residual changes dissipate within a day on cessation of the activity), very localized changes.

Selkirk First Nation

Changes in characteristic sensory conditions may affect the desirability and experience of conducting current traditional land and resource uses. Visual changes related to Project development may affect current traditional land and resource users. Selkirk First Nation citizens said in 2013 that changes to vegetation being observed on the land were a concern including changes to the appearance of non-native plant species (KCB 2013). Changes to sensory conditions are expected to vary by season, and by traditional land and resource use. Opening the NAR in winter would produce greater sensory effects in that season. Though no SFN specific primary data were obtained to support this statement, it is assumed that these changes described in TH primary data reflect a position shared by other potentially affected First Nations.

Activities conducted during Construction and Operation are expected to create changes to noise and air quality in the LAA, which some individuals may experience as undesirable anthropogenic influences. Although no SFN specific primary data were obtained to support this statement, it is assumed that these changes described in TH primary data are changes that reflect a position shared by other potentially affected First Nations.

At Reclamation and Closure, it is anticipated that the land will return to baseline sensory conditions. Reclamation and decommissioning will include consultation and engagement with First Nations to help ensure that reclamation and closure plans reflect the values and needs of affected First Nations. For further detail regarding road and Mine Site decommissioning and closure plans, please see **Appendix 31-C Conceptual Reclamation and Closure Plan**.

In conclusion, the potential effect to SFN current traditional land and resource use in the LAA during Construction and Operation as a result of Project-related changes to visual condition are expected to be neutral to adverse, depending on the specific area and time of year. As concluded in the Visual Analysis (**Appendix 24-A**), no significant adverse effects are anticipated from the selected viewpoints near the Mine Site from the Yukon River; thus, in this area of the LAA changes to the visual condition are expected to have a neutral effect to SFN current land and resource use. In those areas along the NAR, changes to visual conditions during the winter season or in currently undeveloped sections of the NAR may be experienced as an adverse Project-related effect.

Secondly, the Project's noise analysis concluded that no adverse residual changes are expected to result from Project activities; thus, potential effects to SFN current traditional land and resource use in the LAA during the Construction and Operation Phases as a result of Project-related changes to noise is likely to be neutral. Neither a worsening nor improvement from baseline noise conditions is expected to result given the temporary, short-term, localized nature of sound levels expected from the Project.

Lastly, the Project's air quality analysis found that the Project will comply with relevant air quality objectives and guidelines beyond the Project footprint, with small areas of predicted temporary exceedance of particulate matter indicator concentrations mainly within the Project area. A potential effect would be adverse to the extent that SFN current traditional land and resource use overlaps in time with these short-lived (residual changes dissipate within a day on cessation of the activity), very localized changes.

First Nation of Na-cho Nyäk Dun

Changes in sensory conditions potentially affect the desirability and experience of conducting current traditional land and resource uses. Visual changes related to the development of the Project Mine Site and NAR may also have an effect on traditional land and resource users. Changes to sensory conditions are expected to vary by season, and by traditional land and resource use. As the NAR is not currently open in winter, having the road open during this time of year would cause more pronounced changes to sensory conditions at this time of year. Though no FNNND-specific primary data were obtained to support this statement, it is assumed that these changes described in TH primary data are changes that reflect a position shared by other potentially affected First Nations.

Activities conducted during Construction and Operation are expected to result in changes to noise and air quality in the LAA. These Project-related changes may be characterized as an adverse effect by those who consider such changes to sensory condition from anthropogenic activities to be undesirable. Though no FNNND-specific primary data were obtained to support this statement changes described in TH primary data are presumed to reflect a position shared by other potentially affected First Nations.

At Reclamation and Closure, it is anticipated that the land will return to baseline sensory conditions. Reclamation and decommissioning will include consultation and engagement with First Nations to help ensure that reclamation and closure plans reflect the values and needs of affected First Nations. For further detail regarding road and Mine Site decommissioning and closure plans, please see **Appendix 31-C Conceptual Reclamation and Closure Plan**.

In conclusion, the potential effect to FNNND current traditional land and resource use in the LAA during the Construction and Operation Phases as a result of changes to visual is likely to be neutral to adverse, depending on the specific area and time of year. As concluded in the Visual Analysis (**Appendix 24-A**), no significant adverse effects are anticipated from the selected viewpoints in the vicinity of the Mine Site from the Yukon River; thus, in this area of the LAA changes to the visual condition are expected to have a neutral effect to FNNND current land and resource use. In those areas along the NAR, changes to visual conditions during winter and/or in currently undeveloped sections of the NAR within the FNNND territory, may be experienced as adverse.

Secondly, the Project's noise analysis concluded that no adverse residual changes are expected to result from Project activities; thus, potential effects to FNNND current traditional land and resource use in the LAA during Construction and Operation Phases as a result of Project-related changes to noise is likely to be neutral. Neither a worsening nor improvement from baseline noise conditions are expected to result given the temporary, short-term, localized nature of sound levels expected from the Project.

Lastly, the Project's air quality analysis found that the proposed Project will comply with relevant air quality objectives and guidelines beyond the Project footprint, with small areas of predicted exceedance of particulate matter indicator concentrations beyond the Project footprint in the vicinity of the Mine Site. Thus potential changes are not within the FNNND territory and current traditional land and resource use is not anticipated to be affected.

4.2.2.4 Potential Decrease in the Quality of Land and Resources

Project-related changes to environmental conditions may adversely affect the quality of resources currently used for traditional purposes. Linked biophysical technical reports that support an assessment of changes in the land quality to related VCs and ICs are: **Appendix 12-B Surface Water Quality**; **Appendix 14-B Fish and Fish Habitat**; **Appendix 15-B Vegetation**; **Appendix 16-A Terrestrial Wildlife**; and **Appendix 17-A Birds and Bird Habitat. Appendix 9-B Air Quality and Greenhouse Gas Emissions**, **Appendix 10-A Noise**, and **Appendix 24-B Visual Analysis** are considered in the potential effects to sensory disturbance. Residual adverse effects identified in these linked VC reports are summarized in **Section 4.2.1.4** and discussed with respect to effects to the quality of land and resources for each First Nation in the following sections.

A change to the quality of resources is likely to affect different individuals and First Nations differently. Project-related environmental changes to the amount of resources currently used for traditional purposes may include presence, absence, abundance, and distribution of animals, plants, and fish that First Nations depend on for traditional purposes. Changes to environmental conditions may affect traditional economic activities such as gathering firewood, transmitting TK on the land, hunting, fishing, trapping, and plant harvesting. Project-related environmental changes may also influence changes to the quality of resources currently used for traditional purposes; this could include health and habitat.

Tr'ondëk Hwëch'in

Primary and secondary data show that TH citizens currently use areas in the LAA and RAA for such traditional land and resource use purposes as habitation, transportation, and subsistence, and these uses are linked to current cultural, spiritual, and environmental values. At the TH Traditional Foods and Traditional Economy focus group TH Elders shared that they currently do not use the LAA along some areas of the existing portions of the NAR because the area is highly disturbed and used for placer mining activities (TH Traditional Foods and Traditional Economy focus group, Personal Communication, 2016);

thus it expected that potential effects to the amount or quality of resources will be more pronounced in areas of the Project footprint that are currently undeveloped.

Tr'ondëk Hwëch'in traditional harvesters shared a concern that a spill or runoff could have far-reaching effects on the entire ecosystem, including drinking water and fish (TH Traditional Foods and Traditional Economy focus group, Personal Communication, 2016). Accidents and Malfunctions such as this are addressed in **Section 2**8 of this Project proposal.

In addition to those rights outlined in the Tr'ondëk Hwëch'in Final Agreement (IAND 1998), the following information was provided by TH and/or its citizens regarding current use of the LAA and/or RAA for traditional purposes.

Vegetation

Tr'ondëk Hwëch'in citizens currently harvest vegetation for many food, medicinal, social, cultural, and material purposes. Project-related adverse effects to the amount or quality of vegetation could affect TH's current use of vegetation for traditional purposes; including effects to TH's vegetation harvest or to vegetation which animals depend on as a source of food or for habitat. One TH contributor explained that the NAR is proposed to go through an existing spruce stand in its southern extent close the Yukon River; they shared that removing this stand (or portions of it) will change the environmental conditions and habitat that currently exist in this area (Interview 14, Personal Communication, 2016). An interviewee also explained that even if a Blueberry patch remained after the NAR was constructed, the presence of the road alone in close proximity to their harvesting areas would affect their desire to use the area for such health-related concerns as contamination (Interview 14, Personal Communication, 2016).

Limited site-specific information regarding TH's current use of vegetation in or near the LAA was provided or available to the Project's study team. As described in **Appendix 15-B Vegetation VC Assessment Report**, Project-related effects on vegetation are limited to the Project footprint due to clearing, and adjacent vegetation due to dust deposition. There are no known rare, threatened, or unique ecological communities at the footprint or in the Vegetation LAA. Traditional and medicinal use plants found in the Project footprint are also common throughout the Vegetation LAA. Following the successful application of all recommended mitigation measures, detectable residual Project-related effects are anticipated to occur from habitat loss, some changes in distribution of invasive plant species, and change in vegetation health due to roadside dust; however, no significant effects were identified for any of the Vegetation subcomponents. Although a residual effect might occur, the effect is unlikely to pose a risk to the long-term persistence and viability of vegetation, including ecological communities, wetlands, and traditional or medicinal and rare plants at the local and regional level; therefore, Project-related effects are not likely to result in an adverse effect to the current use of vegetation by TH.

Wildlife and Birds

Wildlife and birds are currently harvested and/or valued by TH citizens for many food, social, ceremonial, and material purposes. Potential Project-related effects to wildlife resources in the LAA and RAA may affect the amount and/or quality wildlife resources available for TH traditional land and resource purposes. A 2012 study conducted by TH stated that the Coffee Creek area is environmentally and culturally significant (TH 2012b). One current traditional land and resource user provided the example of how clear-cutting conducted by placer miners affects the abundance of valued wildlife such as Marten and Moose (Interview 22, Personal Communication, 2016). One factor contributing to this change in abundance is the destruction of habitat (Interview 22, Personal Communication, 2016). Other current traditional land and resource users said they were concerned that Project-related changes to environmental conditions related to the barge could affect adjacent Moose habitat and the condition of the banks of the Yukon River, an area they cited as prone to erosion (Interview 14, Personal Communication, 2016). Limited site-specific information regarding TH's current use of wildlife resources in or near the LAA and RAA was provided or available to the Project study team.

As described in **Appendix 16-B Wildlife and Wildlife Habitat VC Assessment Report**, no significant adverse effects were identified for any of the wildlife and wildlife habitat subcomponents at the regional level. A detectable or measurable residual effect might occur at the individual level if Project activities resulted in habitat loss and reduced habitat effectiveness due to sensory disturbance, or to mortality risk and altered movement to some subcomponents; however, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire wildlife population at the regional level. As described in **Appendix 17-B Birds and Bird Habitat Valued Component Assessment**, following the successful application of proposed mitigation measures, detectable or measurable Project-related residual effects are only anticipated to occur from direct loss of habitat and sensory disturbance; however, no significant adverse effects were identified for any of the bird-related subcomponents at the regional level. Although a detectable or measurable effect might occur at the individual level if Project activities resulted in direct habitat loss or sensory disturbance, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire bird population at the regional level. Based on the results of these two VC Assessment Reports (**Appendix 16-B** and **Appendix 17-B)** Project-related effects are not likely to result in an adverse effect to the current use of wildlife by TH.

Fish

Fish are currently used and/or valued by TH citizens for many purposes, which include food, social, and ceremonial uses (among others). Potential Project-related effects to fish in the LAA and RAA may result in an adverse effect to the amount or quality of fish available for TH current land and resource use-related purposes. One current TH traditional land and resource user raised a concern that Project-related changes to environmental conditions at the proposed barge location on the Yukon River could affect nearby fishing areas and the condition of the Yukon River banks, which are prone to erosion (Interview 14, Personal Communication, 2016). Limited site-specific information regarding TH's current use of fish in or near the LAA was provided or available to the Project study team.

The **Fish and Fish Habitat Valued Component Assessment (Appendix 14-B**) includes an assessment of the availability of fish habitat with respect to the Project. The Project footprint will not affect fish habitat availability because those stream reaches that are expected to be directly affected by the mine infrastructure are not fish-bearing. As a result of Construction and Operation, residual effects to the habitat for Arctic Grayling in Latte, Halfway, YT-24 creeks were assessed as not significant, but not in the drainages located downstream from the Mine Site (i.e., Yukon River and Coffee Creek). With respect to the NAR, a residual effect to fish and fish habitat for Arctic Grayling, Chinook Salmon, and Chum Salmon during the Construction Phase only was identified as not significant due to expected habitat alteration and encroachment near the barge landings and road along the back channel of Stewart River.

Effects to the current use of fish are rated neutral and not likely to result in adverse effects as no significant effects to fish and fish habitat were identified, and residual effects are very localized and not likely to affect traditional fishing activities.

Water

Water, including surface water and groundwater, is currently used and valued by TH citizens. Potential Project-related effects to water in the LAA and RAA may result in an adverse effect to the amount and quality of all land and resources currently used by TH for traditional purposes. At the TH Traditional Foods and Traditional Economy focus group, TH Elders shared that water is not only important for the plants, wildlife, fish, and other aspects of the environment that it supports, but is also used by citizens (TH Traditional Foods and Traditional Economy focus group, Personal Communication, 2016). In the TH Traditional Foods and Traditional Economy survey, one respondent indicated that they collect drinking water (or surface water) from an area within or near the LAA along the NAR (TH Traditional Foods and Traditional Economy survey, Personal Communication, 2016). Citizens also expressed concerns about the safety of drinking surface water and changes to surface water quality that they have been observing (TH Traditional Foods and Traditional Economy survey, Personal Communication, 2016). Water was also expressed as one of the necessities required for sustainability (TH Traditional Foods and Traditional Economy survey, Personal Communication, 2016). Limited site-specific information regarding TH's current use of water in or near the LAA and RAA was provided or available to the Project study team.

As described in **Section 7.0 Groundwater Analysis** of the Project Proposal, mitigation measures included as part of the Project design (Project Modification) are considered effective and sufficient to avoid or minimize potential changes to groundwater, and no residual changes are anticipated. As described in **Section 12.0 Surface Water Quality Assessment** of the Project Proposal, overall, residual As described in **Section 12 Surface Water Quality Assessment**, overall, residual Project-related effects following mitigation are predicted to occur in Latte Creek, YT-24 tributary, and Halfway Creek. No residual effects are predicted to occur in Coffee Creek, downstream of the Latte Creek confluence, or in the Yukon River. Overall, residual effects from total uranium (T-U) in Latte Creek, total arsenic (T-As) in YT-24, and nitrate, T-U, and total zinc (T-Zn) in Halfway Creek were identified but are considered not significant. Project-related effects to surface water quality are likely to result in effects to current use of water by TH to the extent that they currently use water in the Latte Creek, YT-24 Tributary, and Halfway Creek; however, information on TH current use of water was not available.

White River First Nation

Secondary and primary data show that WRFN members currently use areas in the LAA and RAA for such traditional land and resource use purposes as habitation, transportation, and subsistence, (although not as much as in the past), and these uses are linked to current cultural, spiritual, and environmental values. In a 2012 Harvest Study with WRFN, it was identified that harvest locations were primarily located within 35 km of Beaver Creek along the Alaska Highway corridor (Calliou Group 2012a). While this finding does not eliminate the possibility of members conducting traditional activities in other areas, it does suggest that the majority of WRFN members would experience neutral effects based on the Project study team's current understanding of where harvesting-related activities of the traditional economy are currently conducted. Related VCs and ICs that inform potential changes in the amount or qualities of resources include:

- Appendix 9-B Air Quality and Greenhouse Gas Emissions Analysis
- Appendix 10-A Noise Intermediate Component Analysis
- Appendix 12-B Surface Water Quality Valued Component Assessment
- Appendix 14-B Fish and Fish Habitat Valued Component Assessment
- Appendix 15-B Vegetation Valued Component Assessment
- Appendix 16-A Terrestrial Wildlife Valued Component Assessment
- Appendix 17-A Birds and Bird Habitat Valued Component Assessment
- Appendix 24-A1 Visual Analysis.

In addition to those rights pursuant to Section 35 of the *Constitution Act*, *1982*, the following information was provided by WRFN regarding current use of the LAA and RAA for traditional purposes.

Vegetation

Members of WRFN currently harvest or value vegetation for many medicinal, social, cultural, and material purposes. A potential Project-related adverse effect to the amount or quality of vegetation resources may result in an adverse effect to WRFN's current use of vegetation for traditional purposes. Limited site-specific information regarding WRFN's current use of vegetation in or near the LAA was provided or available to the Project study team.

As described in **Appendix 15-B Vegetation Valued Component Assessment**, Project-related effects on vegetation are limited to the Project's footprint due to clearing, and adjacent vegetation due to dust deposition. The footprint and the Vegetation LAA contain no known rare, threatened, or unique ecological communities. Traditional and medicinal use plants found in the Project footprint are also common throughout the Vegetation LAA. Following the successful application of all recommended mitigation measures, detectable residual Project-related effects are anticipated to occur from habitat loss, some changes in distribution of invasive plant species, and change in vegetation health due to roadside dust; however, no significant effects were identified for any of the Vegetation subcomponents. Although a residual effect might occur, the effect is unlikely to pose a risk to the long-term persistence and viability of Vegetation, including ecological communities, wetlands, and traditional or medicinal and rare plants at the local and regional level; therefore, Project-related effects are not likely to result in an adverse effect to the current use of vegetation by WRFN.

Wildlife and Birds

Wildlife are currently harvested and valued by WRFN members for many food, social, ceremonial, and material purposes. A potential Project-related adverse effect to the amount or quality of wildlife resources may result in an adverse effect to WRFN's current use of wildlife for traditional purposes. Limited site-specific information regarding WRFN's current use of wildlife in or near the LAA was provided or available to the Project study team.

As described in **Appendix 16-B Wildlife and Wildlife Habitat Valued Component Assessment**, no significant adverse effects were identified for any of the wildlife and wildlife habitat subcomponents at the regional level. A detectable or measurable residual effect may occur at the individual level if Project activities resulted in habitat loss and reduced habitat effectiveness due to sensory disturbance, and to mortality risk and altered movement to some subcomponents; however, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire wildlife population at the regional level. Based on the results in **Appendix 16-B**, Project-related effects are not likely to result in an adverse effect to the current use of wildlife by WRFN.

Birds are currently used and valued by WRFN citizens for many food, social, ceremonial, and material purposes. A potential Project-related adverse effect to the amount or quality of birds may result in an adverse effect to WRFN's current use of birds for traditional purposes. Limited site-specific information

regarding WRFN's current use of fish in or near the LAA was provided or available to the Project study team.

As described in **Appendix 17-B Birds and Bird Habitat Valued Component Assessment**, following the successful application of proposed mitigation measures, detectable or measurable Project-related residual effects are only anticipated to occur from direct loss of habitat and sensory disturbance; however, no significant adverse effects were identified for any of the bird-related subcomponents at the regional level. Although a detectable or measurable effect may occur at the individual level if Project activities resulted in direct habitat loss or sensory disturbance, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire bird population at the regional level. For these reasons, Project-related effects are not likely to result in an adverse effect to the current use of birds by WRFN.

Fish

Fish are currently used and valued by WRFN citizens for many food, social, and ceremonial purposes, among others. A potential Project-related adverse effect to the amount or quality of fish may result in an adverse effect to WRFN's current use of fish for traditional purposes. Limited site-specific information regarding WRFN's current use of fish in or near the LAA was provided or available to the Project study team.

The **Fish and Fish Habitat Valued Component Assessment (Appendix 14-B**) assesses the availability of fish habitat with respect to the Project. In summary, it was found that the Project footprint will not affect fish habitat availability because stream reaches that are expected to be directed affected by the mine infrastructure are not fish-bearing. During the Project's Construction and Operation Phase, residual effects to the habitat for Arctic Grayling in Latte, Halfway, YT-24 creeks were assessed as not significant, but not in those drainages located downstream from the Mine Site (i.e., Yukon River and Coffee Creek With respect to the NAR, a non-significant residual effect to fish and fish habitat for Arctic Grayling, Chinook Salmon, and Chum Salmon during construction only was identified as a result of expected habitat alteration and encroachment in the vicinity of the barge landings and road along the back channel of Stewart River.

Effects to the current use of fish are rated neutral as no significant effects to fish and fish habitat were identified, and non-significant residual effects are very localized, and not likely to affect traditional fishing activities.

Water

Water, including surface water and groundwater, is very important to WRFN (YESAB 2012). Potential Project-related effects to water in the LAA and RAA may result in an adverse effect to the amount and quality of all land and resources currently used by WRFN for traditional purposes. White River First Nation appreciates the linkages between water and environmental quality, and has identified water resource-

related concerns in previous projects on their Traditional Territory, including: contamination of water sources, erosion and sedimentation of waterbodies, downstream effects, and water withdrawal (YESAB 2012). Limited site-specific information regarding WRFN's current use of water in or near the LAA and RAA was provided or available to the Project study team.

As described in **Section 7.0 Groundwater Analysis**, mitigation measures included as part of the Project design (Project modification) are considered effective and sufficient to avoid or minimize potential changes to groundwater and no residual changes are anticipated. As described in **Section 12.0 Surface Water Quality Assessment** of the Project Proposal, overall, residual Project-related effects following mitigation are predicted to occur in Latte Creek, YT-24 tributary, and Halfway Creek. No residual effects are predicted to occur in Coffee Creek, downstream of the Latte Creek confluence, or in the Yukon River. Overall, residual effects from total uranium (T-U) in Latte Creek, total arsenic (T-As) in YT-24, and nitrate, T-U, and total zinc (T-Zn) in Halfway Creek were identified but are considered not significant. Project-related effects to surface water quality are likely to result in effects to current use of water by WRFN to the extent that they currently use water in Latte Creek, YT-24 tributary, and Halfway Creek; however, information on WRFN current use of water was not available.

Selkirk First Nation

Secondary data shows that SFN citizens currently use areas in the RAA for such traditional land and resource use purposes as habitation, transportation, and subsistence, and these uses are linked to current cultural, spiritual, and environmental values. No information was provided to the Project regarding SFN's potential current use of areas of SFN's Traditional Territory, which are considered as part of the LAA. Therefore, the following discussion of potential Project-related effects to SFN's current traditional land and resource use is discussed with regards to the SFN Final and Self-Government Agreements, including Category B land. Related VCs and ICs that inform potential changes in the amount or qualities of resources include:

- Appendix 9-B Air Quality and Greenhouse Gas Emissions Intermediate Component Analysis
- Appendix 10-A Noise Intermediate Component Analysis
- Appendix 12-B Surface Water Quality Valued Component Assessment
- Appendix 14-B Fish and Fish Habitat Valued Component Assessment
- Appendix 15-B Vegetation Valued Component Assessment
- Appendix 16-B Wildlife and Wildlife Habitat Valued Component Assessment
- Appendix 17-A Birds and Bird Habitat Valued Component Assessment
- Appendix 24-A1 Visual Analysis.

Vegetation

Selkirk First Nation citizens currently harvest or value vegetation for many medicinal, food, social, cultural, and material purposes. A potential Project-related adverse effect to the amount or quality of vegetation resources may result in an adverse effect to SFN's current use of vegetation for traditional purposes. Limited site-specific information regarding SFN's current use of vegetation in or near the LAA was provided or available to the Project study team.

As described in **Appendix 15-B Vegetation Valued Component Assessment**, Project-related effects on vegetation are limited to the Project's footprint due to clearing, and adjacent vegetation due to dust deposition. The vegetation found in the footprint and the Vegetation LAA is common in the area, and there are no known rare, threatened, or unique ecological communities. Traditional and medicinal use plants found in the Project footprint are also common throughout the Vegetation LAA. Following the successful application of all recommended mitigation measures, detectable residual Project-related effects are anticipated to occur from habitat loss, some changes in distribution of invasive plant species, and change in vegetation health due to roadside dust; however, no significant effects were identified for any of the Vegetation subcomponents. Although a residual effect may occur, the effect is unlikely to pose a risk to the long-term persistence and viability of Vegetation, including ecological communities, wetlands, and traditional, medicinal, and rare plants at the local and regional level; therefore, Project-related effects are not likely to result in an adverse effect to the current use of vegetation by SFN.

Wildlife and Birds

Wildlife are currently harvested and valued by SFN citizens for many food, social, ceremonial, and material purposes. A potential Project-related adverse effect to the amount or quality of wildlife resources may result in an adverse effect to SFN's current use of wildlife for traditional purposes. Limited site-specific information regarding SFN's current use of wildlife in or near the LAA was provided or available to the Project study team.

As described in **Appendix 16-B Wildlife and Wildlife Habitat Valued Component Assessment**, no significant adverse effects were identified for any of the wildlife and wildlife habitat subcomponents at the regional level. A detectable or measurable residual effect may occur at the individual level if Project activities result in habitat loss and reduced habitat effectiveness due to sensory disturbance, and to mortality risk and altered movement to some subcomponents; however, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire wildlife population at the regional level. Based on the results in **Appendix 16-B**, Project-related effects are not likely to result in an adverse effect to the current use of wildlife by SFN.

Fish are currently used and valued by SFN citizens for many food, social, ceremonial, and material purposes. A potential Project-related adverse effect to the amount or quality of birds may result in an adverse effect to SFN's current use of birds for traditional purposes. Limited site-specific information

regarding SFN's current use of fish in or near the LAA was provided or available to the Project study team. As described in **Appendix 17-B Birds and Bird Habitat Valued Component Assessment**, following the successful application of proposed mitigation measures, detectable/measurable Project-related residual effects are only anticipated to occur from direct loss of habitat and sensory disturbance; however, no significant adverse effects were identified for any of the bird-related subcomponents at the regional level. Although a detectable or measurable effect might occur at the individual level if Project activities resulted in direct habitat loss or sensory disturbance, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire bird population at the regional level. For these reasons, Project-related effects are not likely to result in an adverse effect to the current use of birds by SFN.

Fish

Fish are currently used and valued by SFN citizens for many food, social, ceremonial, and material purposes. A potential Project-related adverse effect to the amount or quality of fish resources may result in an adverse effect to SFN's current use of fish for traditional purposes. Limited site-specific information regarding SFN's current use of fish in or near the LAA was provided or available to the Project study team.

The **Fish and Fish Habitat Valued Component Assessment (Appendix 14-B**) assesses the availability of fish habitat with respect to the Mine Site and NAR. In summary, it was found that the Project footprint will not affect fish habitat availability as those stream reaches that will likely be directly affected by the mine infrastructure are not fish-bearing. During the Project's Construction and Operation Phases, residual effects to the habitat for Arctic Grayling in Latte, Halfway, YT-24 creeks were assessed as not significant, but not in those drainages located downstream from the Mine Site (i.e., Yukon River and Coffee Creek). With respect to the NAR, a non-significant residual effect to fish and fish habitat for Arctic Grayling, Chinook Salmon, and Chum Salmon during the Construction Phase only was identified as a result of expected habitat alteration and encroachment in the vicinity of the barge landings and road along the back channel of Stewart River.

Effects to the current use of fish are rated neutral as no significant effects to fish and fish habitat were identified, and residual effects, deemed not significant, are very localized and not likely to affect traditional fishing activities.

Water

Water, including surface water and groundwater, is currently used and valued by SFN citizens. The SFN culture and community have been described as being intrinsically linked to the water resources on its Traditional Territory (KCB 2013). Citizens have expressed that they are currently observing and experiencing changes to the water on their Traditional Territory, which they feel may be directly and indirectly related to development on their Traditional Territory; these current changes include not trusting that surface water is safe for drinking any more, and observing unknown 'glaze-like' substances on the surface of Yukon and Pelly River in the summer of 2012 (KCB 2013). Potential Project-related effects to water in the LAA and RAA may result in an adverse effect to the amount and/or quality of all land and resources currently used by WRFN for traditional purposes. Limited site-specific information regarding SFN's current use of water in or near the LAA and RAA was provided or available to the Project study team.

As described in **Section 7.0 Groundwater Analysis** of the Project Proposal, mitigation measures included as part of the Project design (Project modification) are considered effective and sufficient to avoid or minimize potential changes to groundwater, and no residual changes are anticipated. As described in **Section 12.0 Surface Water Quality Assessment**, overall, residual Project-related effects following mitigation are predicted to occur in Latte Creek, YT-24 tributary, and Halfway Creek. No residual effects are predicted to occur in Coffee Creek, downstream of the Latte Creek confluence, or in the Yukon River. Overall, residual effects from total uranium (T-U) in Latte Creek, total arsenic (T-As) in YT-24, and nitrate, T-U, and total zinc (T-Zn) in Halfway Creek were identified but are considered not significant.Project-related effects to surface water quality are likely to result in effects to current use of water by SFN to the extent that they currently use water in the Latte Creek, YT-24 Tributary, and Halfway Creek; however, information on SFN's current use of water was not available.

First Nation of Na-cho Nyäk Dun

Secondary data shows that FNNND currently uses areas of its Traditional Territory or the RAA for such traditional land and resource use purposes as habitation, transportation, and subsistence, and these uses are inseparably linked to current cultural, spiritual, and environmental values. No information was provided to the Project regarding FNNND's potential current use of areas in FNNND's Traditional Territory, which is considered as part of the LAA. The following discussion of potential Project-related effects to FNNND current traditional land and resource use is thus discussed with regards to the FNNND Final and Self-Government Agreements. Related VCs and ICs that inform potential changes in the amount or qualities of resources include:

- Appendix 9-B Air Quality and Greenhouse Gas Emissions Intermediate Component Analysis
- Appendix 10-A Noise Intermediate Component Analysis
- Appendix 12-B Surface Water Quality; Valued Component Assessment
- Appendix 14-B Fish and Fish Habitat Valued Component Assessment

- Appendix 15-B Vegetation Valued Component Assessment
- Appendix 16-B Wildlife and Wildlife Habitat Valued Component Assessment
- Appendix 17-A Birds and Bird Habitat Valued Component Assessment
- Appendix 24-A1 Visual Analysis.

Vegetation

Citizens of FNNND currently harvest or value vegetation for many medicinal, food, social, cultural, and material purposes. A potential Project-related adverse effect to the amount or quality of vegetation resources may result in an adverse effect to FNNND's current use of vegetation for traditional purposes. Limited site-specific information regarding FNNND's current use of vegetation in or near the LAA was provided or available to the Project study team; however, FNNND citizens in a 2010 report indicated that they don't generally harvest plants in areas that have been historically disturbed by mining activities (DPRA 2010). Thus, it is expected that potential Project-related effects to vegetation will be more pronounced in those areas of the Project footprint that are currently not disturbed.

As described in **Appendix 15-B Vegetation Valued Component Assessment**, Project-related effects on vegetation are limited to the Project footprint due to clearing, and to adjacent vegetation due to dust deposition. The vegetation found in the footprint and the Vegetation LAA are common in the area, and there are no known rare, threatened, or unique ecological communities. Traditional and medicinal use plants found in the Project footprint are also common throughout the Vegetation LAA. Following the successful application of all recommended mitigation measures, detectable residual Project-related effects are anticipated to occur from habitat loss, some changes in distribution of invasive plant species, and change in vegetation health due to roadside dust; however, no significant effects were identified for any of the Vegetation subcomponents. Although a residual effect may occur, the effect is unlikely to pose a risk to the long-term persistence and viability of Vegetation, including ecological communities, wetlands, and traditional or medicinal and rare plants at the local and regional level; therefore, Project-related effects are not likely to result in a residual adverse effect to the current use of vegetation by FNNND.

Wildlife and Birds

Wildlife are currently harvested and valued by FNNND citizens for many food, social, ceremonial, and material purposes. A potential Project-related adverse effect to the amount or quality of wildlife resources may result in an adverse effect to FNNND's current use of wildlife for traditional purposes. Limited site-specific information regarding FNNND's current use of wildlife in or near the LAA was provided or available to the Project study team.

As described in **Appendix 16-B Wildlife and Wildlife Habitat Valued Component Assessment**, no significant adverse effects were identified for any of the wildlife and wildlife habitat subcomponents at the regional level. A detectable or measurable residual effect may occur at the individual level if Project

activities resulted in habitat loss and reduced habitat effectiveness due to sensory disturbance, and to mortality risk and altered movement to some subcomponents; however, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire wildlife population at the regional level. Based on the results in **Appendix 16-B**, Project-related effects are not expected to result in a significant residual adverse effect to the current use of wildlife by FNNND.

Birds are currently used and/or valued by FNNND citizens for many food, social, ceremonial, and material purposes. A potential Project-related adverse effect to the amount or quality of birds may result in an adverse effect to FNNND's current use of birds for traditional purposes. Limited site-specific information regarding FNNND's current use of fish in or near the LAA was provided or available to the Project study team. As described in **Appendix 17-B Birds and Bird Habitat Valued Component Assessment**, following the successful application of proposed mitigation measures, detectable or measurable Project-related residual effects are only anticipated to occur from direct loss of habitat and sensory disturbance; however, no significant adverse effects were identified for any of the bird-related subcomponents at the regional level. Although a detectable or measurable effect may occur at the individual level if Project activities resulted in direct habitat loss or sensory disturbance, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire bird population at the regional level. For these reasons, Project-related effects are not likely to result in a residual adverse effect to the current use of birds by FNNND.

Fish

Fish are currently used and valued by FNNND citizens for many food, social, ceremonial, and material purposes. A potential Project-related adverse effect to the amount or quality of fish resources may result in an adverse effect to FNNND's current use of fish for traditional purposes. Limited site-specific information regarding FNNND's current use of fish in or near the LAA was provided or available to the Project study team. As found in **Appendix 14-B Fish and Fish Habitat Valued Component Assessment**, no potential residual adverse effects are expected to result; therefore, no adverse effects are likely to result to FNNND current traditional land and resource use of fish and fish habitat.

Water

Water, including surface water and groundwater, is currently used and valued by FNNND members. Water quality was an explicit topic identified as part of the Na-Cho Nyäk Dun Fish and Wildlife Management Plan 2008 – 2013 (DPRA 2010). Potential Project-related effects to water in the LAA and RAA may result in an adverse effect to the amount and quality of all land and resources currently used by WRFN for traditional purposes (DPRA 2010). Limited site-specific information regarding FNNND's current use of water in or near the LAA and RAA was provided or available to the Project study team.

As described in **Section 7.0 Groundwater Analysis** of the Project Proposal, mitigation measures included as part of the Project design (Project modification) are considered effective and sufficient to avoid or minimize potential changes to groundwater, and no residual changes are anticipated. As described in **Section 12 Surface Water Quality Assessment**, overall, residual Project-related effects following mitigation are predicted to occur in Latte Creek, YT-24 Tributary, and Halfway Creek. No residual effects are predicted to occur in Coffee Creek, downstream of the Latte Creek confluence, or in the Yukon River. Overall, residual effects from total uranium (T-U) in Latte Creek, total arsenic (T-As) in YT-24, and nitrate, T-U, and total zinc (T-Zn) in Halfway Creek were identified but are considered not significant. Project-related effects to surface water quality are likely to result in effects to current use of water by FNNND to the extent that they currently use water in the Latte Creek, YT-24 Tributary, and Halfway Creek; however, information on FNNND current use of water was not available.

4.2.2.5 Potential Effect to the Quality of Intangible Cultural and Spiritual Resources

Intangible cultural and spiritual resources are perceptions, feelings, and emotions that individuals and First Nations relate to current traditional land and resource use. In the Final Agreements of TH, SFN, and FNNND each respective agreement that "…the parties to this Agreement wish to recognize and protect a way of life that is based on an economic and spiritual relationship between [the respective First Nation] and the land" (ANDC 1993, PWGSC 1997, and Minister of Indian Affairs 1998). A change to the quality of intangible cultural and spiritual resources in the LAA or RAA during Construction or Operation is likely to affect different individuals and First Nations differently.

Potential Project-related effects to the quality of cultural and spiritual resources associated with current traditional land and resource use purposes include:

I. **Changes to Habitation**: The development of the Mine Site and NAR may cause a change to habitation in the LAA and RAA during the Construction, Operation, Closure and Reclamation Phases, related (but not limited) to:

   - Changing the overall condition of the land so that short-term and/or long-term habitation, are no longer desirable (sensory conditions)
   - Changing the overall condition of the land so that gathering sites are no longer desirable (sensory conditions and quality of the land and resources).

   Potential Project-related effects to known First Nation traditional cabins, buildings, and habitation sites are discussed and assessed in **Section 26.0 Heritage Resources Assessment**, which found that implementation of identified mitigation measures is likely to prevent adverse residual effects to heritage resources**.**

II. **Changes to Transportation**: The development of the Project may cause a change to how First Nation citizens and members travel across their territories in the LAA and RAA during the Construction, Operation, and Reclamation and Closure Phases, related (but not limited) to

- Changing the desirability of use of traditional trails and other traditional modes of transport (sensory conditions, heritage resources).

Potential Project-related effects to known First Nation traditional trails are discussed and assessed in **Section 26 Heritage Resources Assessment** which found that implementation of identified mitigation measures is likely to prevent adverse residual effects to heritage resources.

III. **Changes to Intangible Culture and Heritage Values:** Collective changes related to the development of the Project may contribute to a change to those intangible culture and heritage values that some individuals and First Nations identify with portions of or the entire LAA and RAA during the Construction, Operation, and Reclamation and Closure Phases of the Project. These potential changes include (but are not limited to):

- Changing the connection that First Nations and their respective citizens/members may have with the land
- Changing the opportunities that First Nations and their respective citizens/members may have to share, teach and practice traditional knowledge and activities on the land.

Changes to tangible values related to culture and heritage are discussed and assessed in **Section 26.0 Heritage Resources Assessment** which found that implementation of identified mitigation measures is likely to prevent adverse residual effects to heritage resources**.**

As listed, assessment of the potential adverse effects to cultural and spiritual resources considers the potential for effects to habitation, transportation, and intangible culture and heritage values, which in turn are supported by the assessment of effects to sensory conditions (noise, visual effects, air quality), access, heritage resources, the availability of land and the quality of land (water, fish, wildlife, birds and habitats). Assessments of the potential residual effects for heritage resources (**Appendix 26-A Heritage Resources Valued Component Assessment**), access, sensory conditions, availability of land and quality of resources are assessed separately (**Sections 4.4.3.1 to 4.4.3.4**) and are therefore not considered further within this assessment for intangible resources. The contributing assessments of the linked residual effects were considered not likely to affect sensory conditions, and the availability and quality of land, and therefore not likely to affect the current traditional use of land and resources. However, this affect recognizes that there remains a potential for changes to intangible cultural and heritage values through changes in connections to the land and opportunities to share, teach and practice traditional knowledge.

Adverse effects may be experienced by those who consider any change to the existing condition and character of the land to affect their well-being; these potential effects are discussed and assessed in **Section 25.0 Community Health and Well-being Assessment** of the Project Proposal.

Tr'ondëk Hwëch'in

Tr'ondëk Hwëch'in traditional land and resource use is interconnected with all aspects of TH culture. From TH traditional knowledge and the traditional economy to traditional lifestyles and values, the land and resources are inherently linked (TH 2012a). Through primary and secondary data collection the Project study team identified that intangible cultural and spiritual resources contribute to TH's current traditional land and resource use (TH Traditional Foods and Traditional Economy Survey, Personal Communication, 2016; Interview 10, Personal Communication, 2016; Interview 14, Personal Communication, 2016; Interview 22, Personal Communication, 2016; Interview 24, Personal Communication, 2016). Changes to the quality of TH's intangible cultural resources may occur during the Construction, Operation, and Reclamation and Closure Phases in the LAA and RAA as a direct result of Project activities. These changes are expected to be experienced and characterized differently by different citizens at the community level.

Habitation

Dwellings are necessary to conduct some current traditional land and resource use on Traditional Territory. TH citizens continue to live on the land in and near the RAA at different times of the year (Interview 14, Personal Communication, 2016, Interview 22, Personal Communication, 2016). This includes both short and long-term habitation. Some TH citizens shared that they use cabins to conduct such traditional land and resource use activities as trapping (Interview 22, Personal Communication, 2016). Others said they live in their cabin on their Traditional Territory for approximately six or more months each year, and stay in their cabins for medicinal and food plant harvesting, trapping, hunting, fishing, teaching, and sharing traditional knowledge through activities out on the land (Interview 14, Personal Communication, 2016). They explain that they consider the land around their cabin to be "their piece of heaven" and that the area's land, culture and heritage are sacred (Interview 14, Personal Communication, 2016). Project-related changes that affect the desirability of TH to habituate on their Traditional Territory may occur during the Construction and Operation Phase in the LAA and RAA as a direct result of Project activities. Tr'ondëk Hwëch'in members said increased natural resource development is changing the character of the land (Interview 14, Personal Communication, 2016).

Citizens of TH continue to use locations throughout the RAA for gatherings and cultural activities such as potlaches and culture camps (TH Traditional Foods and Traditional Economy Survey, Personal Communication, 2016; Interview 10, Personal Communication, 2016; Interview 24, Personal Communication, 2016). The annual Moosehide Gathering is an example of one of TH's cultural gatherings, which they hold at the traditional Moosehide village each summer. The event is open to the

public and features "…performances, guest speakers, feasts, dancing, drumming, singing, storytelling and artisan crafts" (Travel Yukon 2016). Though no primary data were identified that indicates whether gatherings currently are conducted in the LAA, the authors of this report conservatively assume that the Coffee Creek area continues to be of importance to TH for habitation and gathering-related purposes (TH 2012b). Potential effects to the intangible resources related to habitation are expected to be experienced and characterized differently by different citizens at the community level.

Transportation

Tr'ondëk Hwëch'in citizens use various modes of transportation to conduct traditional land and resource use including vehicles (i.e. trucks, etc.), ATVs or four-wheelers, snowmobiles, and boats (TH Traditional Foods and Traditional Economy Survey, Personal Communication, 2016; Interview 14, Personal Communication, 2016). Water routes, including the Yukon and Stewart Rivers, are currently used by TH to conduct traditional land and resource use in the LAA and RAA (TH Traditional Foods and Traditional Economy Focus Group, Personal Communication, 2016; Interview 14, Personal Communication, 2016). Though no primary data were identified that indicates whether TH citizens currently use traditional trails, the Project study team conservatively assumes that some of the traditional trails on TH Traditional Territory are currently used by citizens.

Intangible Culture and Heritage Values

The land and resources are intrinsic to TH culture and heritage. As such, intangible culture and heritage values reflect, in part, the relationship or connection with TH shares with their Traditional Territory. Through their current traditional land and resource use, TH maintains, practices and evolves these values. Primary data indicates how spending time on the land conducting traditional pursuits contribute to the traditional values and beliefs of citizens (TH Traditional Foods and Traditional Economy Survey, Personal Communication, 2016); this includes such values as reciprocity. Giving back to the land and spirit world in appreciation of the resources that one uses (reciprocity) is a value to which the majority of citizens subscribe and practise; examples of how some citizens demonstrate reciprocity include (but are not limited to): giving a prayer and tobacco offering; leaving plant matter as an offering before harvesting; and treating the land, water, animals, and plants with respect (TH Traditional Foods and Traditional Economy Survey, Personal Communication, 2016). Other cultural and heritage values identified for current traditional land and resource use include maintaining one's connection to the land, and the sharing and teaching of TK to others out on the land (Interview 10, Personal Communication, 2016; Interview 14, Personal Communication, 2016; Interview 22, Personal Communication, 2016).

Summary

Project-related effects to intangible culture and heritage values may occur during the Construction and Operation Phases in the LAA and RAA as a direct result of Project activities, which change the ability of TH to conduct traditional land and resource use. As discussed in preceding sections of this report and in

Section 4.4.2, which considers residual effects for current traditional land and resource uses, no significant adverse residual effects to access, sensory conditions, or the amount or quality of resources are likely to result from the Project. However, since these potential effects may collectively contribute to a Project-related affect to the intangible culture and heritage values, a neutral to negligibly adverse effect to intangible culture and heritage values is likely. At a community level, the trend of the effect is considered neither a worsening nor improvement from baseline conditions.

Selkirk First Nation

Selkirk First Nation citizens conduct TU activities across their Traditional Territory throughout the year contributing to citizens' ability to maintain their connection with the land and water (KCB 2013). Secondary data collected for this assessment indicate how spending time on the land conducting traditional pursuits contributes to the traditional values and beliefs of citizens (B 2013). Further, cultural well-being was explicitly identified as being of particular importance to SFN and overall SFN community well-being (KCB 2013). Changes to the quality of SFN's intangible cultural resources may occur during the Construction, Operation, and Reclamation and Closure Phases in the LAA and RAA as a direct result of Project activities. These changes are expected to be experienced and characterized differently by different citizens at the community level.

Habitation

The ability to construct and/or occupy dwellings on one's Traditional Territory is necessary to conduct some current traditional land and resource use. Though no SFN specific primary or secondary data were obtained to indicate how habitation-related intangible cultural and heritage values related to SFN's current traditional land and resource use, it is assumed that SFN shares the position that such values are of importance, as other potentially affected First Nations have identified.

Transportation

Selkirk First Nation members use various modes of transportation to conduct traditional land and resource use in the LAA and RAA via overland and water routes. Water routes, including the Yukon River, are currently used by SFN citizens to conduct traditional land and resource use in the LAA and RAA (Interview 14, Personal Communication, 2016). Though no primary data were identified that indicates whether SFN citizens currently use traditional trails, the Project study team conservatively assumes that some of the traditional trails on SFN Traditional Territory are currently used by citizens.

Intangible Culture and Heritage Values

Intangible culture and heritage values reflect, in part, the relationship or connection that SFN shares with their Traditional Territory. Through their current traditional land and resource use, SFN maintains, practices and evolves these values. Secondary data provides some insight as to how SFN current traditional land use related to their intangible cultural and heritage related values.

Sustaining a healthy environment throughout the SFN Traditional Territory is one of SFN's intangible culture and heritage values that could be affected by Project activities in the LAA and RAA as a direct result of Project activities. Citizens note how they are observing environmental changes on their territory, and that these changes are influencing how they conduct traditional land and resource use (KCB 2013). It was also identified how such important intangible cultural and heritage values as maintaining their connection with the land, revitalizing the Northern Tutchone language, and practising the traditional Dooli Law are all related to current traditional land and resource use (KCB 2013). Other aspects of cultural well-being related to current traditional land and resource use include the sharing and teaching of knowledge, the revitalization of the Northern Tutchone language, and the creation of employment opportunities that support cultural well-being through such initiatives as a traditional pursuit policy (KCB 2013).

Summary

Project-related effects to intangible culture and heritage values may occur during the Construction and Operation Phases in the LAA and RAA as a direct result of Project activities, which change the ability of TH to conduct traditional land and resource use. As discussed in preceding sections of this report and in Section 4.4.2, which considers residual effects for current traditional land and resource uses, no significant adverse residual effects to access, sensory conditions, or the amount or quality of resources are likely to result from the Project. However, since these potential effects may collectively contribute to a Project-related affect to the intangible culture and heritage values, a neutral to negligibly adverse effect to intangible culture and heritage values is likely. At a community level, the trend of the effect is considered neither a worsening nor improvement from baseline conditions.

White River First Nation

White River First Nation members continue to actively conduct traditional land and resource use activities, which contribute to all aspects of their culture and well-being. Current traditional land and resource use by WRFN citizens is inseparably linked to their culture, language, social organization, and practices (Calliou Group 2012b). The term 'sense of place' is used by WRFN to describe this intimate relationship that they share with the land and resources. A relationship that is characterized by generations of "knowledge, history, emotion and identity with respect to place" (YESAB 2012).

Habitation

The ability to construct and occupy dwellings on one's Traditional Territory is necessary to conduct some current traditional land and resource use. Though no WRFN specific primary or secondary data were obtained to indicate how habitation-related intangible cultural and heritage values related to WRFN's current traditional land and resource use, it is assumed that WRFN shares the position that such values are of importance, as other potentially affected First Nations have identified.

Transportation

Various modes of transportation are currently used by WRFN members to conduct traditional land and resource use in the LAA and RAA via overland and water routes; these include (but are not limited to): vehicles (i.e. trucks, etc.), ATVs or four-wheelers, snowmobiles, walking, and boats (Calliou Group 2012b). Water routes, including the Yukon and Stewart Rivers, may currently be used by WRFN members to conduct traditional land and resource use in the LAA and RAA, but are not as readily used as in the past (Calliou Group 2012b). Though no primary data were identified that indicates whether WRFN members currently use traditional trails, the Project study team conservatively assumes that some of the traditional trails on WRFN Traditional Territory are currently used by citizens. White River First Nation explicitly notes that current use or absence of current use does not reflect the actual cultural and heritage value of traditional land and resource use (Calliou Group 2012b).

Intangible Culture and Heritage Values

The land and resources across WRFN's asserted territory facilitate the transmission, practices, and knowledge of integral WRFN values, which includes the transmission of language, knowledge, stories, traditional values, and cultural practices (Bates et el. 2014). The cultural significance of the Coffee Creek area to WRFN is reflected by all the site-specific values associated with this specific area (Bates et al. 2014). In addition to such previously described values related to habitation, transportation, and subsistence, Coffee Creek is also culturally valued because of other cultural activities that are known to have taken place here. These cultural activities include potlatches, ceremonies, and other cultural events (Bates et al. 2014, Easton et al. 2013). Certain qualities have been identified by WRFN as being important to maintaining an area's cultural and/or spiritual integrity; this includes maintaining "…undisturbed, peaceful state" (Bates et al. 2014).

The Coffee Creek area is of spiritual value to WRFN because this was a birth and burial place for some WRFN ancestors. Further, other spiritual activities are known to have taken place at Coffee Creek, including marriage and baptizing ceremonies (Bates et al. 2014).

Summary

Project-related effects to intangible culture and heritage values may occur during the Construction and Operation Phases in the LAA and RAA as a direct result of Project activities, which change the ability of TH to conduct traditional land and resource use. As discussed in preceding sections of this report and in **Section 4.4.2**, which considers residual effects for current traditional land and resource uses, no significant adverse residual effects to access, sensory conditions, or the amount or quality of resources are likely to result from the Project. However, since these potential effects may collectively contribute to a Project-related affect to the intangible culture and heritage values, a neutral to negligibly adverse effect to intangible culture and heritage values is likely. At a community level, the trend of the effect is considered neither a worsening nor improvement from baseline conditions.

First Nation of Na-cho Nyäk Dun

Traditional use activities conducted across FNNND Traditional Territory are of cultural importance, in part, because of the socio-cultural ties they support, including the actual harvesting of traditional foods, as well as the act of sharing and consuming them (DPRA 2010). Important FNNND cultural and heritage values are taught and demonstrated through current traditional land and resource use. Secondary data support the central and inseparable relationship that intangible cultural and heritage related values have with current traditional land and resource use.

Habitation

The ability to construct and occupy dwellings on one's Traditional Territory is necessary to conduct some current traditional land and resource use. Though no FNNND specific primary or secondary data were obtained to indicate how habitation-related intangible cultural and heritage values related to FNNND's current traditional land and resource use, it is assumed that FNNND shares the position that such values are of importance, as other potentially affected First Nations have identified.

Transportation

The ability to move across one's Traditional Territory is necessary to conduct current traditional land and resource use. Though no FNNND specific primary or secondary data were obtained to indicate how habitation-related intangible cultural and heritage values related to FNNND's current traditional land and resource use, it is assumed that FNNND shares the position that such values are of importance, as other potentially affected First Nations have identified.

Intangible Culture and Heritage Values

Intangible culture and heritage values are central to the relationship or connection that FNNND shares with its Traditional Territory. Secondary data supports that FNNND citizens' current traditional land use is related to their intangible cultural and heritage related values. To FNNND citizens, the act of sharing is important, since it shows that citizens are taking care of one another as well as sharing the "gifts from the land" (DPRA 2010). As noted by Leary (2009), FNNND citizens "…always share food with Elders" and that citizens "…need to respect every animal [taken] from the land and be thankful (Leary 2009). The traditional foods and medicines harvested from the land through traditional land and resource use contribute to the vitality of FNNND culture. Citizens of FNNND recount how it is challenging for them to balance such cultural values as respecting the earth and protecting the water while working jobs in the natural resource development sector. They explain that such "contradictions" challenge citizens to reconcile their heritage with best practices (FNNND 2008). Changes to the quality of FNNND's intangible cultural resources may occur during the Construction, Operation, and Reclamation and Closure Phases in the LAA and RAA as a direct result of Project activities. These changes are expected to be experienced and characterized differently by different citizens at the community level.

Summary

Project-related effects to intangible culture and heritage values may occur during the Construction and Operation Phases in the LAA and RAA as a direct result of Project activities, which change the ability of TH to conduct traditional land and resource use. As discussed in preceding sections of this report and in **Section 4.4.2**, which considers residual effects for current traditional land and resource uses, no significant adverse residual effects to access, sensory conditions, or the amount or quality of resources are likely to result from the Project. However, since these potential effects may collectively contribute to a Project-related affect to the intangible culture and heritage values, a neutral to negligibly adverse effect to intangible culture and heritage values is likely. At a community level, the trend of the effect is considered neither a worsening nor improvement from baseline conditions

4.3 MITIGATION AND ENHANCEMENT MEASURES

This section describes mitigation measures consistent with the definition provided by YESAA (i.e., measures for the elimination, reduction, or control of adverse environmental or socio-economic effects). Mitigation measures comprise any practical means taken to manage potential adverse effects, and may include applicable standards, guidelines, and best management practices (BMPs) supported by specific guidance documents (e.g., *Engaging with Yukon First Nations and Communities, A Quick Reference Guide to Effective and Respectful Engagement Practices* [FNNND et. al2012]). Where non-negligible potential adverse effects are determined likely to occur from a project, mitigation measures are described that are consistent with the definition provided by YESAA (i.e., measures for the elimination, reduction, or control of adverse environmental or socio-economic effects).

This section also describes measures that will be used to enhance potential beneficial effects of the Project.

The selection of mitigation and enhancement measures for Land and Resource Use VC was informed by primary and secondary data collection, a review of mitigation and enhancement measures and follow-up programs undertaken for past projects, and First Nation and public input. Specifically, feedback was received regarding working with local communities, supporting local community initiatives and values, and promoting traditional economy related initiative and values. For example, suggested mitigation and enhancement measures were identified through primary data collection activities.

Mitigation and enhancement measures to address potential adverse effects to the Land and Resource Use VC or specific subcomponent are described below and summarized in **Table 4.3-1**. The mitigation measures for this VC have been coordinated and, where efficient to do so, combined with the measures for other VCs. The final column in the table identifies whether or not there is the potential for a residual effect. A potential (i.e., non-negligible) residual effect will be carried forward in the assessment (see **Section 4.4**).

Mitigation measures included in the development of the Project Description by the Proponent are discussed in **Section 4.3.1.**

In addition, mitigation measures for the linked ICs for the sensory disturbance effects, and the linked VCs for the quality of the land and resources also avoid and mitigate potential effects to the land and resource subcomponents. These measures are included in the respective IC and VC sections.

4.3.1 PROJECT DESIGN MEASURES

Goldcorp has limited the potential effects to land and resource uses through the design of the Project layout, including measures to limit the size of the Project footprint and utilize the existing access routes as components of the NAR. Such measures reduce the effects of changes in land availability, and reduce changes in access for various land and resource users.

4.3.2 ACCESS ROUTE OPERATIONAL MANAGEMENT PLAN

Mitigation measures associated with the Access Route Operational Management Plan are intended to address the potential effects of changes to access to the Land and Resource Use VC throughout all Phases of the Project. The Access Route Operational Management mitigation measures include (but are not limited to) the following:

- The Proponent will control traffic on the NAR, including barge landing areas, by conducting the following activities:
  - Implement access control at river crossings the Stewart and Yukon Rivers barge landing and ice bridge areas.
  - Permit only Proponent-authorized vehicles to use the Proponent's barges and ice bridges on the Stewart and Yukon Rivers.
  - Post signage on Hunker Road at Sulphur Creek and at each barge landing advising the public of the hazards of using the NAR. The signs will also provide safety and emergency contact information including radio call-out procedures and radio frequencies.
  - Prior to opening the road, advertise and hold at least one public meeting in Dawson to explain the hazards of using the road. Safety protocols and considerations will also be reviewed.
  - Develop indicators for monitoring how traffic is affected by the Project and adapt management protocols accordingly.
- Goldcorp will develop a NAR Emergency Response Plan, which will include incident prevention and response measures.
- Goldcorp will consider feasible wildlife-related mitigation measures provided by First Nations, regulators, and stakeholders in the Access Route Operational Management Plan (**Appendix 31-B**).
- Goldcorp will consider and incorporate feasible land use and access-related mitigation measures provided by First Nations, regulators, and stakeholders in ithe Access Route Operational Management Plan.

The mitigation measures associated with the Access Route Operational Management Plan will be implemented in conjunction with other Project mitigation, such as the NAR Emergency Response Plan, among others. Access Route Operational Management Plan mitigation measures were informed through Project consultation and engagement. These measures reflect the Proponent's commitments to continue to work closely with local communities and maximize local benefits associated with the Project.

The Access Route Operational Management Plan measures are expected to become effective prior to the completion of the Construction Phase and continued through subsequent Operation and Closure Phases. The Construction Access Route Management Plan may also address concerns related to access. As part of the proposed socio-economic monitoring (refer to the **Socio-economic Management Plan**, summarized in **Section 31.0 Environmental and Socio-economic Management Program of the Project Proposal**), the Proponent will track the effectiveness of the Access Route Operational Management Plan from a community perspective through socio-economic monitoring or other means of engagement, and adapt strategies as needed based on feedback from affected stakeholders.

4.3.3 ENGAGEMENT PLAN

Goldcorp recognizes the importance of engaging and consulting First Nations, on whose Traditional Territory the mine and NAR will cross, as well as local communities, and in establishing long term, good-neighbour relationships. As part of this recognition, and reflecting Goldcorp's commitment to engagement, Goldcorp will develop an Engagement Plan for the Project. Mitigation measures associated with the Engagement Plan are intended to address the following potential effects for Land and Resource Use throughout all phases of the Project:

- Changes in access to areas used for traditional land and resource use and economic purposes
- Changes in the environmental condition of areas used for traditional land and resource use and economic purposes.

Goldcorp will develop and implement an Engagement Plan, which will comprise several specific mitigation measures relative to economic conditions and land and resource use:

- The Proponent will continue to communicate the status and schedule of the Project with local communities, residents, and organizations.
- The Proponent will implement a Community Response Protocol for responding to questions and concerns regarding the Project. The Engagement Plan will lay out the strategy and actions required to publicize this protocol through the course of ongoing engagement to ensure it is accessible.
- The Proponent will communicate with contractors and employees, as well as government of all assessment area communities regarding the Project's status and schedule. The Proponent will communicate any temporary or seasonal closure.
- The Proponent will continue to engage with First Nations, and consider their concerns, interests, and priorities.

- The Proponent will consider the values, needs, and concerns expressed by First Nations and non-First Nation land and resource users in the development of Project plans, procedures, and communications.
- The Proponent will work with the placer mining claims holders potentially affected by the NAR to develop approaches to road development and access that will avoid or minimize potential interruptions to placer operations.

Successful engagement and consultation is likely to lead to First Nations and local communities' understanding the Project, and sharing in the benefits and economic opportunities it will provide. The increased communication that results from successful engagement and consultation will also allow the Proponent to have first-hand knowledge of the concerns and priorities First Nations and local communities have with the Project. The mitigation measures associated with the Engagement Plan will be implemented in conjunction with other human environment mitigation and enhancement measures. Several of the Engagement Plan mitigation measures were informed by primary data collection and other Project communications. The Engagement Plan mitigation measures are generally standard in the industry, and reflect the Project Proponent's commitments to continue to work closely with First Nations local communities and stakeholders.

Goldcorp will initiate the Engagement Plan prior to the Project's Construction Phase. Communications regarding status and schedule as the Project transitions through Project Phases will allow those engaged in the non-wage and traditional economy to begin planning accordingly. Some uncertainty exists regarding mitigation the ability to implement Engagement Plan mitigation measures and the effectiveness of those measurers depending on the dynamic nature of the values, needs, and concerns of First Nations and individuals engaged in the non-wage, and traditional, economy. As part of the proposed socio-economic monitoring (see **Appendix 21-A Social Economy Valued Component Assessment**), Goldcorp will track the effectiveness of communication plan mitigation measures, and adapt its strategies as needed based on feedback received.

4.3.4 CURRENT TRADITIONAL LAND AND RESOURCE USE ENHANCEMENT MEASURES

Enhancement measures associated with the current traditional land and resource use subcomponent are intended to support the local values and potential benefits that the Project can contribute to the potentially affected First Nations through all Phases of the Project. The Proponent will describe the traditional land and resource use in the Introduction and Overview of the Project Area component of its onboarding presentation to all new mine employees. The Proponent will encourage employees to pursue traditional land and resource use activities by providing a two-week-on/two-week-off schedule.

The enhancement measures associated with the traditional land and resource use subcomponent will be implemented in conjunction with other human environment mitigation for potential adverse effects, such as the development and implementation of Project's Engagement Plan and cultural awareness training,

among others. Traditional land and resource use enhancement measures were informed by primary data collection, desktop research, and Project consultation and engagement. These enhancement measures reflect the Proponent's commitments to continue to work closely with local First Nations and maximize local benefits associated with the Project.

The traditional land and resource use subcomponent enhancement measures will be initiated prior to the Project's Construction Phase, and will be carried out through subsequent Project phases. Uncertainty regarding the effectiveness and the ability to implement the identified enhancement measures are associated with the dynamic nature of working with communities, and their changing values, needs, and priorities.

4.3.5 SUMMARY OF MITIGATION MEASURES

The mitigation measures for Land and Resource Use VC comprise several topics, including a workforce transition strategy, a NAR Road Management Plan, an Engagement Plan, and Memoranda of Understanding. **Table 4.3-1** summarizes the potential effects, mitigation, and whether residual effects are anticipated following the application of mitigation measures.

Table 4.3-1 Summary of Potential Effects and Mitigation Measures for Land and Resource Use

Summary of Potential Effect	Project Components	Contributing Project Activities	Proposed Mitigation and/or Enhancement Measure(s)	Detectable / Measurable Residual Effect (Yes / No)
Construction, Operation, Reclamation and Closure Phases				
Non-Traditional Land and Resource Use				
Effects from Increase in access	Overall Construction, Operation, Reclamation and Closure Phase	Mine Site and NAR activities	• Project design • Access Route Construction and Operational Management Plans • Engagement Plan	Yes
Effects to sensory conditions	Operation,	Mine Site and NAR activities will change air quality, noise, and visual conditions	• Mitigation measures for linked ICs • Engagement Plan	Yes
Decrease in the availability of land and resources	Overall Construction Phase, and Operation	Mine Site and NAR activities	• Project design • Engagement Plan • Access Route Construction and Operational Management Plans	Yes
Decrease in the quality of land and resources	Overall Construction, Operation, Reclamation and Closure Phase	Mine Site and NAR activities	• Mitigation measures for linked VCs • Water Management Plan • Access Route Construction and Operational Management Plans • Erosion and Sediment Control Plans • Fish and Aquatic Habitat Protection Plan • Vegetation Management Plan • Wildlife Protection Plan	Yes, for water quality only
Current Traditional Land and Resource Use				
Increase in access, which affects the ability to conduct current traditional land and resource uses	Overall Construction, Operation, Reclamation and Closure Phase	Mine Site and NAR activities	• Project design • Traditional Economy Enhancement Measures • Access Route Construction and Operational Management Plans • Engagement Plan	Yes
Effects to sensory conditions (air quality, noise and visual resources) conditions, which affects the ability to conduct current traditional land and resource use	Overall Construction, Operation, Reclamation and Closure Phases	Mine Site and NAR	• Mitigation measures for linked IC analyses • Traditional Economy Enhancement Measures • Access Route Construction and Operational Management Plans • Noise Management Plan • Engagement Plan	Yes

Summary of Potential Effect	Project Components	Contributing Project Activities	Proposed Mitigation and/or Enhancement Measure(s)	Detectable / Measurable Residual Effect (Yes / No)
Change in availability of land, which affects the ability to engage in current traditional land and resource use	Overall Construction, Phases	Mine Site and NAR activities	• Project design • Traditional Economy Enhancement Measures • Engagement Plan	Yes
Decrease in the quality of land and resources, which affects the ability to conduct current traditional land and resource uses	Overall Construction, Operation, Reclamation and Closure Phases	Mine Site and NAR activities	• Mitigation measures for linked VCs • Water Management Plan • Access Route Construction and Operational Management Plans • Erosion and Sediment Control Plans • Fish and Aquatic Habitat Protection Plan • Vegetation Management Plan • Wildlife Protection Plan	Yes, for water quality only
Change in the quality of intangible cultural and spiritual resources, which affect the ability to engage in current traditional land and resource use	Overall Construction, Operation, Reclamation and Closure Phases	Labour needs and goods and services spending during the Construction, Operation, andReclamation and Closure Phases	• Traditional Economy Enhancement Measures • Engagement Plan • Heritage Resources Protection Plan	Yes (positive effect with enhancement)

4.4 RESIDUAL EFFECTS AND SIGNIFICANCE OF RESIDUAL EFFECTS

This section describes anticipated residual effects of the Project (i.e., effects anticipated to occur subsequently to the application of mitigation measures) to Land and Resource Use.

This section also determines the significance of residual effects to the Land and Resource Use non-traditional land and resource use and current traditional land and resource use subcomponents that could occur due to interactions with the Project during the Construction, Operation, and Reclamation and Closure Phases. This section discusses the significance of each residual effect for each VC subcomponent, as applicable, as well as the likelihood of the residual effect, and the level of confidence associated with the determinations of significance and probability. The determination of significance for the potential residual effects on non-traditional land and resource use and current traditional land and resource use is based on a consideration of the residual effects characteristics and socio-economic context of these two Land and Resource Use subcomponents.

4.4.1 RESIDUAL EFFECTS CHARACTERISTICS AND SIGNIFICANCE DEFINITIONS

4.4.1.1 Residual Effects Characteristics

Definitions for ratings applied to residual effects characteristics developed with specific reference to the Land and Resource Use VC are presented in **Table 4.4-1.**

Table 4.4-1 Effect Characteristics Considered When Determining the Significance of Residual Effects to Land and Resource Use

Residual Effect Characteristic	Definition	Rating
Direction	Identifies whether the residual effect will be adverse or positive.	• Adverse – the trend of the effect is considered undesirable or worsening from baseline conditions • Positive – the trend of the effect is considered desirable or an improvement from baseline conditions
Magnitude	Size or severity of the residual effect – generally measured in terms of the proportion of the VC affected within the LAA, relative to the range of historic variation	• Negligible – no effect is detectable from baseline conditions, or is in the normal range of variability in the human environment • Low – effect is detectable, but is not expected to be experienced at the community-wide level. The effect is limited to an inconvenience or nuisance, and is compatible with existing available policy guidance • Moderate – effect would result in demonstrable change and is possible at the community-wide level, but remains within historic norms and does not present a management challenge • High – effect would result in changes beyond historic norms, and presents a management challenge
Geographic Extent	Spatial scale over which the residual effect is likely to occur.	• Local (limited to LAA) • Regional (limited to RAA)
Timing	Occurrence of the residual effect with respect to a temporal attribute important to the VC	• Not applicable • Seasonal • Year-round
Frequency	How often the residual effect is likely to occur.	• Infrequent – occurs once • Frequent – occurs at irregular intervals • Continuous – occurs on a regular basis and at regular intervals
Duration	Length of time over which the residual effect is likely to persist.	• Short-term – occurs during the Construction Phase • Long-term – occurs throughout the Operation or Reclamation and Closure phases or both Phases • Permanent – effect continues during the Post-closure Phase and beyond
Reversibility	Whether or not the residual effect can be reversed once the activity causing the residual effect ceases.	• Reversible – effect can be reversed to baseline or equivalent conditions, considering non-Project-related change in the human environment • Partially reversible – effect can be reversed partially to baseline or equivalent conditions • Irreversible – effect is permanent

Residual Effect Characteristic	Definition	Rating
Probability of occurrence	Likelihood that the predicted residual effect will occur.	• Likely – past experience indicates that the effect is likely to occur as a result of the Project • Unlikely – past experience indicates that the effect is not expected to occur as a result of the Project
Context	The extent to which the VC has been affected by past and present socio-economic processes and conditions, its potential sensitivity to the Project-related residual effect, and its ability to recover from that effect (i.e., resilience)	• Low – limited ability of community to respond to disturbances • Moderate – moderate ability of community to respond to disturbances • High – strong ability of community to respond to disturbances

4.4.1.2 Significance Definition

The significance of potential residual effects was determined based on the residual effect characteristic rating, a review of secondary data sources, consultation with government agencies, feedback obtained through primary data collection, and professional judgement. The level of each residual effect has been rated as not significant or significant, as follows:

Not Significant Effects determined to be not significant are those that are greater than negligible but that do not meet the definition of significant. Residual effects that are determined to be not significant are not carried forward to the cumulative effects assessment.

Significant Effects determined to be significant are those characterized as high magnitude, LAA or greater geographic extent, continuous frequency, long-term duration, and likely to occur. Significant effects also occur within a context for low resiliency. Significant residual effects are carried forward to the cumulative effects assessment.

Predictions regarding the characterization of residual effects on the Land and Resource Use as a result of the Project carry an element of uncertainty due to the dynamic nature of the human environment, including external influences such as environmental conditions and individual choices. For human environment VCs, standards, guidelines, objectives, and thresholds are not well defined, understood, nor agreed-upon (YESAB 2006). As a result, characterizing the significance of residual human environment effects is more subjective, and based strongly on professional judgment, feedback and input from primary data collection. For example, through primary data collection activities, an effect to Land and Resource Use was defined in various ways, including:

- Increasing the connectivity of roads in the LAA through the NAR, as well as having roads maintained year-round, which could result in an increase in anthropogenic activities in the area including (but not limited to) mining, hunting, fishing, and recreational use (Interview 4, Personal Communication, 2016; Interview 11, Personal Communication, 2016; Interview 13, Personal Communication, 2016; Interview 24, Personal Communication, 2016; Interview 29, Personal Communication, 2016).

- Changing the abundance of animals in the LAA or RAA as a result of increased traffic and general human activity along the NAR (Interview 22, Personal Communication, 2016).
- Changing the abundance of animals in the LAA or RAA as a result of increased hunting pressure due to increased and improved access from the NAR (Interview 22, Personal Communication, 2016).

The above feedback demonstrates how individual interpretations of significance can vary, reflecting the perceptions and values of affected communities. Incorporating feedback identified through primary data collection is a means of assessing human environment VCs to consider the context in which residual effects are anticipated to be experienced. The challenges of a lack of defined thresholds, integrating community context, resiliency, and perceptions, and inherent uncertainty regarding the dynamic nature of the human environment results in a qualitative assessment approach for human environment VCs, using both quantitative and qualitative data.

The levels of confidence (i.e., low, moderate, high) for each predicted Project-related effect is discussed to characterize the level of uncertainty associated with significance determinations. Level of confidence is typically based on expert judgement and is characterized as follows:

- **Low** – judgement is hampered by an incomplete understanding of the cause-effect relationship, or a lack of data or primary data feedback on a specific topic.
- **Moderate** – reasonable understanding of the cause-effect relationship exists, and there is adequate data; however, outcomes may be influenced by external influences, preferences, and choices.
- **High** – there is a good understanding of the cause-effect relationship and ample data, including regular feedback during primary data collection.

4.4.2 NON-TRADITIONAL LAND AND RESOURCE USE

The history and current activities for gold mining in the Project RAA provide the basis for an assessment of a moderately resilient context. The White Gold District of west-central Yukon was heavily explored by placer miners following the discovery of gold and the subsequent Klondike Gold Rush in the late 1890s to early 1900s. More than a century later, placer mining remains a large contributor to Yukon economy. Existing placer mining claims providing exclusive mineral rights to the holder are situated along most of the District's creeks, many of which are crossed by the NAR. Following major gold discoveries in the District, the northern mining sector is showing resurgence with a focus on hard rock mining of gold deposits. As a result, the Proponent's quartz claims are bordered on all sides by quartz claims held by other parties. Between the junction of NAR and the Klondike Highway and the southernmost point of the Mine Site, the Project is located adjacent to or overlaps with many quartz and placer mining claims. With this context, the existing land users are anticipated to be able to respond and adapt to Project-related changes to land uses and access.

4.4.2.1 Decrease in the Availability of Land and Resources

The potential for residual effects related to decreases in the availability of land for the non-traditional land uses is likely to begin in the Construction Phase and extend through the Operation and Reclamation and Closure Phases.

The potential adverse residual effects from a decrease in available land to the non-traditional land and resource uses is anticipated to be low in magnitude, as the area of the Project footprint is less than 0.3 % of the RAA, and where possible the Proponent has utilized land already withdrawn from land and resource use by existing activities (for example, placer mining and existing roads). The geographic extent is the LAA (excepting those areas already disturbed), and the effect is continuous, long term, and partially reversible on decommissioning. The residual effect is likely as the Project will require land area (**Table 4.4-2**). Based on the effects characteristics, the residual effect is considered not significant, with high confidence, in an area with moderate resiliency to disturbance.

Table 4.4-2 Summary of Effect Characteristics Ratings for Decrease in the Availability of Land during Construction and Operation

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	The Project footprint will remove land from non-traditional land and resource uses.
Magnitude	Low	Decrease in the area of available land may be detectable, and land uses are expected to be able to continue with minimal inconvenience.
Geographic Extent	LAA	Residual effects are within the LAA, focused on the Mine Site footprint and new sections of the NAR.
Timing	Not applicable	Not applicable.
Frequency	Continuous	The effect is continuous, until the commencement of decommissioning.
Duration	Long-term	Effect is initiated with the commencement of construction, and continues until the completion of decommissioning
Reversibility	Partially Reversible	With decommissioning, the effect is anticipated to be partially reversible. Changes can be partially reversed to baseline or equivalent conditions
Probability of Occurrence	Likely	The Project footprint will affect the availability of land.
Context	Moderate	Potentially affected non-traditional users are expected to have a moderate to strong ability to respond to potential Project-related disturbances to the availability of land, given that a portion of the Project footprint is within already disturbed land and most of the uses involve large areas.

4.4.2.2 Effects from Increase in Access to Lands and Resources

The residual effects resulting from increases in access to the non-traditional land and resource use subcomponent are expected to begin in the latter portion of the Construction Phase and extend through the Operation, and Reclamation and Closure Phases. The construction of the NAR is expected to commence in Q2 of Year –3 and complete in the beginning of Year –2. On average, the NAR is expected to be open for approximately 280 days per year during the Operation Phase, with seasonal shutdowns planned in the spring and winter during break-up and freeze-up, respectively. Since only Project-related vehicles will have access to the river crossings in both winter and summer conditions, access south of the Stewart River will not be changed. During winter months, access from the NAR to adjacent areas in the RAA, generally by increased ability to transport ATVs closer to areas of use, will also improve. Access to and through the Mine Site will not be available for health and safety reasons.

Increases in access are expected to occur in the LAA as a direct result of upgrades and extensions for the NAR between Stewart River and the south end of the existing YG road, which may facilitate additional improvements in access in the LAA and adjacent portions of the RAA via ATVs, snowmobiles, or walking. The residual effect is likely to affect different land uses differently, and potentially different cohorts within each potentially affected land use. The Project-related change in access is an opportunity to facilitate non-traditional users related to resource development and harvesting. For users displaced from where they are currently conducting particular resource harvesting activities or recreational activities, and their appreciation of the particular use is dependent on a limited number of other users, an adverse effect is expected.

Given that access is increased in only a portion of the NAR, and that harvesting (hunting and fishing) of resources is managed by the YG (see **Appendix 16-B Wildlife and Wildlife Habitat Valued Component Assessment** for regulatory context), potential effects to the harvested species are not anticipated.

Residual effects associated with access road placement within placer mining claims will be addressed during final alignment for the NAR. Such changes likely will not substantially alter access.

Residual effects associated with access in the event of a temporary or permanent closure will be managed by the road management plan. See **Appendix 31-B Access Route Operation Management Plan** for further detail on how the road will be managed in the event of a temporary and/or permanent closure.

Recognizing that the perspective on the direction of the effect may vary between and within users, and that such differentiation is not feasible for this assessment, only one assessment has been made for adverse effects; however, adverse and positive residual effects would be expected to have the same ratings for the residual effects characteristics (**Table 4.4-3**).

Residual effects will likely be low to moderate in magnitude since effects are not expected to be community wide, will extend into the areas of the RAA along the portion of the NAR north of Stewart River, will vary by season, and will be continuous over the long term (from year –3 to approximately Year 15 when road is decommissioned) and likely **(Table 4.4-3**). The residual effects are anticipated to be not significant, within a moderately resilient context as non-traditional users will have the ability to adjust to changes. Confidence in the assessment is considered moderate, as the Engagement plan is expected to further clarify user perspectives.

Table 4.4-3 Summary of Effect Characteristics Ratings for Change in Access during Operation

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	For those currently participating in a non-traditional land and resource use who may be displaced from where they are currently conducting and/or may wish to conduct particular resource harvesting or recreational activities in the absence of additional resource users, an adverse effect is expected.
Magnitude	Moderate	Improvements to access may be highly detectable and would be considered detectable in adjacent portions of the RAA, although is likely not community wide. Effect would result in demonstrable change but remains within historic norms and does not present a management challenge.
Geographic Extent	Regional	Residual effects are expected to occur within and beyond the LAA, as changes to access in the LAA may facilitate further changes to access in adjacent portions of the RAA however, residual effects will be limited to the northern portion of the NAR from Stewart River north to the southern end of the YG road.
Timing	Seasonal	Increases in vehicular access will depend on the season. No changes are anticipated during freeze and thaw periods. During summer and winter, access will be improved north of the Stewart Rive yet unchanged to the south of the river. Changes in access are expected to influence current traditional land and resource users differently with respect to their harvesting seasons.
Frequency	Continuous	Increases in access are anticipated to be continuous on completion of NAR construction.
Duration	Long-term	Increases in access are anticipated to occur throughout the, Operation Phase, and to be partially available during Construction and Reclamation and Closure Phases.
Reversibility	Partially Reversible	Project-related Increases in access will be reversed partially to baseline or equivalent conditions.
Probability of Occurrence	Likely	The improvements to access by the NAR are likely to alter access for non-traditional purposes for existing users.
Context	Moderate	Potentially affected users are expected to have a moderate ability to respond to potential Project-related disturbances to existing access conditions.

4.4.2.3 Effects to Sensory Conditions

The potential for residual effects related to changes in sensory conditions to the non-traditional land uses is likely to begin in the Construction Phase and extend through the Operation and Reclamation and Closure Phases.

Depending on when and where potentially affected non-traditional users who are sensitive to visual conditions are currently conducting land and resource use activities, Project-related changes to visual conditions are expected to be neutral or negligible. Visual effects from identified viewpoints (for example for recreational users on the Yukon River) were not identified.

The Project's Noise Analysis concluded that with mitigation no or negligible residual adverse effects would result from Project activities; thus, noise-related changes to sensory conditions are not expected. The trend is not considered to be a worsening or improvement from baseline conditions.

There are no modelled exceedances of regulated standards or guidelines for Air Quality outside of the Project RSA. While there are dust related concerns with the use of the NAR, they will be mitigated through the Dust Management Plan, which is summarized in **Section 31.0 Environmental and Socio-economic Management Program** of the Project Proposal. The majority of air quality particulate matter emissions are associated with the operation of the mine. Air quality residual changes due to combustion by-products are expected to dissipate shortly after cessation of the causal activity. Air quality effects would be adverse to the extent that land and resource use occurs within the area of residual changes to air quality and could be affected. Non-traditional uses within this area include recreational users and placer mining activities. Other potential uses are harvesting and subsistence uses, trapping, and guide outfitting (should the concession be used), although specific information on these uses in the vicinity of the mine is not available.

Based on this review of the residual changes for the linked ICs, the residual effects to air quality may affect sensory conditions for non-traditional uses, and only these effects are considered further.

The residual adverse effects to sensory conditions from Project-related effects to air quality are anticipated to be low in magnitude, local in extent (in the vicinity of the Mine Site), seasonal as potential uses may change by season, and reversible as air quality is anticipated to return to baseline conditions (**Table 4.4-4**). The residual effect to changes in sensory conditions is likely to begin in the Construction Phase and extend through the Operation and Reclamation and Closure Phases, although the air quality assessment considers the operational years with the greatest potential for effects. The residual effects is considered likely, based on the assessment of the air quality VCs, and will likely be not significant, based on the effects characteristics, and the moderate to high resiliency of the subcomponent. Confidence in the assessment is considered moderate; further consultation through the proposed consultation mitigation may clarify non-traditional land and resource uses of the potentially affected areas near the mine.

Table 4.4-4 Summary of Effect Characteristics Ratings for Change in Sensory Conditions (Air Quality) during Operation

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	Decreases in air quality are adverse to the extent that non-traditional land and resource use occurs within the area of predicted air quality standard exceedances.
Magnitude	Low	Effects to sensory conditions may be detectable, but will be limited to an inconvenience or a nuisance.
Geographic Extent	Local	Residual effects are expected to be focused within the LAA in the vicinity of the Mine Site.
Timing	Seasonal	Air quality changes would likely be evident year-round; however, effects to users would be influenced by their seasonal usage.
Frequency	Continuous	Changes are anticipated to occur on a regular basis and at regular intervals.
Duration	Long-term	Changes to air quality are greatest in the Operation Phase of the Project.
Reversibility	Reversible	Project-related changes to air quality are reversible to baseline or equivalent conditions.
Probability of Occurrence	Likely	Changes to air quality are expected as a result of the Project.
Context	Moderate to High	Potentially affected users will likely have a moderate to strong ability to respond to potential Project-related disturbances to existing sensory conditions.

4.4.2.4 Decrease in the Quality of Land and Resources

The potential for Project activities to affect the quality of land through effects to the environment was considered in **Section 4.2.2.3**, which presents a summary of the predicted residual effects to linked VCs for water quality, fish, vegetation, wildlife, and birds. An adverse residual effect to these VCs will potentially result in an adverse effect to the quality of land.

Residual effects to the current use of fish are rated neutral as no potential residual adverse effects are expected to result to fish and fish habitat.

Residual effects to vegetation resources are rated neutral as no significant effects were identified for any of the Vegetation subcomponents and although a residual effect might occur, the effect is unlikely to pose a risk to the long-term persistence and viability of vegetation resources, including ecological communities, wetlands, and traditional/medicinal and rare plants at the local and regional level. Therefore Project-related effects are not expected to result in a significant residual adverse effect to subsistence harvesting of vegetation.

Residual effects to non-traditional uses of wildlife (guide outfitting, trapping, hunting, viewing) are rated neutral as no significant effects were identified for any of the wildlife and wildlife habitat subcomponents at the regional level. A detectable/ measurable residual effect might occur at the individual level if Project

activities resulted in habitat loss and reduced habitat effectiveness due to sensory disturbance, and to mortality risk and altered movement to some subcomponents; however, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire wildlife population at the regional level.

Residual effects to the non-traditional uses of birds (hunting, viewing) are rated neutral since no significant effects were identified for any of the bird-related subcomponents at the regional level. Although a detectable/measurable effect might occur at the individual level if Project activities resulted in direct habitat loss or sensory disturbance, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire bird population at the regional level.

The assessment evaluates potential residual effects to surface water quality based on the predicted concentrations of key indicators (**Section 1.3**) under Base Case model conditions (presented in **Appendix 12-C Water Balance and Water Quality Model Report**). The Base Case water quality model results incorporate conservative assumptions with respect to the derivation of source terms, climate considerations, and geochemical behaviour along groundwater pathways, or in the receiving environment. As part of the assessment methodology, predicted mean monthly concentrations for each parameter were compared to their corresponding BC or Canadian Council of Ministers of the Environment (CCME) water quality guideline for the protection of aquatic life. Aquatic life guidelines reflect the most sensitive water use for Project area streams and were thus selected for screening purposes over other guidelines (e.g., drinking water, wildlife/livestock or irrigation/agriculture). Water quality parameters with concentrations predicted to fall below guidelines were screened out of the assessment for residual effects, since the guidelines approved by CCME and the BC Ministry of Environment are considered protective of all aquatic species and life stages.] Predicted concentrations were also compared to a Natural Case (i.e., no Project) to account for parameters which have naturally elevated background concentrations. From this modelling process residual effects to the non-traditional use of water are rated adverse as localized potential residual effects to surface water quality in in Latte Creek, YT-24 tributary, and Halfway Creek. No residual effects are predicted to occur in Coffee Creek, downstream of the Latte Creek confluence, or in the Yukon River. Overall, residual effects from total uranium (T-U) in Latte Creek, total arsenic (T-As) in YT-24, and nitrate, T-U, and total zinc (T-Zn) in Halfway Creek were identified but are considered not significant..

Based on this review of the residual effects assessments for the linked VCs, the residual effects to water quality may affect the quality of land for non-TUs, and only these effects are considered further.

The residual adverse effect to land quality from Project-related effects to water quality is anticipated to be low in magnitude, local in extent as the water resources affected are in the vicinity of the Mine Site, seasonal as the effect is seasonal and potential uses may change by season, and partially reversible as water quality in affected water courses is anticipated to return to close to baseline conditions (**Table 4.4-5)**. Beginning in the Construction Phase and extending through the Operation and

Reclamation and Closure Phases, the residual effect to changes in land quality is considered likely, based on the assessment of the water quality VCs and not significant based on the effects characteristics and the moderate resiliency of the subcomponent. Confidence in the assessment is considered moderate: further consultation through the proposed consultation mitigation may clarify non-land and resource uses of the potentially affected areas near the Mine Site.

Table 4.4-5 Summary of Effect Characteristics Ratings for Decrease in the Quality of Resources (Water) during Construction, Operation, and Reclamation and Closure

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	Residual effects to the current use of water are rated adverse as potential effects to surface water quality in Yt-24 tributary from nitrate and nitrite, sulphate, and T-U were assessed as being significant.
Magnitude	Low	Any changes to the amount and quality of resources may be detectable, but are not expected to be experienced at the community level.
Geographic Extent	Local to Regional	Residual effects are expected to occur across the LAA and RAA, as respective resources may have the ability to move between the LAA and RAA.
Timing	Seasonal	Changes to the amount or quality of resources are expected to influence current traditional land and resource users differently with respect to harvesting seasons.
Frequency	Continuous	Changes are anticipated occur on a regular basis and at regular intervals.
Duration	Long-term	Changes related to water are anticipated occur throughout the Construction, Operation, Reclamation and Closure Phases; however, water quality effects are likely after the start of operation of the Open Pits.
Reversibility	Partially Reversible	Changes can be partially reversed to baseline or equivalent conditions.
Probability of Occurrence	Likely	Changes to the amount or quality of resources available for current traditional uses are expected as a result of the Project.
Context	Moderate	Potentially affected non-traditional land and resource users are expected to have a moderate to strong ability to respond to potential Project-related disturbances to the amount or quality of resources available for non-traditional uses.

4.4.3 CURRENT TRADITIONAL LAND AND RESOURCE USE

Residual effects to current traditional use of land and resources are discussed in the following section. Goldcorp recognizes and respect that each First Nation may identify and interpret the term “traditional use” and the related use of land and resources differently from one another, as well as potential Project interactions. Also, not all aspects of the traditional economy may be represented in this assessment, since comprehensive qualitative and quantitative secondary data specific to each potentially affected First Nation were not readily available or provided to the Project study team, and primary data collection was not completed with each of the potentially affected First Nations identified in this assessment.

The residual effects to the current use of land and resources have been assessed for the Project as a whole, and have not differentiated between First Nations; however, the Proponent recognizes that the Project is likely to affect First Nations differently, depending on the extent of their Traditional Territory within the Project footprint and assessment areas, as presented in **Table 4.4-6**.

The Project is located on Crown lands that are within the established Traditional Territory of TH, with portions of the proposed NAR within the established Traditional Territory of the SFN and the FNNND. The Project is located outside of the Traditional Territory of WRFN as currently recognized by YG; however, the Project is within their asserted territory as defined in the "Northern Boundary Document" as presented to Canada and YG in February 2013. Based on communication from WRFN with Government and the Project Proponent regarding WRFN's expressed need to be consulted and accommodated on the Project, the discussion of current TU of land and resources takes into consideration the asserted Traditional Territory of WRFN As specific information on locations of focused current land use activities by First Nations is not uniformly available, the assessment has assumed that all areas within the traditional territories are used equally, and has therefore not presented residual effects by First Nation. Within this assumption, where possible, the discussion of the potential effects (**Section 4.2**) has presented the scope of effects for each First Nation in relation to their Traditional Territory.

The level of effect for each residual effect is also anticipated to affect individual First Nations differently and to a different level. A high level consideration of Project-related residual effects on First Nations is provided in **Table 4.4-6**, with definitions of the anticipated potential for the effect presented below the table. Where the Traditional Territory mainly overlaps with existing portions of the NAR, it is unlikely that the availability of land, access, or effects to sensory resources will affect the First Nation. Those First Nations with Traditional Territory overlapping the Mine Site are more likely to be affected by changes in sensory resources and potential changes to the quality of the land, as well as access changes and land availability. Effects to the quality of intangible cultural and spiritual resources are assumed possible for all portions of the Project footprint and on a broader scale within portions of the RAA, increasing with the percentage of overlap of the territory.

While the Project–related residual effects are not specifically differentiated by First Nation, it is anticipated that the scope of the effects to each First Nation will be aligned with **Table 4.4-6.**

Table 4.4-6 Interaction Matrix between First Nation Traditional Lands and Project Footprint

First Nation	Level of Interaction	Area of Project Footprint Overlap with Traditional Territory (ha)	Percent Overlap of Traditional Territory (%)	Description of Overlap	Traditional Land Use Study Available?	Traditional Knowledge Available?	Considerations Based on Traditional Land Use Study and Traditional Knowledge
Tr'ondëk Hwëch'in	Likely	3404	0.05	Project Footprint overlaps the Traditional Territory.	Yes	Yes	Traditional Land Use Study and TK information describe historical and current traditional use of the areas of interaction between TH territory and the Project.
White River First Nation	Unlikely	0	0.00	Project Footprint does not overlap with Traditional Territory as recognized by Yukon government.	Yes	Yes	Traditional Land Use Study and TK information describe historical traditional use of the Coffee Creek area as a meeting place with other nations.
White River First Nation - Asserted Territory	Likely	2418	0.04	The Mine Site and a portion of the NAR are within the WRFN asserted territory as defined in *Northern Boundary Document* that was presented to Canada and Yukon Government in February 2013.	Yes	Yes	Traditional Land Use Study and TK information describe historical traditional use of the Coffee Creek area as a meeting place with other First Nations.
Selkirk First Nation	Likely	308	0.007	The southern-most section of the Northern Access Route, mainly new build, overlaps with the western portion of the Traditional Territory. Category B lands are not in the Project footprint.	No	Yes	Traditional Knowledge information describes historical traditional use of the Coffee Creek area and current traditional use of the Traditional Territory in general. No specific references to the areas of interaction between SFN territory and the Project; noting the lack of Traditional Land Use Study available.

First Nation	Level of Interaction	Area of Project Footprint Overlap with Traditional Territory (ha)	Percent Overlap of Traditional Territory (%)	Description of Overlap	Traditional Land Use Study Available?	Traditional Knowledge Available?	Considerations Based on Traditional Land Use Study and Traditional Knowledge
First Nation of Na-cho Nyäk Dun	Unlikely	665	0.00	A northern portion of the existing NAR (providing placer mine access) overlaps the southwest portion of FNNND Traditional Territory.	No	Yes	Traditional Knowledge information describes historical traditional use of the Coffee Creek area and current TU of the Traditional Territory in general, No specific references to the areas of interaction between FNNND territory and the Project.

Table 4.4-7 Anticipated Scope of Residual Effects to First Nations

Residual Effect to Current use of Land and Resources	Tr'ondëk Hwëch'in	White River First Nation	Selkirk First Nation	First Nation of Na-cho Nyäk Dun
Decrease in availability of land and resources	Likely	Possible	Possible	Unlikely
Increase in access to lands and resources	Likely	Unlikely	Possible	Unlikely
Effects to sensory resources	Likely	Possible	Possible	Unlikely
Decrease in quality of land and resources	Likely	Possible	Possible	Unlikely
Effects to the quality of intangible cultural and spiritual resources	Likely	Possible	Possible	Possible

Notes:

Unlikely: Effect in Traditional 'Territory is limited in extent and therefore not likely to have a substantive influence on the short or long-term current use of land and resources.

Possible: Effects in Traditional 'Territory are limited in extent, however may overlap for a small percentage of the Traditional Territory.

Likely: Effects in Traditional 'Territory are limited in extent, will overlap for a percentage of the Traditional Territory and are likely to affect the land and resource use by the First Nation within that overlap.

4.4.3.1 Decrease in Availability of Land and Resources

The potential adverse residual effects from a decrease in available land to the current use of lands and resources is anticipated to be low in magnitude, as the area of land in the Project footprint is less than 0.03 % of the RAA, and where possible the Proponent has utilized land already withdrawn from traditional land and resource by existing activities (placer mining and existing road). The geographic extent is the LAA (excepting those areas already disturbed within the LAA), and the effect is continuous, long term, and partially reversible on decommissioning. The residual effect is likely as the Project will require land area. Based on the effects characteristics, the residual effect is considered not significant, with high confidence, in an area with moderate resiliency to disturbance.

Table 4.4-8 Summary of Effect Characteristics Ratings for Decrease in the Availability of Land during Construction and Operation

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	The Project footprint will remove land from traditional land and resource uses.
Magnitude	Low	Decrease in the area of available land may be detectable, but will not likely be experienced at the community level.
Geographic Extent	LAA	Residual effects will be within the LAA, focused on the Mine Site footprint and new sections of the NAR
Timing	Not applicable	Not applicable.
Frequency	Continuous	The effect will be continuous, until the commencement of decommissioning.

Residual Effects Characteristic	Rating	Rationale for Rating
Duration	Long-term	Effects will begin with the commencement of construction, and will continue until the completion of decommissioning.
Reversibility	Partially Reversible	With decommissioning, the effect will likely be partially reversible. Changes can be partially reversed to baseline or equivalent conditions.
Probability of Occurrence	Likely	The Project footprint will affect the availability of land.
Context	Moderate	Potentially affected First Nations are expected to have a moderate to strong ability to respond to potential Project-related disturbances to the availability of land for current traditional uses, given that a portion of the Project footprint is within already disturbed land.

4.4.3.2 Effects from Increase in Access to Lands and Resources

The residual effects resulting from increases in access to the current traditional land and resource use subcomponent are expected to begin in the latter portion of the Construction Phase and extend through he Operation and Reclamation and Closure Phases. The construction of the NAR is expected to commence in Q2 of Year -–3 and be complete in the beginning of Year –2. On average, the NAR is expected to be open for approximately 280 days per year during the Operation Phase, with seasonal shutdowns planned in the spring and winter during break-up and freeze-up, respectively. With access control in place at Stewart River, increased access will be limited to the NAR from the southern end of the existing YG road to the Stewart River. Access to and through the Mine Site will not be available for health and safety reasons.

Increases in access are expected to occur in the LAA as a direct result of upgrades and extensions for the NAR, which may facilitate additional improvements in access in the LAA and adjacent portions of the RAA via ATVs, snowmobiles, or walking. The residual effect is likely to affect different cohorts within each potentially affected First Nation, and will be experienced differently in both the LAA and RAA. For those First Nations who use the LAA, and the Project-related change in access is an opportunity to facilitate current traditional land and resource use, a positive effect is expected. For those First Nations who are displaced from where they are currently conducting and/or may wish to conduct particular traditional land and resource use activities in the future, an adverse effect is expected. For this assessment, the adverse and positive residual effects are considered to have the same ratings for the residual effects characteristics, and are thus evaluated in the same table.

Residual effects are anticipated to be moderate in magnitude, extend into the areas of the RAA in proximity to the LAA, vary by season, continuous, long term (from Year –1 to Year 15) and likely **(Table 4.4-9**). The residual effects are anticipated to be not significant, within a moderately resilient context as First Nations will have the ability to adjust to changes. Confidence in the assessment is considered moderate, as further First Nations consultation through the proposed mitigation measures may clarify the traditional land and resource uses of the potentially affected area.

Table 4.4-9 Summary of Effect Characteristics Ratings for Increase in Access during Construction and Operation

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse and Positive	Increase in access may facilitate opportunities for traditional uses, or displace existing traditional uses.
	Adverse	For those currently participating in a traditional land and resource use who may be displaced from where they are currently conducting and/or may wish to conduct particular resource harvesting activities or other activities in the absence of additional resource users, an adverse effect is expected.
Magnitude	Moderate	Increases to access would result in demonstrable change and is possible at the community-wide level, but remains within historic norms and does not present a management challenge.
Geographic Extent	Regional	Residual effects are expected to occur within and beyond the LAA, as changes to access in the LAA may facilitate further changes to access in adjacent portions of the RAA adjacent to the NAR from Stewart River north to the southern end of the YG road.
Timing	Seasonal	Increases in vehicular access will depend on the season. No changes are anticipated during freeze and thaw periods. During summer, access will be improved north of the Stewart River yet unchanged to the south of the river. In winter, vehicular access will be improved to the north side of the Yukon River. Changes in access are expected to influence current traditional land and resource users differently with respect to their harvesting seasons.
Frequency	Continuous	Increases in access are anticipated to be continuous on completion of the construction of the NAR.
Duration	Long-term	Increases in access will likely occur throughout the, Operation Phase, and will be partially available during the Construction and Reclamation and Closure Phases.
Reversibility	Partially Reversible	Project-related Increases in access will be reversed partially to baseline or equivalent conditions.
Probability of Occurrence	Likely	The improvements to access by the NAR are likely to alter access for traditional purposes for existing First Nations users.
Context	Moderate	Potentially affected First Nations are expected to have a moderate ability to respond to potential Project-related disturbances to existing access conditions.

4.4.3.3 Effects to Sensory Conditions

The potential for Project activities to affect sensory conditions through effects to the environment was considered in **Section 4.2.2.2**, which presents a summary of the predicted residual effects to linked ICs for air quality, noise, and visual analysis. An adverse residual effect to these ICs will potentially result in an adverse effect to sensory conditions, and influence the use of the land for traditional purposes.

The residual effect to changes in sensory conditions is likely to begin in the Construction Phase and extend through Operation and Reclamation and Closure.

Depending on when and where potentially affected First Nations are currently conducting traditional land and resource use activities, Project-related changes to visual conditions are expected to be neutral or adverse.

The Project noise assessment report concluded that no or negligible residual adverse effects would result from Project activities; thus, noise-related changes to sensory conditions are not expected. The trend is not considered to be a worsening or improvement from baseline conditions.

The proposed Project will comply with relevant air quality objectives and guidelines within 500 m of the Mine Site footprint. With mitigation, exceedances within the Mine Site and to approximately 500 m beyond the Mine Site footprint are anticipated: no exceedances are predicted for the NAR. This potential effect would be adverse to the extent that land and resource use occurs within the area of predicted exceedance and could be affected.

Based on this review of the residual changes for the linked ICs, the residual effects to air quality and visual resources may affect sensory conditions for traditional uses, and only these effects are considered further.

The residual adverse effects to sensory conditions from Project-related effects to air quality are anticipated to be low in magnitude, local in extent (in the vicinity of the Mine Site), seasonal as potential uses may change by season, and reversible as air quality is anticipated to return to baseline conditions. Beginning in the Construction Phase and extending through Operation Phase, the residual effect is considered likely, based on the assessment of the air quality VCs, and will likely be not significant, based on the effect characteristics, and the moderate to high resiliency of the subcomponent. Confidence in the assessment is considered moderate; additional First Nations consultation through the proposed mitigation may clarify the traditional land and resource uses of the potentially affected area.

The residual adverse effects to sensory conditions from Project-related effects to visual resources are anticipated to be low in magnitude, local in extent (in the vicinity of the Mine Site and new and upgraded portions of the NAR), seasonal as potential uses may change by season, and partially reversible depending on the rate of return to baseline conditions for those areas that are reclaimed **(Table 4.4-10**). Beginning in the Construction Phase and extending through the Operation and Reclamation and Closure Phases, the residual effect is considered likely, based on the assessment of the visual VC and the primary data from First Nations, and will likely be not significant based on the effect characteristics, and the moderate to high resiliency of the subcomponent. Confidence in the assessment is considered moderate; further First Nations consultation through the proposed mitigation may clarify the traditional land and resource uses of the potentially affected areas.

Table 4.4-10 Summary of Effect Characteristics Ratings for Change in Sensory Conditions (Air Quality) during Construction and Operation

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	The Proponent will comply with relevant air quality objectives and guidelines beyond the Project footprint, with small areas of predicted exceedance of particulate matter indicator concentrations occurring within 500 m of the Mine Site footprint. This potential effect would be adverse to the extent that current traditional land and resource use occurs within the area of predicted exceedance.
Magnitude	Low	Changes to sensory conditions may be detectable, but are not expected to be experienced at the community level.
Geographic Extent	Local	Residual effects will likely be focused in the LAA in the vicinity of the Mine Site.
Timing	Seasonal	Changes to the sensory conditions are expected to influence current traditional land and resource users differently with respect to harvesting seasons. Dust during summer months could affect NAR users.
Frequency	Continuous	Changes are likely to occur on a regular basis and at regular intervals.
Duration	Long-term	Changes to sensory conditions are likely to occur throughout the Construction, Operation, and Reclamation Phases.
Reversibility	Reversible	Project-related changes to air quality are reversible to baseline or equivalent conditions.
Probability of Occurrence	Likely	Changes to air quality are likely as a result of the Project.
Context	Moderate to High	Potentially affected First Nations will likely have a moderate to strong ability to respond to potential Project-related disturbances to existing sensory conditions.

Table 4.4-11 Summary of Effect Characteristics Ratings for Change in Sensory Conditions (Visual Resources) during Construction and Operation

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	Depending on when and where non- traditional land and resource use activities are conducted, Project-related changes to visual conditions will likely be neutral or adverse.
Magnitude	Low	Changes to sensory conditions may be detectable, and will be experienced at the community level.
Geographic Extent	Local	Residual effects will likely be focused in the LAA.
Timing	Seasonal	Changes to the sensory conditions will likely be different in different seasons (i.e., with or without snow) and influence current traditional land and resource users differently with respect to harvesting seasons.
Frequency	Continuous	The disturbance causing the changes in visual quality will likely be continuous.
Duration	Long-term	Changes to sensory conditions will likely occur throughout the Construction, Operation, and Reclamation Phases.
Reversibility	Partially Reversible	Project-related changes to partially reversible to baseline or equivalent

Residual Effects Characteristic	Rating	Rationale for Rating
		conditions depending on the rate of return to baseline conditions for those areas that are reclaimed.
Probability of Occurrence	Likely	Changes to visual resources are likely as a result of the Project
Context	Moderate to High	Potentially affected First Nations will likely have a moderate to strong ability to respond to potential Project-related disturbances to existing sensory conditions.

4.4.3.4 Decrease in Quality of Land and Resources

The potential for Project activities to affect the quality of land through effects to the environment was considered in **Section 4.2.2.4**, which presents a summary of the predicted residual effects to linked VCs for water quality, fish, vegetation, wildlife, and birds. An adverse residual effect to these VCs will potentially result in an adverse effect to the quality of land, which may decrease the ability and desirability of First Nations to carry out current traditional activities to the current levels.

Residual effects to the current use of fish are rated neutral as no significant effects to fish and fish habitat were identified, and residual effects deemed not significant will be localized, and not likely to affect current traditional fishing activities.

Residual effects to the current use of vegetation are rated neutral as no significant effects were identified for any of the Vegetation subcomponents. Although a residual effect might occur, the effect is unlikely to pose a risk to the long-term persistence and viability of vegetation resources, including ecological communities, wetlands, and traditional, medicinal, and rare plants at the local and regional level; therefore Project-related effects are not expected to result in a residual adverse effect to the current use of vegetation.

Residual effects to current use of wildlife are rated neutral as no significant effects were identified for any of the wildlife and wildlife habitat subcomponents at the regional level. A detectable or measurable residual effect might occur at the individual level if Project activities result in habitat loss and reduced habitat effectiveness due to sensory disturbance, and to mortality risk and altered movement to some subcomponents; however, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire wildlife population at the regional level

Residual effects to the current use of birds are rated neutral as no significant effects were identified for any of the bird-related subcomponents at the regional level. Although a detectable/measurable effect might occur at the individual level if Project activities result in direct habitat loss or sensory disturbance, the effect would be unlikely to pose a risk to the long-term persistence and viability of the entire bird population at the regional level.

The assessment evaluates potential residual effects to surface water quality based on the predicted concentrations of key indicators (**Section 1.3**) under Base Case model conditions (presented in **Appendix 12-C Water Balance and Water Quality Model Report**). The Base Case water quality model results incorporate conservative assumptions with respect to the derivation of source terms, climate considerations, and geochemical behaviour along groundwater pathways, or in the receiving environment. As part of the assessment methodology, predicted mean monthly concentrations for each parameter were compared to their corresponding BC or CCME water quality guideline for the protection of aquatic life. Aquatic life guidelines reflect the most sensitive water use for Project area streams, and were thus selected for screening purposes over other guidelines (e.g., drinking water, wildlife/livestock or irrigation/agriculture). Water quality parameters with concentrations predicted to fall below guidelines were screened out of the assessment for residual effects, since the guidelines approved by CCME and the BC Ministry of Environment are considered protective of all aquatic species and life stages. Predicted concentrations were also compared to a Natural Case (i.e., no Project) to account for parameters that have naturally elevated background concentrations. From this modelling process residual effects to the current use of water are rated adverse since residual Project-related effects following mitigation are predicted to occur in Latte Creek, YT-24 tributary, and Halfway Creek. No residual effects are predicted to occur in Coffee Creek, downstream of the Latte Creek confluence, or in the Yukon River. Overall, residual effects from total uranium (T-U) in Latte Creek, total arsenic (T-As) in YT-24, and nitrate, T-U, and total zinc (T-Zn) in Halfway Creek were identified but are considered not significant.

Based on this review of the residual effects assessments for the linked VCs, the residual effects to water quality may affect the quality of land for traditional uses, and only these effects are considered further.

The residual adverse effect to land quality from Project-related effects to water quality are anticipated to be low in magnitude, local in extent as the water resources affected are in the vicinity of the Mine Site, seasonal as the effect is seasonal and potential uses may change by season, and partially reversible as water quality in affected water courses is anticipated to return closer to baseline conditions over the long term (**Table 4.4-12**). Beginning in the Construction Phase and extending through the Operation and Reclamation and Closure Phases, the residual effect is considered likely based on the assessment of the residual effects to the water quality VCs, and is anticipated to be not significant based on the effects characteristics and the moderate resiliency of the subcomponent. Confidence in the assessment is considered moderate.

Table 4.4-12 Summary of Effect Characteristics Ratings for Decrease in the Quality of Resources (Water) during Construction, Operation, and Reclamation and Decommissioning

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Adverse	Residual effects to the current use of water are rated adverse as potential effects to surface water quality in YT-24 tributary from nitrate and nitrite, sulphate, and T-U were assessed as potentially non-significant.
Magnitude	Low	Residual effects to water quality are be detectable, but are not expected to be experienced at the community level.
Geographic Extent	Local	Residual effects are expected to occur within a portion of the LAA in the vicinity of the Mine Site.
Timing	Seasonal	Changes to the amount or quality of resources are expected to influence current traditional land and resource users differently with respect to harvesting seasons.
Frequency	Continuous	Changes are anticipated occur on a regular basis and at regular intervals.
Duration	Long-term	Changes re anticipated occur throughout the Construction, Operation, and Reclamation and Closure Phases.
Reversibility	Partially Reversible	Changes can be partially reversed to baseline or equivalent conditions
Probability of Occurrence	Likely	Changes to the amount or quality of resources available for current traditional uses are expected as a result of the Project.
Context	Moderate	Potentially affected First Nations are expected to have a moderate to strong ability to respond to potential Project-related disturbances to the amount or quality of resources available for current traditional uses.

4.4.3.5 Effects to the Quality of Intangible Cultural and Spiritual Resources

Determining significance of effects to such potential Project-related changes as the quality of intangible cultural and spiritual resources is challenging and complex as several factors may contribute to how the effect is characterized (YESAB 2012).

Assessment of the potential adverse effects to cultural and spiritual resources considers the potential for effects to habitation, transportation, and intangible culture and heritage values, which in turn are supported by the assessment of effects to sensory conditions (noise, visual effects, air quality), access, heritage resources, the availability of land and the quality of land (water, fish, wildlife, birds and habitats). Assessments of the potential residual effects for heritage resources (**Appendix 26-A Heritage Resources Valued Component Assessment**), access, sensory conditions, availability of land, and quality of resources are assessed separately (**Sections 4.4.3.1 to 4.4.3.4**) and therefore not considered further within this effect assessment for intangible resources. Residual effects for these considerations are summarized below and in **Table 4.4-13.**

- No residual effects for heritage resources
- Negligible (sound) and not significant (air quality, visual) residual effects for sensory conditions

- Negligible (vegetation, fish, birds) and not significant (water quality) adverse residual effects (localized) for VCs with linkages to the quality of land
- No significant adverse, and positive, residual effects for access.

The assessment to the quality of intangible cultural resources therefore focuses on the extent to which the Project may influence cultural and traditional knowledge. Project support for TK projects and monitoring allows learning about traditional resources and allows for time spent on the land. With the enhancement measures in place, this effect is anticipated to be positive. The residual effects are anticipated to be low in magnitude, local to regional in extent, year-round, continuous, long-term. and partially reversible as learning may be passed to future generations.

Table 4.4-13 Summary of Effect Characteristics Ratings for Change to the Quality of Intangible Cultural and Spiritual Resources during Construction, Operation, and Reclamation and Closure

Residual Effects Characteristic	Rating	Rationale for Rating
Direction	Positive	Positive rating to the extent that new employment of First Nation citizens in TK projects and monitoring allows learning more about traditional resources and spending time on the land.
Magnitude	Low	Positive residual effect of First Nation employees learning more about traditional resources and spending time on the land may be detectable, but will not likely be experienced at the community level.
Geographic Extent	Local to Regional	Positive residual effect of First Nation employees learning more about traditional resources and spending time on the land is likely to extend across local hiring within LAA and RAA.
Timing	Year-round	Changes are related to year-round construction and operation activities.
Frequency	Continuous	Changes are anticipated occur on a regular basis and at regular intervals.
Duration	Long-term	Positive effects are anticipated throughout the Construction, Operation, and Reclamation and Closure Phases.
Reversibility	Partially reversible	Partially reversible – positive effect of First Nation employees learning about traditional resources and spending time on the land may be forgotten by some but some are likely to pass on learning to subsequent generations.
Probability of Occurrence	Likely	Past experience indicates that the effect is likely to occur as a result of the Project.
Context	Moderate	First Nation communities have a moderate ability to respond to change in the quality of intangible cultural and spiritual resources.

4.4.4 SUMMARY OF PROJECT–RELATED RESIDUAL ADVERSE EFFECTS AND SIGNIFICANCE

The potential residual adverse effects to non-Traditional Land and Resource Use and to current traditional land and resource use and the determination of significance of these residual adverse effects on non-traditional land and resource use and on current traditional land and resource use are summarized in **Table 4.4-14** and **Table 4.4-15**.

Table 4.4-14 Summary of Potential Residual Adverse Effects for Non-Traditional Land and Resource Use

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Note for details)										
			Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	Likelihood	Context	Significance	Level of Confidence
Construction Phase													
Increase in access	Mine Site and NAR activities	• Access Route Construction Management Plan • Engagement Plan	*A*	*M*	*R*	*S*	*LT*	*C*	*P*	*L*	*M*	*NS*	*M*
Decrease in the available land for resource use (for maximum footprint)	Mine Site and NAR activities	• Engagement Plan	*A*	*L*	*LAA*	*N/A*	*LT*	*C*	*P*	*L*	*M*	*NS*	*M*
Decrease in the quality of resources (water)	Mine Site and NAR activities	• Water Management Plan (**Appendix 31-E**) • Access Route Construction Management Plan (**Appendix 31-A**) • Erosion and sediment control plans	*A*	*L*	*L*	*S*	*LT*	*C*	*P*	*L*	*M*	*NS*	*M*
Operation Phase													
Increase in access	Mine Site and NAR activities	• Access Route Operation Management Plan • Engagement Plan	*P* *A*	*M* *M*	*R* *R*	S *S*	LT *LT*	*C* *C*	*P* *P*	*L* *L*	*M* *M*	*NS* *NS*	*M* *M*
Effects to Sensory Conditions	Mine Site and NAR activities	• Access Route Operation Management Plan • Engagement Plan	*N-A*	*L*	*L*	*Y*	*LT*	*C*	*R*	*L*	*M-H*	*NS*	*M*
Decrease in the quality of resources (water)	Mine Site and NAR activities	• Water Management Plan (**Appendix 31-E**) • Access Route Operation Management Plan • Erosion and sediment control plans	*A*	*L*	*L*	*S*	*LT*	*C*	*P*	*L*	*M*	*NS*	*M*

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Note for details)										
			Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	Likelihood	Context	Significance	Level of Confidence
Closure and Reclamation Phase													
Increase in access	Mine Site and NAR activities	• Access Route Operation Management Plan • Engagement Plan	*P*	*M*	*R*	S	LT	*C*	*P*	*L*	*M*	*NS*	*M*
			A	*M*	*R*	*S*	*LT*	*C*	*P*	*L*	*M*	*NS*	*M*
Decrease in the quality of resources (water)	Mine Site and NAR activities	• Water Management Plan (**Appendix 14-B**) • Access Route Operation Management Plan • Erosion and sediment control plans	*A*	*L*	*L*	*S*	*LT*	*C*	*P*	*L*	*M*	*NS*	*M*

Notes:
Direction: P = Positive, A = Adverse, N= Neutral
Magnitude: N = Negligible, L = Low magnitude, M = Moderate magnitude, H = High magnitude
Geographic Extent: L = local LAA = LAA, R = regional (RAA) =
Timing: S = Seasonal, Y= Year-round
Duration: P = Permanent, LT = Long-term, ST = Short-term,
Frequency: CF = Continuous, FF = Frequent, IF = Infrequent
Reversibility: R = Reversible, P = Partially Reversible, I = Irreversible
Context: L=Low, M=Moderate, H=High
Likelihood: L=Likely, U=Unlikely
Significance: NS = Not-Significant, S = Significant
Level of Confidence: L=Low, M=Moderate, H=High

Table 4.4-15 Summary of Potential Residual Adverse Effects for Current Traditional Land and Resource Use

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Note for details)										
			Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	Likelihood	Context	Significance	Level of Confidence
Construction Phase													
Increase in access	Mine Site and NAR activities	• Traditional Economy Enhancement Measures • Access Route Construction Management Plan • Communication Plan	P	M	R	S	LT	C	P	L	M	NS	M
			A	M	R	S	LT	C	P	L	M	NS	M
Effects to Sensory Conditions	Mine Site and NAR activities	• Traditional Economy Enhancement Measures • Access Route Operation Management Plan • Communication Plan • Memorandum of Understanding	A	L	L	S	LT	C	R	L	M-H	NS	M
Decrease in the availability of land (for maximum footprint)	Mine Site and NAR activities	• Traditional Economy Enhancement Measures • Communication Plan • Water Management Plan (**Appendix 31-E**) • Access Route Construction Management Plan (**Appendix 31-B**) • Erosion and sediment control plans	A	L	LA A	N/A	LT	C	P	L	M	NS	H

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Note for details)										
			Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	Likelihood	Context	Significance	Level of Confidence
Decrease in the quality of land and resources (water)		• Mitigation measure for linked VCs • Traditional Economy Enhancement Measures • Communication Plan • Water Management Plan (**Appendix 31-E**) • Access Route Construction Management Plan (**Appendix 31-B**) • Erosion and sediment control plans	A	L	L	S	LT	C	P	L	M	NS	M
Effects to the quality of intangible cultural and spiritual resources	Labour needs and goods and services spending during the Construction, Operation, Reclamation and Closure Phases	• Traditional Economy Enhancement Measures • Communication Plan	P	N-L	R	Y	LT	C	P	L	M	NS	M
Operation Phase													
Increase in access	Mine Site and NAR activities	• Traditional Economy Enhancement Measures • Access Route Operation Management Plan • Communication Plan	P	M	R	S	LT	C	P	L	M	NS	M
			A	M	R	S	LT	C	P	L	M	NS	M

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Note for details)										
			Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	Likelihood	Context	Significance	Level of Confidence
Effects to Sensory Conditions	Mine Site and NAR activities	• Traditional Economy Enhancement Measures • Access Route Operation Management Plan • Communication Plan • Memorandum of Understanding	A	L	L	S	LT	C	R	L	M-H	NS	M
Decrease in the quality of land and resources (water)		• Mitigation measure for linked VCs • Traditional Economy Enhancement Measures • Communication Plan • Water Management Plan (**Appendix 31-E**) • Access Route Construction Management Plan (**Appendix 31-B**) • Erosion and sediment control plans	A	L	L	S	LT	C	P	L	M	NS	M
Effects to the quality of intangible cultural and spiritual resources	Labour needs and goods and services spending during the Construction, Operation, and Reclamation and Closure Phases	• Traditional Economy Enhancement Measures • Communication Plan	P	N-L	R	Y	LT	C	P	L	M	NS	M

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Note for details)										
			Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	Likelihood	Context	Significance	Level of Confidence
Closure and Reclamation Phase													
Increase in access	Mine Site and NAR activities	• Traditional Economy Enhancement Measures • Access Route Operation Management Plan • Communication Plan	P	M	R	S	ST	C	P	L	M	NS	M
			A	M	R	S	ST	C	P	L	M	NS	M
Effects to Sensory Conditions	Mine Site and NAR activities	• Traditional Economy Enhancement Measures • Access Route Operation Management Plan • Communication Plan • Memorandum of Understanding	N-A	L	L	Y	P	C	R	L	M-H	NS	M
Decrease in the quality of land and resources (water)		• Mitigation measure for linked VCs • Traditional Economy Enhancement Measures • Communication Plan • Water Management Plan (**Appendix 31-E**) • Access Route Construction Management Plan (**Appendix 31-B**) • Erosion and sediment control plans	A	L	L	S	LT	C	P	L	M	NS	M

Potential Residual Adverse Effects	Contributing Project Activities	Proposed Mitigation Measures	Residual Effects Characterization (see Note for details)										
			Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	Likelihood	Context	Significance	Level of Confidence
Effects to the quality of intangible cultural and spiritual resources	Labour needs and goods and services spending during the Construction, Operation, and Reclamation and Closure Phases	• Traditional Economy Enhancement Measures • Communication Plan	P	L	R	Y	ST	C	P	L	M	NS	M

Notes:

Direction:	P = Positive, A = Adverse, N= Neutral
Magnitude:	N = Negligible, L = Low magnitude, M = Moderate magnitude, H = High magnitude
Geographic Extent:	L = local, LAA= LAA, R = regional (RAA)
Timing:	S = Seasonal, Y= Year-round
Duration:	P = Permanent, LT = Long-term, ST = Short-term,
Frequency:	CF = Continuous, FF = Frequent, IF = Infrequent
Reversibility:	R = Reversible, P = Partially Reversible, I = Irreversible
Context:	L=Low, M=Moderate, H=High
Likelihood:	L=Likely, U=Unlikely
Significance:	NS = Not-Significant, S = Significant
Level of Confidence:	L=Low, M=Moderate, H=High

Based on the significance determination for the residual effects listed in **Table 4.4-15,** a potential for significant residual effect on current traditional land and resource use was not identified.

All non-negligible residual adverse effects, whether significant or not significant, are carried forward into the cumulative effects assessment (see **Section 5.0).**

5.0 CUMULATIVE EFFECTS ASSESSMENT

This section presents an assessment of potential cumulative effects to the subcomponents of the Land and Resource Use VC. Cumulative effects result from interactions between Project-related residual effects and the incremental effects on the VC of other past, present and reasonably foreseeable projects and activities. These projects and activities are identified in the Project and Activity Inclusion List provided in **Section 5.0 Assessment Methodology**, Appendix 5-A.

As mentioned above, anthropogenic disturbances (including mining activities) do influence where and what type of traditional activities are conducted by individuals and First Nations. As a whole, this has the potential to decrease the total amount of undisturbed, appropriate land which citizens or members have available to conduct traditional economic activities in the RAA. For example, "…Elders have reported that the Moose population in the Dublin Gulch area has been declining, likely due to the noise and activity in the area resulting from placer and quartz mining activity" (DPRA 2-010), highlighting how mining activity has had an effect on wildlife in other areas of the FNNND Traditional Territory.

5.1 PROJECT-RELATED RESIDUAL EFFECTS

Project-related adverse residual effects on non-traditional land and resource use and current traditional land and resource use, and rationales for their inclusion in (or exclusion from) the cumulative effects assessment, are listed in **Table 5.1-1**. Residual effects that were assessed as negligible are not considered likely to interact cumulatively, and consequently are not carried forward into the cumulative effects assessment.

Table 5.1-1 Project-related Residual Effects Considered in the Cumulative Effects Assessment

Project-related Residual Effect	Included in Cumulative Effects Assessment	Rationale
Non-Traditional Land and Resource Use		
Effect of Increase in Access	Yes	Beneficial effects were identified for those users for whom access was increased, are not carried forward in the cumulative effects assessment. Adverse changes in access were identified by those existing users who are displaced, or by those whose preference is for limited access.
Effects to Sensory Condition (air quality, visual)	Yes	There is a potential for other projects to interact cumulatively with the adverse residual effects to sensory condition

Project-related Residual Effect	Included in Cumulative Effects Assessment	Rationale
Decrease in availability of land and resources	Yes	Other projects may interact with the residual effects on the availability of land and resources. While this residual effect is considered fully mitigated for non-traditional uses, a non-significant adverse effect was identified for traditional uses; therefore, for comprehensiveness it has been carried forward for both subcomponents.
Decrease in quality of resources (water)	Yes	There is a potential for other projects to interact cumulatively with the residual effects to the quality of resources (water quality).
Current Traditional Land and Resource Use		
Effect of Increase in Access	Yes	Beneficial effects were identified for those users for whom access was increased, which are not carried forward in the cumulative effects assessment. Adverse changes in access were identified by those existing traditional users who are displaced, or by those whose preference is for limited access.
Effects to Sensory Condition	Yes	There is a potential for other projects to interact cumulatively with the adverse residual effects to sensory condition
Decrease in availability of land and resources	Yes	Other projects may interact with the residual effects to the availability of land and resources for Tus
Decrease in quality of resources	Yes	There is a potential for other projects to interact cumulatively with the adverse residual effects to the quality of resources (water quality)

5.1.1 CUMULATIVE EFFECTS BASELINE INFORMATION

Primary data collection activities and TK were used to inform the Land and Resource Use subcomponents: non-traditional land and resource use and current traditional land and resource use. Traditional Knowledge was used to shape the subcomponent current traditional land and resource use, and more specifically, to gain an understanding of how each First Nation defines current traditional land and resource use as well as to understand the type of activities and values that each First Nation associates with current use. Other baseline information used to inform the cumulative effects assessment is provided in the Project Proposal in **Section 1.0. Introduction**, **Section 3.0 Existing Conditions**, and the **Socio-economic Baseline Report** (**Appendix 18-A**).

5.2 SPATIAL AND TEMPORAL SCOPE OF THE CUMULATIVE EFFECTS ASSESSMENT

As described in **Section 1.3.1.1,** the spatial boundaries of the cumulative effects assessment for the non-traditional land and resource use subcomponent are defined as the Game Management Subzones that overlap the Project footprint. As described in **Section 1.3.1.2,** the spatial boundaries of the cumulative effects assessment for the subcomponent current traditional land and resource use are defined as the the

cumulative effects assessment area defined in Appendix 5B This spatial boundary is less than the RAA, however based on the focussed location of the Project-related effects on the Mine Site and the NAR, is considered sufficient.

The temporal boundaries within which cumulative effects will be considered are defined as the life of the Project, including its Post-closure Phase. This temporal scope is the same as described in **Section 1.3.2.**

5.3 EFFECTS DUE TO OTHER PROJECTS AND ACTIVITIES

Other relevant projects and activities within the spatial and temporal scope of the cumulative effects assessment that may result in residual adverse effects to non-traditional or current traditional land and resource use and interact with the Project-related residual adverse effects are identified in **Table 5.3-1**. An overview description of each of these projects and activities is provided, along with relevant potential residual effects. Relevant projects and activities were identified from the Project and Activity Inclusion List in the Project Proposal (**Section 5.0 Assessment Methodology**). The other projects and activities have been grouped into general categories for an initial screening.

The following definitions were used to classify the status of projects and activities that could interact with the Project:

- Past – projects and land use activities that occurred in the past and are no longer active.
- Present – existing and active projects and land use activities. All projects or land use activities that applied for approval or permitting prior to 2015 are assumed to be present projects or land use activities.
- Future – reasonably foreseeable future projects or land use activities for which proposals have been submitted to YESAA (subsection 50(1)), or have entered into a formal approval or permitting process. Applications submitted in 2015 and 2016 are assumed to be future projects or land use activities.

Past and present residual effects are captured by the existing conditions described for the subcomponents; the assessment therefore focuses on the remaining incremental adverse effects from the Project in combination with the residual effects of other reasonably foreseeable projects and activities.

Mineral exploration and placer mining projects have occurred and are likely to continue to occur in the Project region. Although the claim blocks can be very extensive and numerous, actual works are likely to be limited to a few focal areas for either a short period of time, or seasonally for many years, as is the case for several quartz claims in the area. Projects in each category summarized in **Table 5.3-1** were assessed in relation to the type of disturbance and potential interaction with each subcomponent.

Table 5.3-1 Potential Residual Adverse Effects of Other Projects and Activities on Land and Resource Use

Other Project / Activity Category	Description	Potential Residual Effects
Quartz projects	Mining of hard rock ore bodies: two existing quartz mining projects are in closure and reclamation stages, two are in operation stage, multiple quartz projects are in exploration, and five quartz projects are considered as foreseeable future mines during the lifetime of the Coffee Creek Project.	Yes. Potential residual effects to non-traditional and current traditional land and resource use are likely from changes to access, sensory conditions, availability and/or quality of resources.
Placer projects	Mining of alluvial deposits for minerals: activities include placer exploration, and placer mining, and multiple current, future, and past placer projects overlap the RAA.	Yes. Potential residual effects to non-traditional and current traditional land and resource use are likely from changes to access, sensory conditions, and availability and/or quality of resources.
Transportation	Access roads construction and upgrades, bridges, and culverts: Multiple projects are currently operating within the RAA.	Yes. Potential residual effects to non-traditional and current traditional land and resource use are likely from changes to access, sensory conditions, and availability and/or quality of resources.
Utilities	Water supply wells, wastewater treatment, and on-site sewage disposal systems: five utilities projects overlap the RAA, including continued operation of municipal water supply, waste treatment, airport access and transmission line, water supply upgrades, and fiber optic lines; and future upgrades to an existing force main.	Yes. Potential residual effects to non-traditional and current traditional land and resource use are likely from changes to availability and/or quality of resources.
Energy	Air emissions permits and electric power transmission lines: multiple energy projects are currently operating within the RAA, mostly transmission line projects.	Yes. Potential residual effects to non-traditional and current traditional land and resource use are likely from changes to access, sensory conditions, and availability and/or quality of resources.
Forestry	Timber harvesting activities for commercial purposes or clearing of forest resources incidental to other activities: five past forestry projects.	Yes. Potential residual effects to non-traditional and current traditional land and resource use are likely from changes to access, sensory conditions, and availability and/or quality of resources.
Agriculture	Soil-based agricultural land applications and livestock grazing land applications: eight agriculture activities are currently operating within the RAA.	Yes. Potential residual effects to non-traditional and current traditional land and resource use are likely from changes to sensory conditions, and availability and/or quality of resources.
Settlements	Residential and commercial land use, community infrastructure, and historic sites: existing communities that overlap the RAA include Dawson and Pelly Crossing.	Yes. Potential residual effects to non-traditional and current traditional land and resource use are likely from changes to access, sensory conditions, and availability and/or quality of resources.

Other Project / Activity Category	Description	Potential Residual Effects
Industrial	Installation and upgrade of oil and solid fuel burning appliances and fuel oil storage tanks: four industrial projects overlap the RAA including fuel storage tank upgrades, biomass boiler, and quarry.	Yes. Potential residual effects to non-traditional and current traditional land and resource use are likely from changes to sensory conditions, and availability and/or quality of resources.
Trapping and Hunting	Registered trapping concession areas and guide outfitter concession areas: Multiple Trapline Concession Areas and nine Guide Outfitter Concession Areas overlap with the RAA.	No. Trapping and hunting activities are sustainably managed by Yukon; therefore, potential residual effects to non-traditional and current traditional land and resource use are not considered likely.

The reasonably foreseeable projects or activities that are expected to have an interaction were included in the cumulative effects assessment on Land and Resource Use subcomponents. Consistent with **Appendix 16-B Wildlife and Wildlife Habitat VC Assessment Report**, the cumulative effects assessments for both Land and Resource Use VC subcomponents assumed the following spatial and temporal boundaries, and timing, of other projects and activities:

- **Placer mining**: All reasonably foreseeable future placer projects were assumed to be active throughout the life of this Project. Timing of placer mining is seasonal in the summer.
- **Quartz exploration:** All past, present, and future quartz exploration projects were assumed to be active throughout the life of this Project. Each project was assumed to have a 10-hectare footprint around the project centre. Quartz exploration is seasonal in the summer.
- **Quartz mining (past and present):** Footprints for present (Brewery Creek, Minto) and past mines (Mt Nansen, Clinton Creek) are based on the existing disturbance footprints visible in satellite imagery. Mining activity for these projects was assumed to occur year-round for the life of this Project.
- **Quartz mining (future):** Reasonably foreseeable future mines considered were Casino, Revenue, Hoochekoo, Carmacks, and Lonestar. Where available (Casino, Carmacks), proposed mine footprints from YESAB submissions were used to defined expected disturbance areas. Where proposed footprints were not available (Revenue, Hoochekoo, and Lonestar), a probable disturbance area was inferred.
- **Roads:** The spatial extent of disturbance due to roads was based on YG roads data.
- **General disturbance:** Spatial footprints of settlements, agriculture and forestry were based on YG map data from high resolution satellite imagery.

5.4 POTENTIAL CUMULATIVE EFFECTS

This section identifies and discusses the potential interactions between Project-related residual effects on both Land and Resource Use subcomponents and those of other projects and activities, as identified in **Table 5.4-1.** The potential adverse cumulative effects resulting from these interactions are also described.

The potential for interactions was determined by assessing the spatial and temporal overlap of future foreseeable projects within the RAA of each subcomponent. Projects and activities deemed to have potential for cumulative interactions with the Project were those that were likely to:

- Have comparable residual effects to land and resource use as the Project
- Be reasonably characterized in terms of their spatial and temporal boundaries
- Have spatial overlap with Project-related residual effects
- Have temporal overlap with Project-related residual effects.

Potential projects and activities were considered not to have potential for cumulative interactions if:

- The available spatial and temporal information indicates there is likely to be overlap with another project or activity that had a larger footprint
- The spatial or temporal extent of a potential project or activity is deemed likely to be too small to have a significant interaction with the Project.

Table 5.4-1 Potential Cumulative Effects on Land and Resource Use due to Interactions between the Project and Other Reasonably Foreseeable Projects and Activities

Other Project / Activity	Potential Residual Adverse Effect	Potential for Interaction Resulting in Cumulative Effect (see Note) and Rationale	
		Non-Traditional Uses	Traditional Uses
Quartz exploration (Past, Present, Future)	• Increase in access • Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	No. There are multiple quartz exploration projects within the land and resource use RAAs that could interact cumulatively with the Project; however, the timing and location of activities is not reasonably foreseeable, they cannot be reasonably characterized in terms of the magnitude and extent of their effects and potential effects to non-traditional uses are likely to be negligible.	No – There are multiple quartz exploration projects within the land and resource use RAAs that could interact cumulatively with the Project; however, the timing and location of activities is not reasonably foreseeable, they cannot be reasonably characterized in terms of the magnitude and extent of their effects, and potential effects to traditional uses are likely to be negligible.

Other Project / Activity	Potential Residual Adverse Effect	Potential for Interaction Resulting in Cumulative Effect (see Note) and Rationale	
		Non-Traditional Uses	Traditional Uses
Quartz mining (Past, Present, Future) Non-traditional use LAA: Lonestar and Casino Mines Traditional use RAA: Lonestar, Casino, Carmacks Copper, Eagle Gold, Hoocheko, Mac Tung, Revenue	• Increase in access • Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	Yes – There are existing and reasonably foreseeable future quartz mines within the land and resource use RAAs that may interact cumulatively with the Project. Other quartz mines activities are likely to have similar residual effects.	Yes – There are existing and reasonably foreseeable future quartz mines within the land and resource use RAAs that may interact cumulatively with the Project. Other quartz mines activities are likely to have similar residual effects.
Placer Mining (Past, Present, Future)	• Increase in access • Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	Yes — There are numerous past, present, and future placer claims within RAA that may interact cumulatively with the Project. Other placer mines activities are likely to have similar, more localized, residual effects.	Yes — There are numerous past, present, and future placer claims within RAA that may interact cumulatively with the Project. Other placer mines activities are likely to have similar, more localized, residual effects.
Industrial (Present and Future)	• Increase in access • Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	No – Potential interactions from present and future industrial projects are located within established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of settlements and roads.	No – Potential interactions from present and future industrial projects are located within established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of settlements and roads.
Utilities (Present and Future)	• Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	No – Potential interactions from present and future industrial projects are located within established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of settlements and roads.	No – Potential interactions from present and future industrial projects are located within established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of settlements and roads.

Other Project / Activity	Potential Residual Adverse Effect	Potential for Interaction Resulting in Cumulative Effect (see Note) and Rationale	
		Non-Traditional Uses	Traditional Uses
Energy (Present)	• Increase in access • Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	No – Potential interactions from present and future energy projects are located within established communities, along road ROWs, or part of quartz mining footprints. An effect from these projects will not be distinguishable from effects of settlements, roads, and quartz mining.	No – Potential interactions from present and future energy projects are located within established communities, along road ROWs, or part of quartz mining footprints. An effect from these projects will not be distinguishable from effects of settlements, roads, and quartz mining.
Transportation (Present)	• Increase in access • Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	No – Potential interactions from present and future transportation projects are located within established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of settlements and roads.	No – Potential interactions from present and future transportation projects are located within established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of settlements and roads.
Forestry (Past)	• Increase in access • Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	No – Forestry projects identified in the land and resource use RAAs are all past activities that should be returning to a naturally vegetated state. Effects these of projects will be assessed as part of existing ground disturbance and roads.	No – Forestry projects identified in the land and resource use RAAs are all past activities that should be returning to a naturally vegetated state. Effects these of projects will be assessed as part of existing ground disturbance and roads.
Agriculture (Present)	• Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	No – Agricultural activities do not overlap spatially with the RAA.	No – Existing agricultural activities in the RAA overlap with residual effects from the Project, however potential effects will not be distinguishable from effects of existing communities and roads, and is therefore not considered further.

Other Project / Activity	Potential Residual Adverse Effect	Potential for Interaction Resulting in Cumulative Effect (see Note) and Rationale	
		Non-Traditional Uses	Traditional Uses
Settlements (Past, Present and Future)	• Increase in access • Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	No – only the northern portion of the RAA, along the Klondike Highway, has residential development, and it not anticipated to interact with non-traditional activities.	No – Existing communities may have residual effects on land and resource use that interact with the Project. Other present settlement projects are located within these established communities or along road ROWs. An effect from these projects will not be distinguishable from effects of existing communities and roads, and is therefore not considered further.
Existing road network (no known future projects).	• Increase in access • Change to sensory conditions • Reduction in the availability of land • Reduction in the quality of resources	Yes – The existing road network has affected land and resource use in terms of access, sensory conditions, and availability or quality of resources. Vehicle traffic also creates sensory disturbance and has the potential to affect quantity of available resources by increasing collision-related wildlife mortalities.	Yes – The existing road network has affected land and resource use in terms of access, sensory conditions, and availability or quality of resources. Vehicle traffic also creates sensory disturbance and has the potential to affect quantity of available resources by increasing collision-related wildlife mortalities.

Note: **No**: no interaction or not likely to interact cumulatively; **Yes**: potential for cumulative effect.
The other activities that may interact are summarized in **Table 5.4-2**.

Table 5.4-2 Summary of Potential Cumulative Interactions

Potential Cumulative effect	Non-Traditional Land and Resource Use	Current Traditional Land and Resource Use
Increase in access	Quartz mining Placer Mining Existing road network	Quartz mining Placer Mining Existing road network
Change to sensory conditions	Quartz mining Placer Mining	Quartz mining Placer Mining
Decrease in the availability of land	Quartz mining Placer Mining	Quartz mining Placer Mining
Decrease in the quality of resources	Quartz mining Placer Mining	Quartz mining Placer Mining

5.4.1 CUMULATIVE EFFECTS TO INCREASES IN ACCESS

Settlements and the existing road network have contributed to the existing access conditions with the cumulative assessment areas, and additional related activity is not likely to be perceptible. Quartz mining projects and placer mining projects may increase access in the future, which may be considered an adverse effect by selected users.

Future changes (increases) in access in the vicinity of the Project-related improved access may be expected from quartz mining projects that require vehicular access, including Casino Mine to the southeast of the Project and Lonestar Mine to the northwest of the NAR. Lonestar Mine is in an area of existing nearby access, and therefore not likely to interact cumulatively. Increases in access from the Casino Mine will not overlap directly or be connected to the Project-related access. Within the larger current traditional land and resource use RAA, proposed and existing mines on the west side of the Klondike Highway do not substantially change access from existing conditions.

The Project will improve access for placer mining along improved portions of the NAR (placer mining is already present), and no additional improvements are anticipated. There may be future improvements to access for placer mining in areas not adjacent to the NAR, or that can connect with the NAR. Such access improvements would be within the non-traditional and current traditional RAAs. Within other areas of the larger current traditional land and resource use RAA, access from placer mining activity is not anticipated to substantially change, as placer mining in focused in the vicinity of Dawson (not present in other areas), and is not anticipated to interact cumulatively with Project related effects.

Cumulative effects would not be likely to occur until such time as the Casino Mine proceeds, presently not known, and not likely until the Project is in operation. With the decommissioning of the Project including its portions of the NAR, cumulative effects would cease.

5.4.2 CUMULATIVE EFFECTS TO CHANGES IN SENSORY CONDITIONS

Potential cumulative effects from changes in sensory conditions to non-traditional land and resource use, and current land and resource use, may occur from interactions with future quartz mining, and placer mining projects. Existing disturbances related to settlements and their associated land uses may interact cumulatively with the current land and resource uses; however, future uses are anticipated to be within the same boundaries and not distinguishable from existing activities. Project-related residual effects to sensory disturbance result from air quality and visual effects.

Project-related air quality residual effects are local in extent and short-term in duration. Spatial overlaps of residual effects from dust associated with the NAR have been considered in the air quality assessment. Use of the NAR by placer miners is anticipated to continue, but there is no information that would lead to an expectation that their use would change substantially in magnitude – existing users may alter their

locations but not likely the extent of their activity; therefore, activities are not likely to result in cumulative changes. Air quality changes associated with the Mine Site are not likely to overlap spatially with air quality changes of other mine sites, given the distance to the closest proposed mine site (Casino). As a result, changes in sensory conditions due to residual air quality effects are not carried forward to the residual cumulative effects assessment.

Project-related residual effects deemed not significant to visual resources were identified for current traditional land and resource uses. While future quartz mining projects may also have residual visual effects, given their spatial location it is not likely that there will be cumulative visual effects, as it will not be possible to see other disturbances from the same viewpoint. Similarly, while there may be visual effects from placer mining along the NAR, there is no information that would lead to an expectation that their use would change substantially in magnitude. Existing users may alter their locations but not likely the extent of their activity, and changes in the visual quality along the NAR would not change cumulatively. As a result, sensory disturbance due to residual effects to visual resources is not carried forward to the residual cumulative effects assessment.

5.4.3 CUMULATIVE EFFECTS TO DECREASE IN AVAILABILITY OF LAND

The availability of land for traditional land and resource use may be cumulatively affected by other projects and activities that utilize substantial areas of land, including interactions with future quartz and placer mining. The existing disturbance to the land base from present settlements and the existing road network in combination with the Project and other activities may result in a cumulative effect.

Based on the analysis of potential disturbance within the Vegetation RAA (an approximately 10-km buffer from the Project footprint), the cumulative disturbance is 9.5 % of the RAA, and the Project contributes 0.4 % of the disturbance (**Appendix 15-B**). The cumulative loss within the land and resource use RAAs is likely to be similar in scope. Because the contribution of the Project to the cumulative effect is anticipated to be negligible – the percentage contribution will be less than the contribution for Vegetation cumulative effects as the RAA is larger – this potential effect is not carried forward to the cumulative residual effects assessment.

5.4.4 CUMULATIVE EFFECT TO DECREASE IN QUALITY OF RESOURCES

An adverse Project-related effects to the quality of resources was identified for surface water quality. Potential residual effects to the linked VCs for, fish, vegetation, wildlife, and birds are not considered likely to result in an adverse residual cumulative effect to the quality of land and resource uses.

A scenario of future development of mines upstream of the Project discharging elevated concentrations of water quality parameters of interest into the Yukon River during periods of low flow could result in non-significant adverse residual cumulative effects of small magnitude in the Yukon River. Effects are

considered unlikely (**Appendix 12-B**). The potential cumulative effect to the quality of land and resources is therefore considered unlikely and not carried forward to the residual cumulative effects assessment.

5.5 MITIGATION MEASURES FOR CUMULATIVE EFFECTS

There are no additional mitigation Project-specific mitigation measures proposed beyond what the Proponent has already committed to at the Project-specific level (**Section 4.3**) of this effects assessment and in the Socio-economic Management Plan (summarized in the **Project Proposal in Section 31.0 Environmental and Socio-economic Management Program**).

5.6 RESIDUAL CUMULATIVE EFFECTS AND SIGNIFICANCE OF RESIDUAL CUMULATIVE EFFECTS

This section describes the total anticipated residual cumulative effects to Land and Resource Use that may remain after implementation of technically and feasible mitigation measures.

The determination of significance for the potential residual cumulative effect(s) on non-traditional land and resource use, and current land and resource use subcomponents is based on a consideration of the residual effects characteristics and environmental or socio-economic context of non-traditional land and resource use, and current land and resource use, presented in **Section 4.4**. The section also describes the Project's contribution to those effect(s).

For those traditional land and resource users for whom access increases are an adverse effect, residual cumulative effects are anticipated to be low in magnitude, regional within the non-traditional use RAA, long term, and continuous although dependent on the seasonality of various users. The residual effect would commence on completion of improved access for other projects, likely not until later in the Operation Phase, and would extend until decommissioning of the NAR. The effect is at least partially reversible on the closure of the Project, as it is assumed that some improvements to the NAR will remain. The access-related residual cumulative effect to both Land and Resource Use subcomponents is viewed as non-significant **(Table 5.6-1)**. The Project has a relatively smaller contribution to the effect on current traditional land and resource use than on non-traditional land and resource use due to differences in the size of respective RAAs. The level of confidence associated with this significance determination is low to moderate, as there is uncertainty with respect to temporal overlaps for future projects.

Table 5.6-1 Summary of Effect Characteristics Ratings for Access-related Residual Cumulative Effect (Operation and Reclamation and Closure Phases)

Residual Cumulative Effects Characteristic	Rating	Rationale for Rating
Magnitude	Low	Access is not anticipated to be substantially changed, with the exception of potential access routes to Casino Mine. .
Geographic Extent	Regional	Residual cumulative effects are expected to occur across the non-traditional use RAA.
Timing	Seasonal	Access for future projects is anticipated to be subject to seasonal climate conditions. Changes in access are expected to influence land and resource users differently with respect to different uses.
Frequency	Continuous	Cumulative changes to access are anticipated to be initiated on development of the Casino Mine, and continue until year 15 in the Reclamation and Closure Phase.
Duration	Long-term	Cumulative effects would likely occur from sometime in operation until Project reclamation and closure of the NAR.
Reversibility	Partially Reversible	Project-related changes to access will be reversed partially to baseline or equivalent conditions, in the Reclamation and Closure Phase of the Project.
Probability of Occurrence	Likely	It is likely that improved access will occur as a result of other quartz mine development and placer mining.
Context	Moderate	Potentially affected non-traditional uses and First Nations are expected to have a moderate ability to respond to potential Project-related disturbances to existing access conditions.

5.7 SUMMARY OF RESIDUAL CUMULATIVE EFFECTS AND SIGNIFICANCE

Cumulative effects to access may have non-significant cumulative residual effects to non-Traditional Land and Resource Use and current traditional land and resource use (**Table 5.7-1**). Effects of past and present activities are captured in the Project-related effects assessment, while future development of quartz mining projects and placer mining and their associated access may result in cumulative effects during operation, assuming new access is completed prior to the reclamation and decommissioning of the Project.

Table 5.7-1 Summary of Potential Cumulative Residual Adverse Effects for Non-Traditional and Current Traditional Land and Resource Use

Potential Residual Adverse Effects	Other Projects / Activities	Proposed Mitigation Measures	Residual Cumulative Effects Characterization (see Note for details)									
			Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	Context	Level of Effect (Significance)	Likelihood	Level of Confidence
Operation Phase												
Increase in access	Past, present, and future quartz mining, and placer mining projects and existing road network	Same as Project-related mitigation	*M*	*R*	*S*	*L*	*CF*	*P*	*M*	*NS*	*L*	*M*
Closure and Reclamation Phase												
Increase in access	Past, present, and future quartz mining, and placer mining projects and existing road network	Same as Project-related mitigation	*M*	*R*	*S*	*L*	*CF*	*P*	*M*	*NS*	*L*	*M*

Notes:
Magnitude: N = Negligible, L = Low magnitude, M = Moderate magnitude, H = High magnitude
Geographic Extent: L = local LAA = LAA, R = regional (RAA) =
Timing: S = Seasonal, Y= Year-round
Duration: P = Permanent, LT = Long-term, ST = Short-term,
Frequency: CF = Continuous, FF = Frequent, IF = Infrequent
Reversibility: R = Reversible, P = Partially Reversible, I = Irreversible
Context: L=Low, M=Moderate, H=High
Likelihood: L=Likely, U=Unlikely
Significance: NS = Not-Significant, S = Significant
Level of Confidence: L=Low, M=Moderate, H=High

6.0 SUMMARY OF EFFECTS ASSESSMENT ON LAND AND RESOURCE USE

Land and Resource Use was selected as a VC to represent the land and resource use values of both Aboriginal and non-Aboriginal Yukoners. The two subcomponents, non-traditional land and resource use and current traditional land and resource, are used to demonstrate the relationship that both of these distinct values share in Yukon.

The Project footprint is located in an area that has been historically and is currently used for numerous non-traditional land and resource purposes, which are regarded as the designated and undesignated use of lands and resources for both commercial and personal purposes. The non-traditional land and resource use subcomponent considers land use planning, land tenure, water licenses; game management; guide outfitters; subsistence harvesting; parks and protected areas; resource development; and recreation and tourism.

Current traditional land and resource use is explicitly recognized by YESAA, and includes those First Nations with established or asserted Traditional Territory that interact with the Project. Current traditional land and resource use was identified through both secondary and primary research as an important value to potentially affected First Nations. Through consultation with the TH TWG it was suggested that candidate current traditional land and resource use VC be considered as a subcomponent of a broader Land and Resource Use VC to demonstrate that current traditional land and resource use is an important and distinct, yet linked, aspect of land and resource use, in general. As a result, current traditional land and resource use was revised from a candidate VC to a subcomponent.

With the implementation of mitigation, no significant residual effects are anticipated. Potential Project related effects resulting from increases to access through the development of the NAR will be mitigated through Project design, which utilizes existing access where available, as well as Access Route Construction and Operation Management Plans. Effects to sensory conditions will be mitigated by the mitigation measures for linked ICs, and the Engagement Plan. A decrease in the availability of land is minimized by Project design, and will also be mitigated by the Engagement Plan, and Access Route Construction and Operation Management Plans. Decreases in the quality of land and resources will be mitigated by the mitigation measures for linked VCs, as well as associated management plans, and other management plans.

Effects to the quality of intangible cultural and spiritual resources will be enhanced by Traditional Economy Enhancement Measures, current traditional land and resource use enhancement measures, an Engagement Plan, and a Heritage Resources Protection Plan (**Section 31.0 Environmental and Socio-economic Management Program**).

Residual cumulative effects due to interactions with other projects and activities were assessed for the Project at the scale of the RAA. The projects and activities considered in the cumulative effects assessment included quartz and placer mining projects, and existing disturbance including road networks. These projects and activities were selected based on their potential to interact cumulatively with other projects and activities within the RAA, including the Project. Cumulative adverse effects to access, sensory conditions, availability of land, quality of land and resources, and the quality of intangible cultural and spiritual resources are anticipated to be not significant, and the contribution of the Project to the cumulative effects is generally low.

Accidents and malfunction scenarios may cause effects to biophysical aspects, which in turn affect both subcomponents of Land and Resource Use. The probability of occurrence is unlikely following the successful implementation of Project design measures, BMPs, and mitigation measures intended to minimize the risk of potential accidents or malfunctions.

7.0 EFFECTS MONITORING AND ADAPTIVE MANAGEMENT

Although the effects of the Project will be minimized by mitigation measures described in **Section 4.3**, where the effects assessment predictions are based on limited data, there was uncertainty in the predictions or where there is the potential for a significant effect, monitoring programs provide a means to gain certainty in predicted Project-related effects and determine the effectiveness of mitigation measures. The objectives of the monitoring program framework include the following:

- Monitor wildlife use of the Project area
- Monitor and verify potential effects related to the Project
- Monitor and evaluate the effectiveness of mitigation measures
- Identify unanticipated Project effects
- Discern Project-related changes from natural variability
- Inform adaptive management measures.

In further support of monitoring effects to the Land and Resource Use VC Goldcorp will develop a socio-economic monitoring program (refer to the Socio-economic Management Plan in **Section 31.0** of the Project Proposal) to 1) to verify the accuracy of the residual effects predictions, and the value of proposed mitigation measures; 2) assess the efficacy of proposed mitigation measures and the need for modifications to those measures to confirm that the effects predictions remain valid; 3) identify unexpected socio-economic outcomes or problems; and 4) implement additional mitigation measures as per adaptive management plans developed in support of the Project.

The socio-economic monitoring program will track and respond to various topics across the human environment VCs and IC, including Economic Conditions, as well as Social Economy, Community Infrastructure and Services, Education, Land and Resource Use, Community Wellbeing and Health, and Demographics. The approach and methods, including data sources, will be developed in conjunction with the governments of the LAA, and the YG.

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