

Greenhills Operations Cougar Phase 7-2 Project Notification

March 17, 2023

PN-007

The Teck logo is located in the bottom right corner of the page. It consists of the word "Teck" in a bold, sans-serif font. The letter "T" is white and set against a dark blue rectangular background, while the letters "eck" are dark blue.

**PROJECT NOTIFICATION
for the
Proposed Cougar Phase 7-2**

**Submitted to :
Environmental Assessment Office
Under Section 10 of the *Environmental Assessment Act*
(2018)**

**Submitted by:
Teck Coal Limited, Sparwood, BC**



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Checklist

- ✓ Initial contact with EAO sector team
- ✓ Project Notification Information
- ✓ Required maps
- ✓ Required shapefiles

Proponent Information

Organization Name: Teck Coal Limited

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Elkford, BC V0B 1H0

Organization Phone: (250) 865-3097

Organization Website: www.teck.com

Contact Information

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1.0 Summary of Project Information

Table 1: Greenhills Operations Cougar Phase 7-2 Project information

Proponent Name	Teck Coal Limited (Teck)		
Project Name	Greenhills Operations Cougar Phase 7-2 Project		
Project Description	Teck is proposing a modification to its existing Greenhills Operation (GHO). The modification involves an extension of the existing active Cougar Phase 7 Pit and associated waste rock spoils; referred to as the Cougar Phase 7-2 Project (the Project).		
Location Description	The proposed Cougar Phase 7-2 Project is located eight kilometres northeast of Elkford, British Columbia on the Greenhills Ridge.		
Project Type	Mining	Region	Kootenay
Project Sub-Type	Coal	Latitude	50° 06' 40" N
Project Nature	Modification to existing project (pit extension)	Longitude	114° 52' 16" W

2.0 Trigger for Notification

The Cougar Phase 7-2 Project (the Project) represents a modification to Teck Coal Limited (Teck) Greenhills Operations (GHO) and has triggered a notification under Section 5(3) of the *Reviewable Project Regulation* (RPR). The Project does not meet the threshold criteria for a reviewable project however, under Section 5(3), the proponent of a project must notify the British Columbia (BC) Environmental Assessment Office (EAO) if the following threshold is met:

“An existing project, as modified, that emits 125,000 tonnes per year or more of one or more greenhouse gases (GHG) directly from project facilities determined in accordance with *Part 3 of the Greenhouse Gas Emission Reporting Regulation*.”

The annual average GHG emissions for the existing GHO mine over the time frame 2022-2028 are projected to be 254,000 tonnes CO_{2e} per year. These emissions would increase by an annual average of 11,000 tonnes CO_{2e} per year with the Cougar Phase 7-2 Project, an increase of approximately 4%.

3.0 Detailed Project Information

3.1 Location Description

Greenhills Operations is situated within the unceded traditional territory of the Ktunaxa Nation. The Ktunaxa Nation is comprised of Yaqit ʔa-knuq̓i 'it (Tobacco Plains Band), ʔaḡam (St. Mary's Band), Yaḡan nuʔkiy (Lower Kootenay Band) and ʔakisḡnuk (Columbia Lake Band). The site is located between the Elk and Fording rivers valleys along the Greenhills Ridge of the Rocky Mountains in southeastern BC, approximately 8 km northeast of the community of Elkford BC and immediately southwest of Teck's Fording River Operations (FRO) as shown in Figures 1 and 2. It is acknowledged that other traditional lands overlap or occur in proximity to the Project including Shuswap Band in BC and the Stoney Nakoda Nation, Piikani Nation, Siksika Nation and Kainai (Blood Tribe), and Tsuut'ina Nation in Alberta.

The major land use activities occurring within the Elk Valley are steelmaking coal mining, recreation, tourism and forestry. Greenhills Operations is accessible by road and the Main Gatehouse is located approximately 6 km from Elkford, BC via the Fording River Road.

The footprint of the proposed Project is located at the north end of the GHO property within the active Cougar Phase 7 Pit which is to the north of the active Cougar Phase 4 Pit and the completed Cougar Phase 3 and Cougar Phase 6 pits. The Project is located within GHO's *Mines Act* C-137 Permit boundary on Teck fee simple, privately-owned land and within the GHO No Unauthorized Entry Area as shown in Figure 3. The Project is not proposed on or near any legally protected wildlife habitat. The closest BC provincial parks include both the Elk Lakes Provincial Park and Height of the Rockies Provincial Park, located approximately 35 and 45 km respectfully to the north-northwest of GHO property. The Beehive Natural Area is located approximately 15 km southeast in Alberta.

3.2 Greenhills Operations History and Existing Facilities

The GHO mine was originally opened in 1981 as a joint venture between Westar Mining and POSCO Canada Limited. As a result of bankruptcy in 1992, the Westar portion was purchased by Fording Coal Limited, which subsequently became part of the Elk Valley Coal Corporation in 2003. In 2008, Teck Cominco Limited acquired 100% of the Elk Valley Coal Corporation and at the same time, the Elk Valley Coal Corporation was renamed Teck Coal Limited. The owner of Teck Coal Limited (Teck Cominco Limited) was subsequently renamed Teck Resources Limited in 2009. In 2009, Teck Resources purchased the majority of shares in GHO and is presently the current permit holder.

Greenhills Operations site plan can be seen in Figure 4. The Main Gatehouse is located at the south end of the mine site, accessed from the Fording River Road approximately 8 km northeast of the District of Elkford. The historical (Cougar South, Phase 3 and Cougar Phase 6) and active mining areas (Cougar Phase 4 and Cougar Phase 7) are located along Greenhills Ridge to the north of the property. The existing Administrative and Maintenance Complex, Process Plant, Tailings Storage Facility (TSF) and CCR storage facilities are located at the southern end of the property.

Greenhills Operations currently holds authorisations under the BC *Environmental Assessment Act* (BCEAA), the *Mines Act*, *Environmental Management Act (EMA)* and the *Water Sustainability Act* related to mining and the management of tailings. Mining of the Cougar South/Main Pits and development of the

Greenhills Operations Cougar Phase 7-2 Project

original West Spoil were approved under the BCEAA in 1997 (Project Approval Certificate M97-01), with extensions to mining areas approved under the *Mines Act* and EMA at various points since then. The mine produces approximately 6 million metric tonnes of clean coal (Mmtcc) per year and has two coal processing tailings streams: coarse coal refuse (CCR) and fine tailings (FT).

Rock mined at GHO has been placed in previously mined pits as well as in spoil areas on the east and west sides of Greenhills Ridge. An extension of the West Spoil (West Spoil Phase 1) footprint was approved under the *Mines Act* in August 2014. In 2015, a Joint Application for amendments of BC *Mines Act* Permit C-137 and EMA PE-06248 for the Cougar Pit Extension (CPX) Project was submitted to a Mine Review Committee (MRC) for review and approval. The CPX Project involved continued mining deeper in an existing pit (Cougar Phase 6), development of a new pit (Cougar Phase 7) and a second extension of the West Spoil (West Spoil Phase 2). Approvals for the CPX Project were issued under the *Mines Act* and EMA in 2016. A *Mines Act* permit amendment related to an extension to the Cougar Phase 7 Pit (the Cougar Phase 7-1 Pit) was issued in 2019. In 2022, the Tailings Management Project for Existing Permitted Reserves was permitted allowing GHO to incorporate best available technologies in line with new global best practices for tailings management.

3.3 Project Description, Proposed Activities and Components

The Project represents the second design stage of the Cougar Phase 7 Pit authorised in 2016 with the CPX Project. Teck had previously indicated its intent to deepen the Cougar Phase 7 Pit below 1740 metres above sea level (masl) to access mineable coal reserves. More recently, GHO completed the geotechnical evaluations to support the design. The Cougar Phase 7-2 Pit would be an incremental widening and deepening to the existing pit shell to safely mine the coal reserves and extend operations at GHO by one year.

As shown in Figure 5, the Project would involve a widening of the Cougar Phase 7 Pit to ensure geotechnical stability before mining to an ultimate depth of approximately 1525 masl. It would increase of the footprint of the existing Cougar Phase 7 Pit by 54.5 hectares (ha) and increase the GHO's *Mines Act* C-137 Permit boundary by approximately 18.3 ha (Figure 6). The Project would involve mining an additional 6.4 million bank cubic metres (Mbcm) of raw coal, 82.3 Mbcm of waste rock and 4.2 Mbcm of rehandled waste rock volumes. As part of the Project, GHO is seeking to maximize opportunities for in-pit backfill spoiling through the Cougar Phase 4 Pit Backfill and Cougar Phase 7 Pit Backfill and an extension of the existing Cougar Phase 6 Pit backfill spoil to accommodate waste rock associated with the Project. The Project also proposes to reduce the permitted capacity of the existing West Spoil Phase 2. The Project footprint includes areas to account for management of fly rock and cast over rock from mining activities. An increase of approximately 1.5 Million cubic meters (Mm³) to existing CCR storage capacity would also be required; no change in footprint of the Site F Mixed Coal Refuse Storage Facility is required (Figure 7).

Greenhills Operations Cougar Phase 7-2 Project

Greenhills Operations has been in operation for over 35 years. The current total production capacity at GHO's mine and Process Plant is approximately 6 million metric tonnes of processed (clean) coal (Mmtcc). The vast majority of Teck's steelmaking coal is transported by rail to the coast of BC for shipment to markets in Asia, Europe and South America. Teck produces a number of coal blends that are essential components for the production of high-quality steel. The proposed mining would be integrated into the overall GHO mine plan and mine development with no change to current annual production capacity at GHO. The Project would sustain operations at GHO until 2028. To avoid impacts to production and employment at GHO, works associated with the proposed Project must commence by August 2023.

The Project is a continuation of existing mining and coal processing activities at GHO and would use all existing mining infrastructure at GHO, including mining equipment, access roads, power, site offices, Process Plant and water management infrastructure. There are no off-site Project components associated with the Cougar Phase 7-2 Project.

The Project would make use of existing water management, including the Fording River Operations South Active Water Treatment Facility (FRO S-AWTF) to treat mine contact water pumped from GHO pit mining areas to the Swift and Cataract drainages which are subsequently treated by the AWTF.

3.5 Work Completed

Teck submitted the Cougar Phase 7-2 Project application to the BC Major Mines Office on February 6, 2023, for review. No works associated with this Project would start prior to receipt of necessary authorizations.

3.6 Duration of the Project

The Cougar Phase 7-2 Project would extend mine life at GHO by approximately one year and, combined with currently permitted reserves, would support maintaining production target rates at GHO of 5 to 6 Mmtcc for the next six years until 2028.

Teck has requested authorization to begin Early Works activities in March 2023. Early Works activities are limited to tree harvesting and soil salvage. Teck has proposed Early Works to reduce potential impacts to migratory birds, as encouraged under the *Migratory Birds Act* and to avoid impacts to production. Mining of Cougar Phase 7-2 Pit would commence upon receipt of all approvals, currently anticipated to be August 2023, and would cease in approximately 2028 followed by closure activities unless further mining developments are authorised at GHO.

A Reclamation and Closure Plan (the Plan) has been developed for the proposed Project. The plan would be incorporated into the next GHO Five Year Mine Plan and Reclamation Plan due to be submitted to the Chief Inspector in 2027 as per Section C.7 of the *Mines Act* C-137 Permit, pending Project approvals.

4.0 Teck's Sustainability Strategy

Sustainability is embedded in Teck's operational practices, and we have a long history of sustainability stewardship. Teck's sustainability strategy has eight strategic themes: health and safety, climate change, responsible production, our people, tailings management, water, biodiversity and reclamation, and communities and Indigenous Peoples. More details can be found at <https://www.teck.com/sustainability>.

We understand that Climate Change and in particular reduction in GHG emissions and a shift to a low carbon economy is vitally important. As such Teck has made Climate Change a Strategic Priority and set specific goals towards an ambitious objective of working towards carbon neutrality across all our operations by 2050. More details specific to de-carbonization at our steelmaking coal operations and in particular GHO and the work Teck is advancing under our Climate Change Strategic Priority is provided below.

4.1 Sustainability Strategic Priority: Climate Change

In early 2022, Teck publicly updated its climate strategy and goals of a long-term strategic priority to achieve net-zero emissions at its operations by 2050 to also include goals to achieving net-zero Scope 2 emissions by 2025, and a 33% reduction in the carbon intensity of our operations by 2030. In addition, Teck also announced its ambition to achieve net-zero Scope 3 emissions by 2050 with supporting short-term goals. To achieve net-zero GHG emissions across our operations and throughout our supply chain, we will implement a range of abatement options including renewable energy use, electrification, carbon capture, carbon offsets and more. More details can be found on pages 16-23 of the <https://www.teck.com/media/2022-Sustainability-Report.pdf>.

We have established a set of actions that progress our decarbonization goals and ambitions. Our objective is to deliver significant and cost-competitive emissions reductions. We routinely evaluate existing and emerging abatement opportunities as the pace of low-carbon technology maturation continues to accelerate and as options that were not feasible a few years ago appear on the horizon.

Teck has accelerated projects to further reduce its carbon emissions, including the announcement of an agreement with Caterpillar Inc. to work towards deploying 30 zero-emissions large haul trucks at its steelmaking coal operations and an agreement with shipping provider Oldendorff Carriers to use energy-efficient eco-bulk carriers to ship a portion of our steelmaking coal to international destinations. In 2022 we continued to advance projects to assess multiple decarbonization technologies such battery electric vehicles, renewable fuels, mechanical dewatering and methane characterization. We expanded our existing electric bus pilot in the Elk Valley and we collaborated with industry partners, equipment manufacturers and other suppliers on zero-emission mining solutions.

5.0 Engagement

Teck initiated consultation in 2018 regarding sustaining production at GHO through to 2028 (which includes the proposed extension to the existing Cougar Phase 7 Pit) with the Ktunaxa Nation Council (KNC), local communities and Provincial agencies. Project-specific engagement on the Cougar Phase 7-2 Project commenced in November 2021 with the Project introductory meeting with Provincial agencies and the KNC. Provincial authorisations for the Project are proceeding via a Mine Review Committee (MRC) review process led by the Major Mines Office (MMO). Feedback on the Project during pre-application engagement has been incorporated in the Project Joint Application submission that is currently under review by the MRC.

Teck engaged with the BC EAO on November 10, 2022, to discuss the Project, and specifically if it triggers Section 5(3) of the *Reviewable Project Regulation (RPR)* with regards to GHG emissions. Since the confirmation that Notification under Section 5(3) is required for the Project, Teck has reached out to

Greenhills Operations Cougar Phase 7-2 Project

potentially affected Indigenous Groups to provide Project information. These engagements are listed below, and Teck will continue to engage and update other Indigenous Groups consistent with existing agreements and practices. To date, Teck has not received any Project-related feedback on GHG emissions from Indigenous nations.

A summary of engagement activities specific to the Project and mining at GHO is provided in Table 2 below.

Table 2: GHO Cougar Phase 7-2 Project: Summary of Engagement Activities

Date	Attendees / Communication	Activity	Summary of Consultation/Engagement
Oct 1, 2018	KNC, Teck	In-person meeting	CPX2 Project Introduction Meeting (included scope of Cougar Phase 7-2 Project)
Oct 12, 2018	KNC, Teck	Email	Discussed timing for Baseline Work plan Workshop (both FRO and GHO)
Oct 19, 2018	KNC, Teck	Email	Memo from Golder prime on the KNC participation opportunities for the 2019 field work
Dec 11, 2018	KNC, Teck	Virtual meeting	Engagement planning meeting
Jan 23, 2019	KNC, Teck	Virtual meeting	Workshop planning
Apr 8-9, 2019	KNC, Teck	In-person meeting	Baseline work plan workshop
May 17, 2019	KNC, Teck	In-person meeting	Engagement session
Sep 9, 2019	KNC, Teck	In-person meeting	Engagement session
Oct 28, 2019	KNC, Teck	Email	Responses provided to KNC comments on the CPX2 Project baseline work plans
Nov 26, 2019	KNC, Teck	In-person meeting	Project status update meeting (CPX2 Project and Tailings Management)
Mar 2020 – Summer 2021	Reduced engagement due to COVID-19 Restrictions. Continued with baseline fieldwork where possible.		
Sep 29, 2021	EMLI	Email	Notification of changes in project direction and separation of Cougar Phase 7-2 Project from proposed CPX2 Project and postponement of CPX2 Project
Nov 16, 2021	EMLI, ENV, MoF, KNC	Virtual Meeting	Cougar Phase 7-2 Project Introduction Meeting including overview of the Project and anticipated regulatory process
Feb 7, 2022	ENV	Written submission	Submission of air quality dispersion model for review
April 29, 2022	MRC, KNC	Written submission	Submission of Summary Project Description and Draft Information Requirements Table (IRT)
Jun 21, 2022	ENV	Written submission	Submission of Preliminary Application Form
July 4, 2022	EMLI	Written submission	Receipt of IRT review comments
July 7, 2022	ENV	Virtual Meeting	Meeting to discuss air quality dispersion model review
Jul 20, 2022	ENV	Written submission	Resubmission of Preliminary Application Forms
Aug 22, 2022	EMLI, ENV	Written submission	Submission of air quality Qualified Person (QP) recommendation memo and updated IRT
Sep 27, 2022	ENV	Virtual Meeting	Pre-application meeting
Oct 11, 2022	ENV	email	Receipt of air quality QP recommendation memo comments
Oct 18, 2022	ENV	Written submission	Submission of updated air quality QP recommendation memo
Oct 20, 2022	ENV	email	Response to additional information regarding potential public notification requirements
Nov 10, 2022	MRC	Written submission	Receipt of finalized IRT and Application Instruction Document (AID)

Greenhills Operations Cougar Phase 7-2 Project

Date	Attendees / Communication	Activity	Summary of Consultation/Engagement
Dec 13, 2022	ENV	email	ENV response to Teck's air quality QP recommendation memo. No modelling required.
Dec 13, 2022	ENV	Written submission	Receipt of air quality QP recommendation memo response
Jan 25, 2023	Piikani Nation	In-person Meeting	Recent meeting included advisement of pending submission of notification to the BC EAO
Feb 2, 2023	Shuswap Band	In-person Meeting	Recent meeting included advisement of pending submission of notification to the BC EAO
Feb 13, 2023	Siksika Nation	email	Correspondence included information regarding pending submission of notification to the BC EAO
Feb 13, 2023	Kainai Nation	email	Correspondence included information regarding pending submission of notification to the BC EAO
Feb 15, 2023	Stoney Nakoda Nation	email	Correspondence included information regarding pending submission of notification to the BC EAO
Feb. 15, 2023	KNC	In-person Meeting	Recent meeting included advisement of pending submission of notification to the BC EAO
Q1 and Q2 2023	MRC, KNC	<i>Pending discussions during review of Joint Permit Amendment application</i>	<i>Post-application meetings and technical discussions as required</i>

EMLI = Ministry of Energy, Mines and Low Carbon Innovation; ENV = BC Ministry of Environment and Climate Change Strategy; MoF = Ministry of Forests; MRC = Mine Review Committee; KNC = Ktunaxa Nation Council, Teck = Teck Coal Ltd.

6.0 Authorizations

6.1 Existing Authorisations

Greenhills Operations currently holds the following authorisations to authorise mining, discharge of effluent and storage of tailings on site:

- Project Approval Certificate M97-01 under the BC *Environmental Assessment Act* (BCEAA),
- C-137 *Mines Act* Permit,
- Environmental Management Act (EMA) Permits 6248, 6249, 6725 and 6764,
- Short Term Use Approval File Number 4007999 under the Water Sustainability Act, and
- Various other permit, licences and authorisation to support mining activities at GHO.

6.2 Required Authorisations for the Project

A Mine Review Committee (MRC) has been established by the Major Mines Office (MMO) under Section 9 of the *Mines Act*, to facilitate the coordinated authorizations process for the proposed GHO Phase 7-2 Project. Together, multiple ministries, Indigenous nations and local governments, and other reviewers are jointly reviewing the Project as a whole and not splitting the authorizations apart.

Teck submitted a Joint Application for the Project to the MRC on February 6, 2023. The Joint Application is seeking an amendment to GHO's existing *Mines Act* C-137 Permit to authorise mining activities associated with the Project (including Early Work activities) and changes to the C-137 *Mines Act* Permit boundary. A clause amendment to EMA Permit 107517 to include GHO pit water as a source to the Swift-

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Cataract drainages is also being requested as part of Joint Application for the Project. No other authorisations are anticipated for the Project.

The MMO will be facilitating the MRC review of the Project Joint Application over the coming months. Decisions are being sought by August 2023 to avoid effects to production and employment at GHO.

7.0 Notification Threshold Information

Notification is triggered under the Notification Category Greenhouse Gases (section 5(3) of the Reviewable Projects Regulation). As outlined in the EAO Project Notification Policy document:

“A modification to an existing project that emits **125,000 tonnes per year or more** is required to notify the EAO, only for the first time an expansion of a given project exceeds this threshold.”

GHO's annual greenhouse gas emissions estimates as CO₂e (both with and without the modification of the Cougar Phase 7-2 Project) were calculated for 2022 to 2028 (2028 being the estimated life of the Cougar Phase 7-2 Project).

The existing mining operations at GHO (without the modification of the Cougar Phase 7-2 Project) have estimated annual average emissions over the 2022-2028 timeframe of 254,000 tonnes CO₂e per year. With the modification of the Cougar Phase 7-2 Project, annual average emissions are predicted to increase to approximately 266,000 tonnes CO₂e per year: representing an expected annual average increase by 11,000 tonnes CO₂e per year or an increase of approximately 4%. The existing mining operations at GHO (without the modification of the Cougar Phase Project) are predicted to reach a maximum of approximately 330,100 tonnes CO₂e in 2024 and with the modification of the Cougar Phase 7-2 Project reach a predicted maximum of approximately 330,300 tonnes CO₂e for the same year, which is only a 200 tonne CO₂e or 0.05% increase.

Further information on the GHO Cougar Phase 7-2 Project GHG estimates is presented in Appendix A.

7.1 Reviewable Projects Regulation Threshold Criteria

The Cougar Phase 7-2 Project represents a modification to the existing GHO mine project and involves an incremental extension and deepening to the existing Cougar Phase 7 Pit. The Project has no change to current production capacity at GHO.

The Cougar Phase 7-2 Project does not meet the threshold criteria for a reviewable project as defined in the *Reviewable Project Regulation* (RPR). An evaluation against the threshold criteria for the Cougar Phase 7-2 Project is summarised below.

Table 3: Summary of RPR Threshold Criteria for Modification of an Existing Project

Reviewable Projects Regulation Criteria	Cougar Phase 7-2 Project
Project Design Threshold (Threshold E of regulation)	<ul style="list-style-type: none"> Does not trigger the Project Design threshold E as the area of land not previously permitted for disturbance is < 50% of the area of land permitted for disturbance at GHO. <ul style="list-style-type: none"> GHO holds a <i>Mines Act</i> C-137 Permit with 4,053 ha authorized for disturbance. Increase of disturbance footprint from the Project is 18.3 ha, which is an increase of 0.5%.
Effects Threshold: Area of Disturbance	<ul style="list-style-type: none"> Does not trigger as Project is below 600 ha threshold. <ul style="list-style-type: none"> Increase of disturbance footprint from the Project is 18.3 ha.
Effects Threshold: Linear Disturbance (e.g., Transmission electric lines, transmission pipeline, railway, highways, or resource road)	<ul style="list-style-type: none"> Not applicable as not a linear project.
Effects Threshold: Greenhouse Gas Emissions (Emits 380,000 tonnes or more per year of one or more greenhouse gases directly from project facilities)	<ul style="list-style-type: none"> Does not trigger as Project is below the 380,000 tonnes threshold. <ul style="list-style-type: none"> Annual average increase in GHG from the Project is approximately 11,000 tonnes CO₂e per year.
Effects Threshold: Project Location/Protected Areas	<ul style="list-style-type: none"> Does not trigger as Project is not located within any parks and protected areas or protected wildlife habitat.

8.0 Maps and Shapefiles

Shapefiles included with submission:

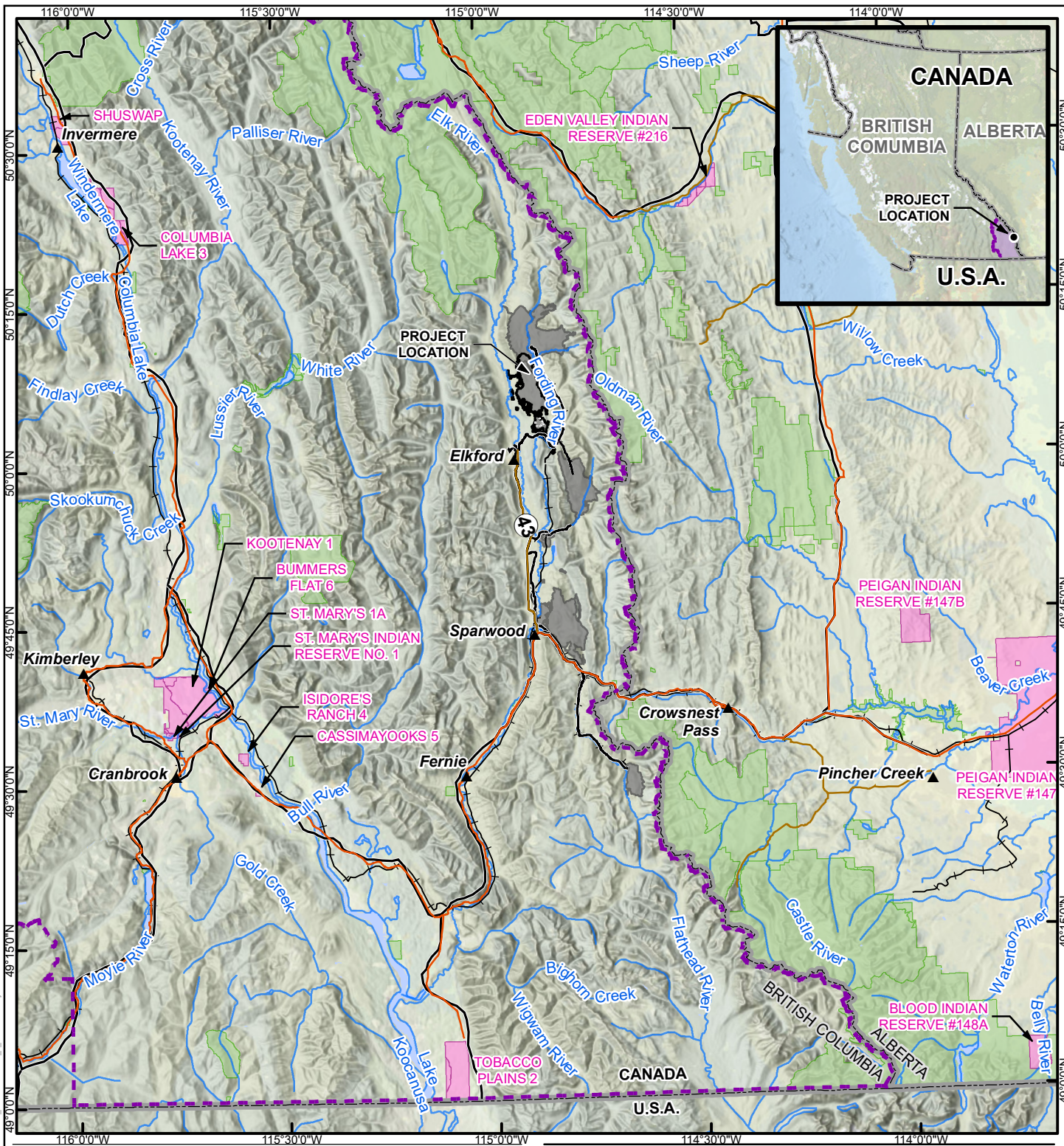
- Project footprint;
- Known or proposed project components; and,
- Project access route.

Table 4: Shapefile Component Attributes and Descriptions

Shapefile Component Attribute	Description
Project Footprint	Phase 7-2 Project Footprint (Pit, Backfills and Spoils)
Proposed Lift Area	Site F Lift Area (only requesting next lift approval)
CG 7-1	Cougar Phase 7-1 Pit Shell – previously approved
CG 7-2	Cougar Phase 7-2 Pit Shell – proposed extension (new)
CG 4, 5, 6 Backfill & West Spoils	Backfill and Spoils locations (existing mine footprint)
CG 7 Backfill	Backfill (new within Phase 7 Pit)
Ph 6 Pit Water	Phase 6 Pit Water (existing)
Proposed Permit Extension	Proposed C-Permit 137 Boundary Adjustment (new)
Phase 7-1 to 7-2 area of difference	Proposed Phase 7 Pit Footprint Difference (new)
Tree Clearing	Tree clearing Southwest of Phase 7 Pit Area (early works)
Tree Clearing - NE	Tree clearing Northeast of Phase 7 Pit Area (early works)
Stockpile	Temporary Soil Stockpile (early works)

The following figures are provided:

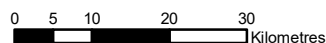
- Figure 1: Project Location within East Kootenay, BC
- Figure 2: Project Location within the Elk Valley
- Figure 3: Legal Location Tenure
- Figure 4: GHO Site Plan
- Figure 5: Cross section of Cougar Phase 7 Pit Development
- Figure 6: Project Components
- Figure 7: Proposed Site F Lift



PATH: \\lucack\commnet\CGO\Group\IT\GIS\Data\Open\tona\GH0\Project\2022\Cougar_Z_ZM\XDEAG_Notification\Fig_1_EastKootenay.mxd PRINTED ON: 2023-02-16 AT: 8:28:43 AM
 IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSIA 25mm

LEGEND

- ▲ COMMUNITY
- PROJECT LOCATION
- SECONDARY HIGHWAY
- PRIMARY HIGHWAY
- ROAD
- RAILWAY
- PROVINCIAL & STATE BOUNDARIES
- WATERCOURSE
- FIRST NATIONS RESERVES
- GH0 C-137 PERMIT BOUNDARY
- MINE PERMIT BOUNDARIES
- PROJECT FOOTPRINT
- PROTECTED AREA
- REGIONAL DISTRICT OF EAST KOOTENAY
- WATERBODY



1:975,000 METRES

REFERENCE(S)

FIRST NATIONS AND RESERVE DATA FROM PROVINCIAL SOURCES (GOV AB & DATA BC).
 BASE DATA AND IMAGERY (2022) OBTAINED FROM TECK RESOURCES LIMITED.
 DATUM: NAD 83 PROJECTION: UTM ZONE 11

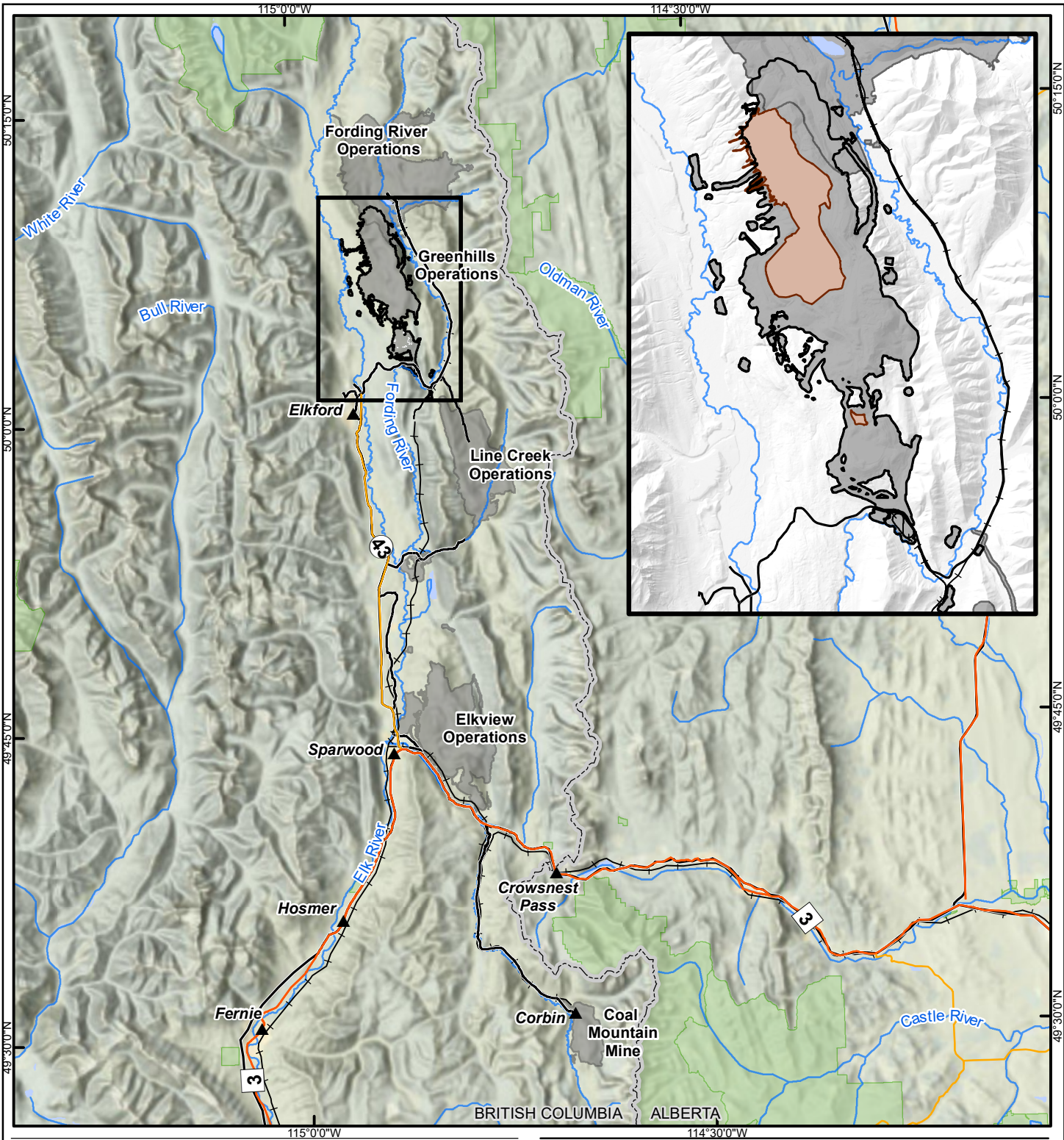
TECK COAL LIMITED

PROJECT
 COUGAR PHASE 7-2 PROJECT

TITLE
 PROJECT LOCATION WITHIN EAST KOOTENAY, BC

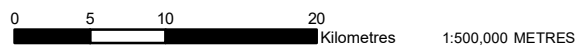
YYYY-MM-DD	2023-02-16
DESIGNED	RG
PREPARED	RG
REVIEWED	KB
APPROVED	SD

PROJECT NO.	PHASE	REV.	FIGURE
GH0-030-2	CG 7-2	1	1



LEGEND

- ▲ COMMUNITY
- SECONDARY HIGHWAY
- PRIMARY HIGHWAY
- ROAD
- RAILWAY
- PROVINCIAL BOUNDARY
- WATERCOURSE
- PROJECT FOOTPRINT
- WATERBODY
- PROVINCIAL PARK / PROTECTED AREA
- GHO C-137 PERMIT BOUNDARY
- MINE PERMIT BOUNDARIES



REFERENCE(S)
 BASE DATA AND IMAGERY (2022) OBTAINED FROM TECK RESOURCES LIMITED.
 DATUM: NAD 83 PROJECTION: UTM ZONE 11

TECK COAL LIMITED

PROJECT
COUGAR PHASE 7-2 PROJECT

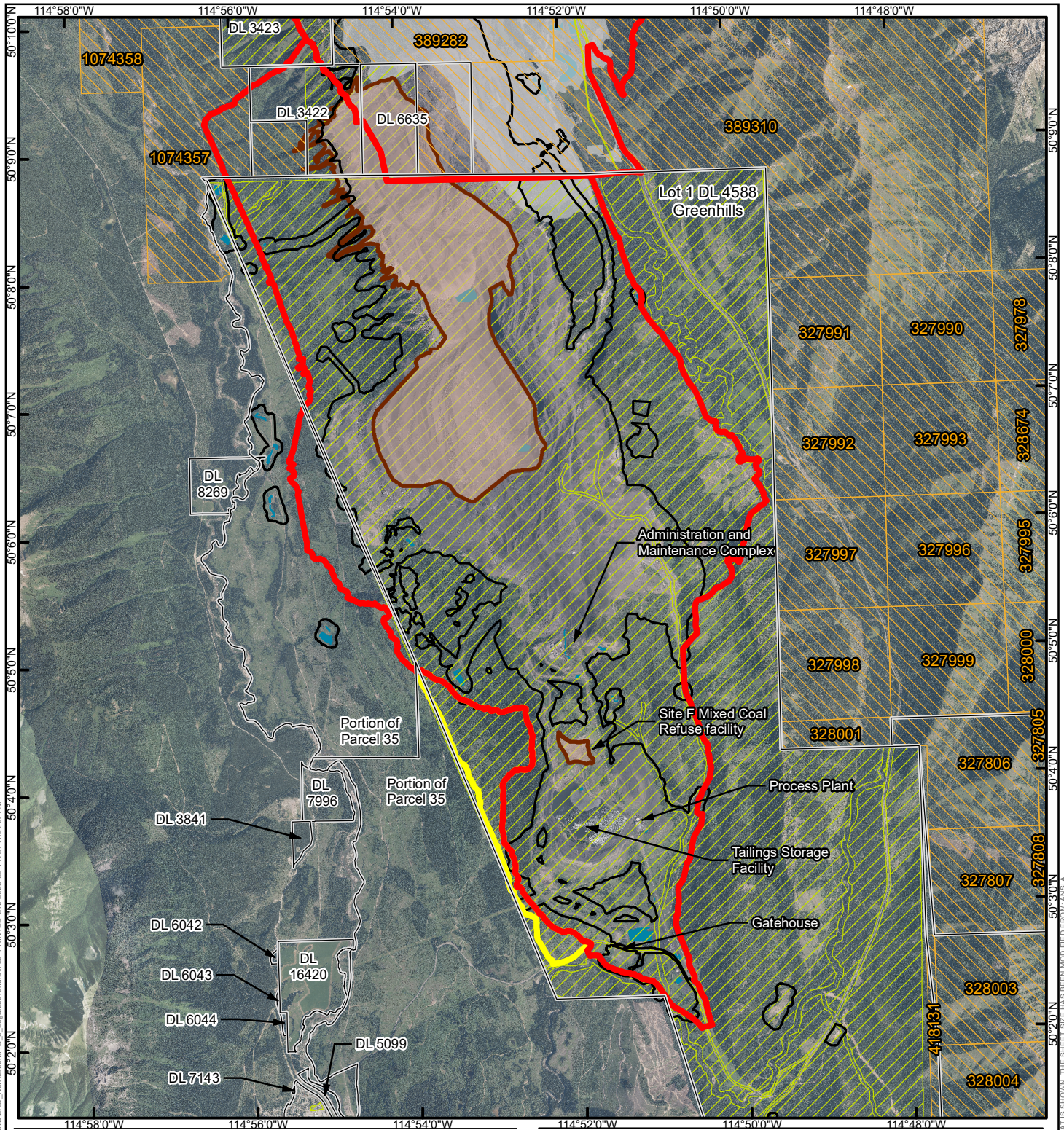
TITLE
PROJECT LOCATION WITHIN ELK VALLEY

YYYY-MM-DD	2023-02-14
DESIGNED	RG
PREPARED	RG
REVIEWED	KB
APPROVED	SD

PROJECT NO.	PHASE	REV.	FIGURE
GHO-030-2	CG 7-2	1	2

PATH: \\teck\comm\CGO\Group\IT\GIS\SD\al\Opera\GHO\Project\2022\Cougar_7_ZMX\DEAO_NotificationFIG_2_GHO_ElKValley.mxd PRINTED ON: 2023-02-14 AT: 11:59:43 AM

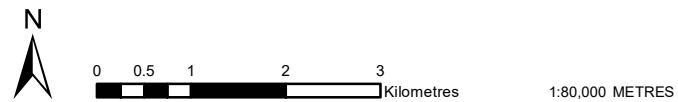
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LEGEND

- DISTRICT LOT
- MINERAL COAL TENURE
- GHO C-137 PERMIT BOUNDARY
- PROJECT FOOTPRINT
- FRO C-3 PERMIT BOUNDARY
- SEDIMENTATION POND
- TECK OWNED LANDS
- FRO & GHO NO UNAUTHORIZED ENTRY
- NO SHOOTING, BOW ONLY ZONE



REFERENCE(S)
 BASE DATA AND IMAGERY (2022) OBTAINED FROM TECK RESOURCES LIMITED.
 DATUM: NAD 83 PROJECTION: UTM ZONE 11

TECK COAL LIMITED

PROJECT
COUGAR PHASE 7-2 PROJECT

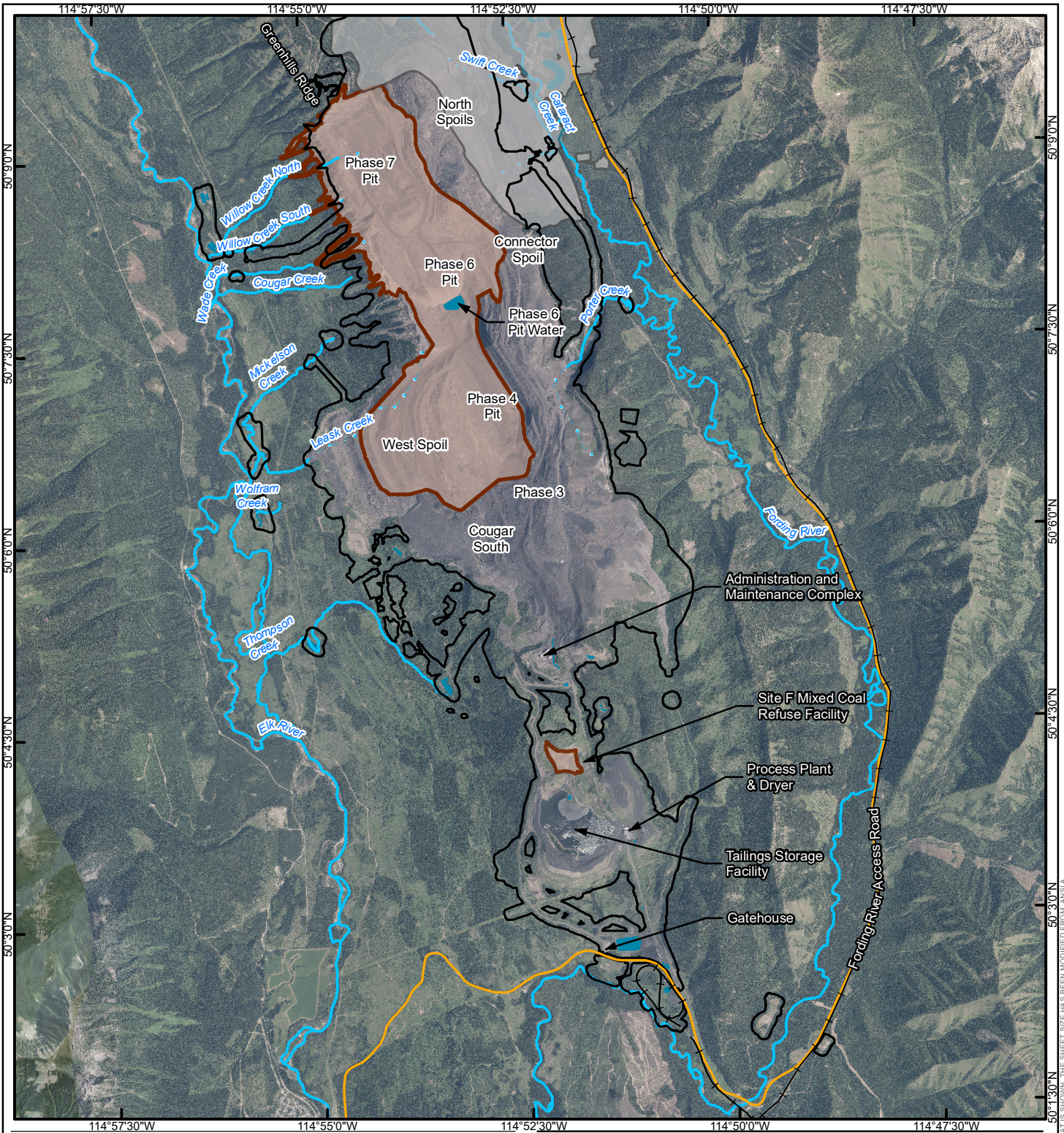
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LEGAL LOCATION AND LAND TENURE

YYYY-MM-DD	2023-02-14
DESIGNED	RG
PREPARED	RG
REVIEWED	KB
APPROVED	ST



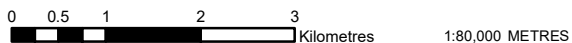
PROJECT NO.	PHASE	REV.	FIGURE
GHO-030-2	CG 7-2	1	3

25mm



LEGEND

- ACCESS - PAVED
- FRO C-3 PERMIT BOUNDARY
- GHO C-137 PERMIT BOUNDARY
- PROJECT FOOTPRINT
- RAILWAY
- SEDIMENTATION POND
- SURFACE FLOW WATERCOURSE
- SUBSURFACE FLOW WATERCOURSE



REFERENCE(S)

BASE DATA AND IMAGERY (2022) OBTAINED FROM TECK RESOURCES LIMITED.
 DATUM: NAD 83 PROJECTION: UTM ZONE 11

TECK COAL LIMITED

PROJECT
COUGAR PHASE 7-2 PROJECT

TITLE
GHO SITE PLAN

YYYY-MM-DD	2023-02-14
DESIGNED	RG
PREPARED	RG
REVIEWED	KB
APPROVED	ST

PROJECT NO.	PHASE	REV.	FIGURE
GHO-030-2	CG 7-2	1	4

PATH: G:\Data\Operations\GHO\Projects\2022\Cougar_7_2\WXD\IAO_Notification\FIG_4_SitePlan.mxd PRINTED ON: 2023-02-14 AT: 1:08:57 PM

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Greenhills Operations Cougar Phase 7-2 Project

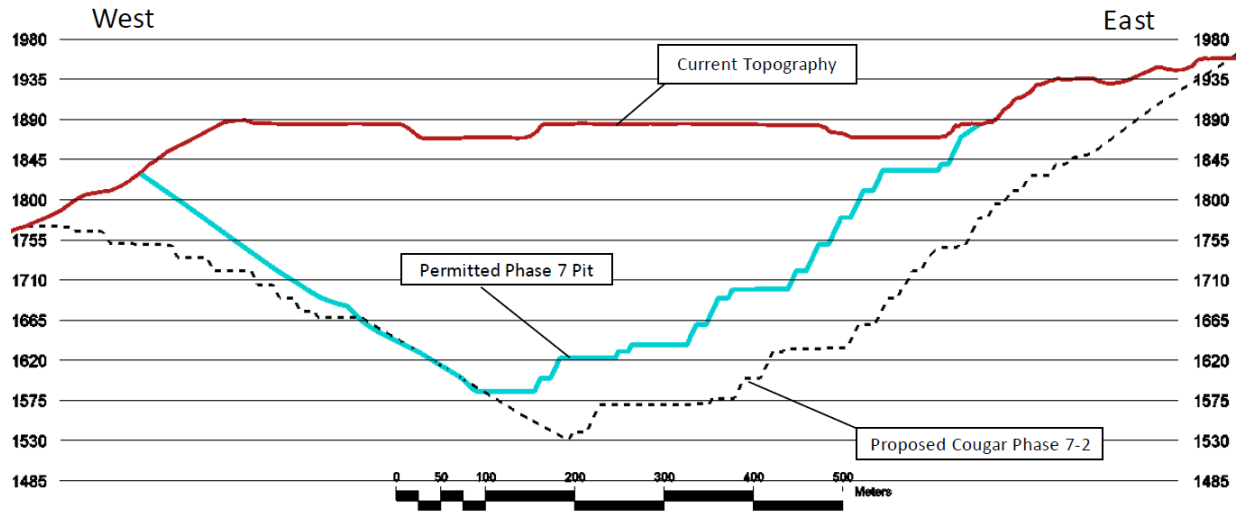
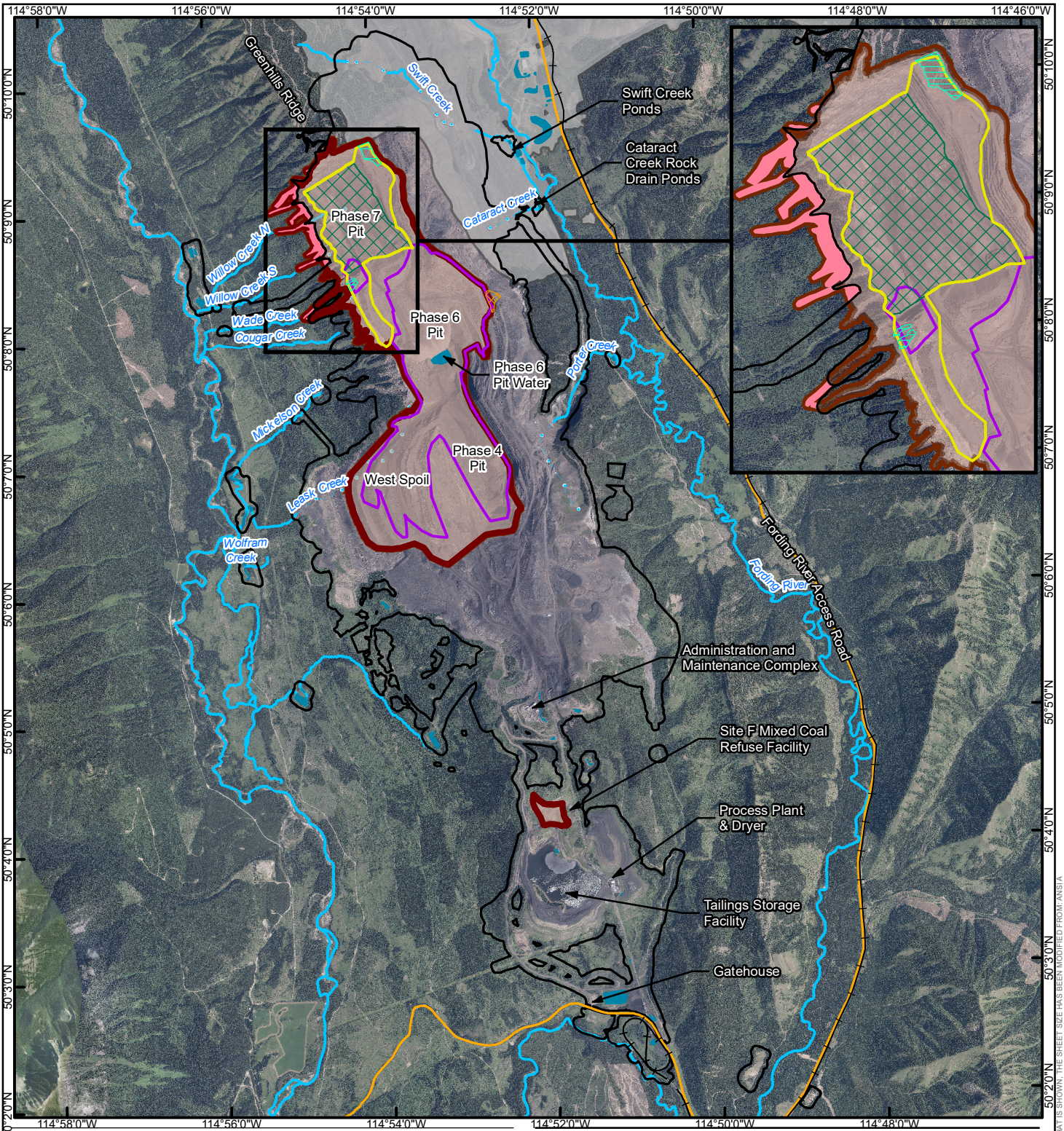


Figure 5: Cross section of Cougar Phase 7 Pit Development



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LEGEND

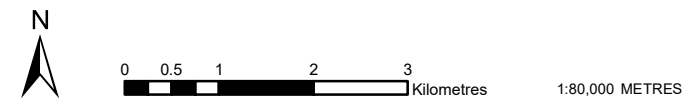
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- PHASE 7-1 PIT
- PHASE 7-2 PIT
- PROJECT FOOTPRINT
- PROPOSED C-PERMIT BOUNDARY ADJUSTMENT
- SITE PREP - TREE CLEARING
- TEMPORARY SOIL STOCKPILE
- ACCESS - PAVED
- GHO C-137 PERMIT BOUNDARY
- FRO C-3 PERMIT BOUNDARY
- RAILWAY
- SURFACE FLOW WATERCOURSE
- SUBSURFACE FLOW WATERCOURSE
- SEDIMENTATION POND

TECK COAL LIMITED

PROJECT
COUGAR PHASE 7-2 PROJECT

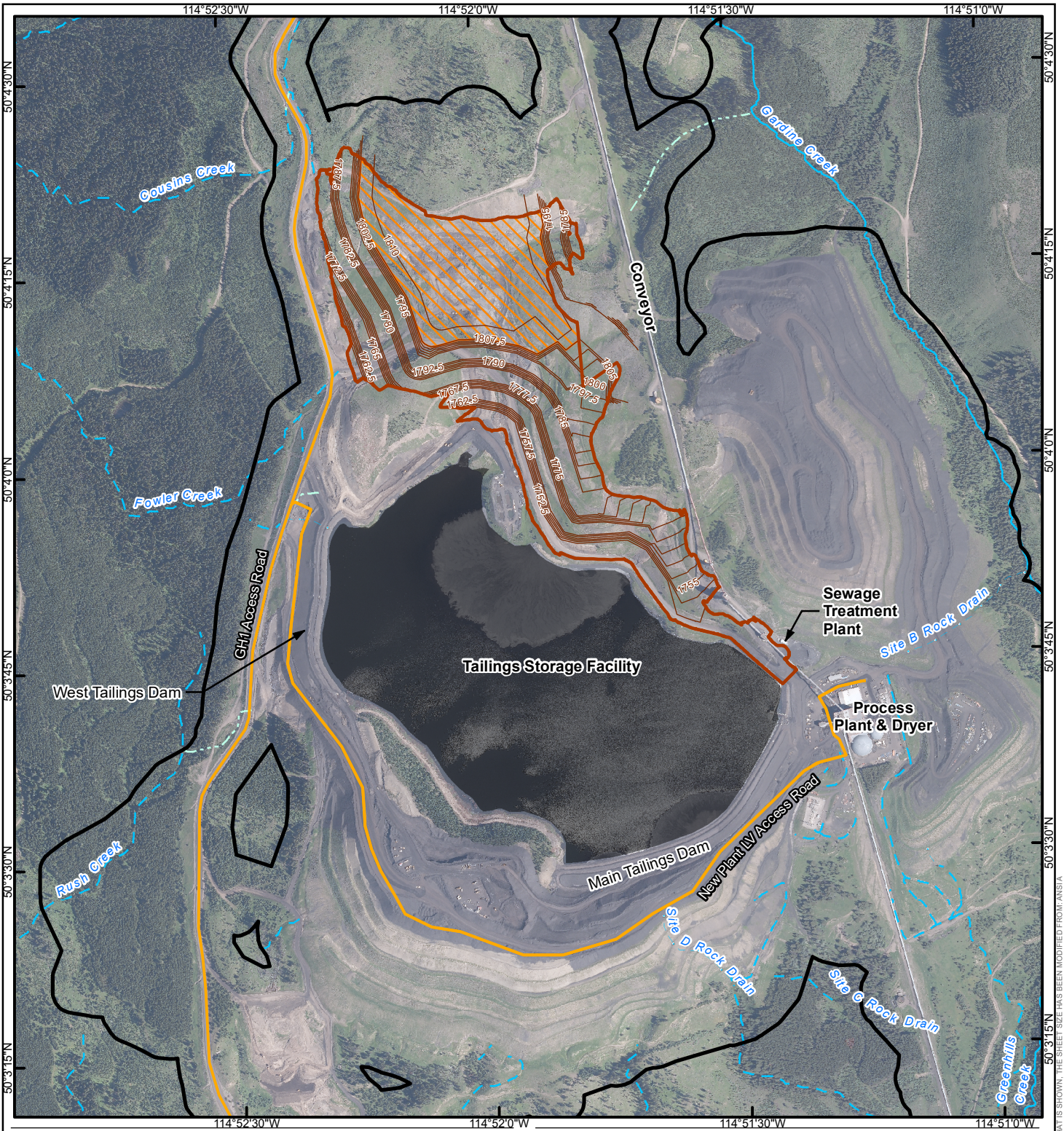
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PROJECT COMPONENTS

YYYY-MM-DD	2023-02-14
DESIGNED	RG
PREPARED	RG
REVIEWED	KB
APPROVED	ST



REFERENCE(S)
BASE DATA AND IMAGERY (2022) OBTAINED FROM TECK RESOURCES LIMITED.
DATUM: NAD 83 PROJECTION: UTM ZONE 11

PROJECT NO.	PHASE	REV.	FIGURE
GHO-030-2	CG 7-2	1	6



LEGEND

- ELEVATION COUNTOUR
- PROPOSED LIFT
- GHO C-137 PERMIT
- SITE F MIXED COAL REFUSE FACILITY
- STREAM
- INTERMITTENT
- INDEFINITE
- SUBSURFACE

REFERENCE(S)

BASE DATA AND IMAGERY (2022) OBTAINED FROM TECK RESOURCES LIMITED.
 DATUM: NAD 83 PROJECTION: UTM ZONE 11

1:13,000 METRES

TECK COAL LIMITED

PROJECT
 COUGAR PHASE 7-2 PROJECT

TITLE
 PROPOSED SITE F LIFT (1795-1810 masl)



YYYY-MM-DD	2023-02-14
DESIGNED	RG
PREPARED	RG
REVIEWED	KB
APPROVED	SD

PROJECT NO.	PHASE	REV.	FIGURE
GHO-030-2	CG 7-2	1	7

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSIA 25mm

Greenhills Operations Cougar Phase 7-2 Project

9.0 References

Teck. 2022. 2022 Sustainability Report. 89 pp.

Teck. 2022. GHO Five Year Mine Plan and Reclamation Plan. 321 pp.

10.0 Appendices

Appendix A: GHO Cougar Phase 7-2 Project Greenhouse Gas Emissions Estimates



TECHNICAL MEMORANDUM

DATE 2 February 2023

TO Kristina Benoit, Regulatory Approvals Lead
Teck Coal Limited, Greenhills Operations

CC Gregory Jones

FROM Eric Christensen and Rachel Wyles

Reference No. 21455876-001-TM-Rev2-2300

EMAIL Eric.Christensen2@wsp.com;
Rachel.Wyles@wsp.com

TECK COAL LIMITED, GREENHILLS OPERATIONS

GHO COUGAR PHASE 7-2 PROJECT GREENHOUSE GAS EMISSIONS ESTIMATES

1.0 INTRODUCTION

Teck Coal Limited (Teck), Greenhills Operations (GHO) retained WSP Canada Inc. (WSP) to estimate greenhouse gas (GHG) emissions related to the Cougar Phase 7-2 Project (CG7-2) for the purpose of providing information to support the Environmental Assessment Office (EAO) notification for the Project.

2.0 METHODS

The Project Notification Policy (BC EAO, 2021) states that the notification threshold for new and existing projects is as follows:

'A new project that emits 125,000 tonnes per year or more of one or more greenhouse gases directly from project facilities determined in accordance with Part 3 of the Greenhouse Gas Emissions Reporting Regulation.'

'A modification to an existing project that emits 125,000 tonnes per-year or more is required to notify the EAO, only for the first time an expansion of a given project exceeds this threshold.'

CG7-2 is considered a modification to an existing project (GHO 2022).

Emissions from project facilities at GHO's operations are shown in Table 1 along with emission sources and the calculation methods used for quantifying GHG emissions as indicated by British Columbia's Greenhouse Gas Emission Reporting Regulation (B.C. Reg. 249/2015). As a result of discussions between Teck and EAO on 10 November 2022 (Dressler 2022), calculated emissions associated with on-site vehicles have not been included, however they are available upon request.

Table 1: GHG Emission Sources and Quantification Methods

Emission Activity	Emission Sources at GHO	GHGs Released	Calculation Method
Stationary Combustion	Coal Dryer, Use of Explosives	CO ₂ , CH ₄ , N ₂ O	WCI.20 ^(a)
Open Pit Coal Mining (Fugitive)	Exposed Raw Coal	CH ₄	British Columbia GHG Reporting Regulation, Schedule A, Section 2 and GGIRCA bulletin 016 ^(b)

- (a) WCI 2010.
- (b) BC ENV 2021.

Section 4.0 of the Project Notification Policy lists the information requirements for a project notification. Subsection 4.5 provides the requirements relating to threshold information. Information required for a project notification triggered by the GHG threshold (BC EAO, 2021) includes:

- estimated total GHG emissions
- estimated incremental change in emissions from the modification
- a brief description of the primary sources of GHG emissions

GHG emissions were estimated for the following two Scenarios:

- Scenario 1: CG7-2 Permit Application Mine Plan reflects operations from 2022 to 2028 where GHO proceeds with implementing CG7-2 in addition to current mining activities.
- Scenario 2: 2022 Permitted Mine Plan reflects operations from 2022 to 2027 where GHO does not proceed with implementing CG7-2 and only continues with current mining activities.

The increment was obtained by calculating the difference between emissions estimated under Scenario 1 and 2. The incremental emissions for 2028, when the CG7-2 permit application mine plan is projected to still be operating and the 2022 permitted mine plan will not, is the emission estimate for the CG7-2 permit application mine plan.

Raw coal production and fuel consumption forecasts (Table 2) were provided by GHO (Benoit 2022, Pers. Comm. and Benoit 2023, Pers. Comm.) for the 2022 Permitted Mine Plan and for the CG7-2 Permit Application Mine Plan scenarios. These were used to calculate GHG emissions for each scenario by applying published emission factors and the indicated method (Table 1).

GHG emissions estimates have been provided for each year of the Project, along with the average of all years.

Table 2: Production and Fuel Consumption Forecast Provided by GHO

Description (units)	2022	2023	2024	2025	2026	2027	2028
CG7-2 Permit Application Mine Plan							
Coal Mined (bcm)	6,450,700	5,767,845	6,481,288	6,077,922	5,835,488	3,822,055	1,323,201
Total Natural Gas Consumption (GJ)	2,081,559	2,031,332	2,081,559	2,108,133	2,116,839	1,254,687	501,536
Mineral Oil in ANFO (kg)	582,565	154,684	157,029	153,315	177,117	78,491	37,099
Emulsion (kg)	13,477,861	17,801,627	18,071,438	17,644,008	20,383,309	9,032,980	4,269,472
2022 Permit Mine Plan							
Coal Mined (bcm)	6,450,700	5,853,611	6,500,076	6,109,412	3,833,663	625,790	
Total Natural Gas Consumption (GJ)	2,081,559	2,013,587	2,081,559	2,081,000	1,540,090	228,472	
Mineral Oil in ANFO (kg)	582,565	163,097	125,721	106,381	80,415	11,955	
Emulsion (kg)	13,477,861	18,769,789	14,468,407	12,242,696	9,254,505	1,375,842	

3.0 RESULTS

Calculated GHG estimates for Scenarios 1 and 2 are presented in Table 3 and Table 4. Emissions are broken down by activity and GHG and summarized as total project facility emissions.

Table 3: Scenario 1: GHG Emission Estimates by Year for GHO Facility Including the CG7-2 Permit Application Mine Plan

Emission Activity	Greenhouse Gas (tonnes)	2022	2023	2024	2025	2026	2027	2028	Average
Stationary Combustion	CO ₂	108,607	105,569	108,141	109,374	110,425	64,765	26,037	90,417
	CH ₄	2	2	2	2	2	1	<1	2
	N ₂ O	2	2	2	2	2	1	<1	2
	CO ₂ e	109,253	106,206	108,793	110,032	111,096	65,152	26,194	90,961
Open Pit Coal Mining (Fugitive)	CO ₂	-	-	-	-	-	-	-	-
	CH ₄	8,819	7,885	8,861	8,309	7,978	5,225	1,809	6,984
	N ₂ O	-	-	-	-	-	-	-	-
	CO ₂ e	220,469	197,131	221,514	207,728	199,442	130,628	45,224	174,591
Total	CO ₂	108,607	105,569	108,141	109,374	110,425	64,765	26,037	90,417
	CH ₄	8,821	7,887	8,863	8,311	7,980	5,226	1,809	6,985
	N ₂ O	2	2	2	2	2	1	<1	2
	CO ₂ e	329,722	303,337	330,308	317,760	310,538	195,780	71,417	265,552
Notification Threshold	CO ₂ e	125,000							

Note: GHG emission estimates greater than the notification threshold are shown in bold.

Table 4: Scenario 2: GHG Emission Estimates by Year for GHO Facility Following the 2022 Permit Mine Plan (Operations continuing without developing CG7-2)

Emissions Activity	Greenhouse Gas (tonnes)	2022	2023	2024	2025	2026	2027	Average
Stationary Combustion	CO ₂	108,607	104,900	107,331	106,803	79,085	11,733	86,410
	CH ₄	2	2	2	2	2	<1	2
	N ₂ O	2	2	2	2	1	<1	2
	CO ₂ e	109,253	105,535	107,970	107,433	79,552	11,802	86,924
Open Pit Coal Mining (Fugitive)	CO ₂	-	-	-	-	-	-	-
	CH ₄	8,819	8,002	8,886	8,352	5,241	856	6,693
	N ₂ O	-	-	-	-	-	-	-
	CO ₂ e	220,469	200,062	222,156	208,804	131,025	21,388	167,317
Total	CO ₂	108,607	104,900	107,331	106,803	79,085	11,733	86,410
	CH ₄	8,821	8,005	8,888	8,354	5,243	856	6,694
	N ₂ O	2	2	2	2	1	<1	2
	CO ₂ e	329,722	305,597	330,126	316,237	210,577	33,190	254,242
Notification Threshold	CO ₂ e	125,000						

Note: GHG emission estimates greater than the notification threshold are shown in bold.

Greenhouse gases emitted by site wide project facilities as modified (CG7-2 Permit Application Mine Plan) are greater than the 125,000 t CO₂e notification threshold each year from 2022 to 2027. Estimated emissions for when activities are expected to be ramping down in 2028 were below the threshold. Average annual total emissions are greater than the threshold.

In the absence of CG7-2, GHG emissions are greater than the 125,000 t CO₂e notification threshold each year from 2022 to 2026. Average annual total emissions are greater than the threshold. Average total facility emissions are expected to increase by 11,310 tonnes CO₂e from Scenario 2 to Scenario 1 with the implementation of CG7-2; a 4.4% increase.

The estimated incremental change as a result of implementing the Project is presented in Table 5. Negative values denote where estimated emissions are greater for the 2022 permitted mine plan than for the CG7-2 permit application mine plan. The greatest incremental changes are in 2026 and 2027, when Scenario 2 is expected to be ramping down and Scenario 1 is still expecting to be in full production. The incremental change is not compared to the 125,000 t CO₂e notification threshold. However, it is included to meet the information requirements listed in the Project Notification Policy.

Table 5: Incremental Increase in Estimated GHG Emissions with the Implementation of the CG7-2 Permit Application Mine Plan Instead of the 2022 Permitted Mine Plan

Emission Activity	Greenhouse Gas (tonnes)	2022	2023	2024	2025	2026	2027	2028
Incremental Facility Emissions	CO ₂	-	670	810	2,571	31,340	53,032	26,037
	CH ₄	-	-117	-26	-43	2,737	4,371	1,809
	N ₂ O	-	-	-	-	-1	-1	-
	CO ₂ e	-	-2,260	182	1,523	99,961	162,590	71,417

Based on the Project Notification Policy (BC EAO 2021) Section 2.0, Table 1, notification is required for CG7-2.

4.0 CLOSURE

The reader is referred to the Study Limitations, which follows the text and forms an integral part of this memorandum. We trust the above meets your present requirements. If you have any questions or requirements, please contact the undersigned.

WSP Canada Inc.



Eric Christensen
 Air Quality Specialist

Rachel Wyles, M.Eng., P.Eng.
 Environmental Engineer

EC/RW/anr/nm/ar/ca

[https://golderassociates.sharepoint.com/sites/142446/project files/6 deliverables/issued/21455876-001-tm-rev2-2300/21455876-001-tm-rev2-2300-ghg 02feb_23.docx](https://golderassociates.sharepoint.com/sites/142446/project%20files/6%20deliverables/issued/21455876-001-tm-rev2-2300/21455876-001-tm-rev2-2300-ghg%2002feb_23.docx)

STUDY LIMITATIONS

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