EQUINOXGOLD
GREENSTONE GOLD MINES
AN EQUINOX GOLD / ORION JOINT VENTURE

December 30, 2021

Nicolas Courville
Compliance and Enforcement Officer
160 Elgin Street, 22nd Floor
Ottawa, Ontario
Canada, K1A 0H3

613-957-0825
nicolas.courville@iaac-aeic.gc.ca

Dear Mr. Courville,

Re: Greenstone Mine, 2021 Federal Biodiversity Monitoring Report

Greenstone Gold Mines GP Inc. (GGM) proposes to construct, operate and ultimately decommission/close a new open pit gold mine, process plant, and associated ancillary facilities, collectively known as the Greenstone Mine (the Mine). The Mine's Environmental Impact Statement was approved by the federal Minister of the Environment as outlined in the Decision Statement issued December 10, 2018, under Section 54 of the Canadian Environmental Assessment Act, 2012. The 2021 Federal Biodiversity Monitoring Report has been developed and submitted to satisfy Federal EIS Conditions 4.1, 4.3, 7.1, 7.1.1, and 7.1.2.

Should you have any questions or comments, please contact the undersigned.

Sincerely,

<Original signed by>

Shane Hayes
Environmental Superintendent

cc: Michelle Fraser, Stantec Consulting Ltd.
Mike Johns, Stantec Consulting Ltd.
Lesley Lorrimer, Stantec Consulting Ltd.
Laura Vares, Greenstone Gold Mines

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Greenstone Mine

2021 Federal Biodiversity Monitoring Report

(To satisfy Federal EIS Conditions 4.1, 4.3, 7.1, 7.1.1, and 7.1.2)

HP-MG003-EV-136-0018_0

December 30, 2021

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List of Abbreviations

BMMP	Biodiversity Monitoring and Management Plan
CEAA	Canadian Environmental Assessment Agency
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FWCA	Fish and Wildlife Conservation Act
GGM	Greenstone Gold Mines GP Inc.
MBCA	Migratory Birds Convention Act
MECP	Ministry of the Environment, Conservation and Parks
MNR	Ontario Ministry of Natural Resources
MNRF	Ministry of Natural Resources and Forestry
MTO	Ministry of Transportation of Ontario
OMNRF	Ontario Ministry of Natural Resources and Forestry
PDA	project development area
the Project	Greenstone Gold Mine
SARO	Species at Risk in Ontario
TETP	temporary effluent treatment plant
TMF	tailings management facility

1 Introduction

Greenstone Gold Mines GP Inc. (GGM) is in the process of constructing the Greenstone Mine (the Project), which was formerly referred to as the Hardrock Project. The Mine site is located just south of Geraldton, Ontario, within the municipality of Greenstone, at the intersection of Highway 11 and Highway 584. The Project's Environmental Impact Statement (EIS) (Stantec 2018a) was approved by the Canadian Environmental Assessment Agency (CEAA), as outlined in the Decision Statement issued under Section 54 of the *Canadian Environmental Assessment Act, 2012*. The federal Decision Statement contained various Conditions of Approval. A Biodiversity Management and Monitoring (BMMP) (GGM 2020) was prepared to address Conditions of Approval related to monitoring potential effects of the Project on biodiversity. The BMMP contained a series of appendices that each deal with specific federal or provincial monitoring requirements.

Mine construction early works began March 1, 2021, with some initial site preparations including tree clearing, the construction of a temporary camp to house mine workers, the set-up of construction trailers, and the construction of a temporary effluent treatment plant (TETP).

1.1 Purpose

The purpose of this 2021 Biodiversity Monitoring Report is to describe monitoring activities for the period of October 1, 2020, through September 30, 2021, that were undertaken to satisfy federal EIS Conditions 4.1, 4.3, 7.1, 7.1.1, and 7.1.2.

The overall objectives related to each condition are provided in Table 1, which also references the applicable section of this 2021 Biodiversity Monitoring Report. This report focuses on those Federal conditions that are relevant to the 2021 development activities. Other conditions are pertinent to activities that will commence in subsequent years, and they will be reported on once the implementation of those development activities and associated conditions are initiated.

Table 1: Objectives for Federal Conditions of Approval Related to Biodiversity Monitoring and Management

Federal Condition	Report Section	Objective (from federal Decision Statement, 9/4/2019)
4.1	2.1	The Proponent shall carry out the Designated Project in a manner that protects migratory birds and avoids harming, killing or disturbing migratory birds or destroying, disturbing or taking their nests or eggs. In this regard, the Proponent shall take into account Environment and Climate Change Canada's *Avoidance Guidelines* and the risk of incidental take. The Proponent's actions when carrying out the Designated Project shall be in compliance with the *Migratory Birds Convention Act, 1994,* the *Migratory Birds Regulations* and the *Species at Risk Act*.

Federal Condition	Report Section	Objective (from federal Decision Statement, 9/4/2019)
4.3	2.2	Compensate the loss of barn swallow (*Hirundo rustica*) nesting sites as a result of the Project, taking into account Ontario's *Recovery Strategy for Barn Swallow* (Hirundo rustica). Install, prior to construction, and maintain, for three years, artificial barn swallow nesting structures.
7.1	BMMP and 2.3	Develop, prior to construction a bald eagle (Haliaeetus leucocephalus) protection plan that takes into account Ontario's Management Plan for the Bald Eagle (Haliaeetus leucocephalus) in Ontario and Ontario's Bald Eagle Habitat Management Guidelines. Implement the protection plan during construction and operation. As part of the implementation of the protection plan:
7.1.1	2.3	Conduct, once prior to construction and annually until vegetation clearing is completed within the project development area, surveys of active bald eagle (*Haliaeetus leucocephalus*) nests within the project development area and within 800 meters of the project development area and provide the results of the surveys to Indigenous groups, relevant authorities and the Agency no later than 60 days after the end of each survey.
7.1.2	2.3	Develop, and implement measures to protect active nest(s) found pursuant to the surveys referred to in condition 7.1.1. At a minimum, these measures shall include restrictions on access and on Designated Project activities, including site preparation and vegetation clearing, that the Proponent may undertake from March 1 to August 31 within 400 metres of any active nest. The Proponent shall submit these measures to the Agency prior to implementing them, including the period(s) of time during which these measures will apply.

2 Monitoring Activities

Sections 2.1 through 2.3 provide a description of monitoring activities undertaken in the 2021 monitoring year to satisfy Conditions 4.1, 4.3, 7.1, 7.1.1, and 7.1.2.

2.1 Migratory Bird Nest Management Plan

The following section describes measures carried out to satisfy federal Condition 4.1 of the Decision Statement. The Migratory Birds Convention Act (MBCA), 1994 protects migratory birds, their nests, and eggs. It prohibits the harming, killing, disturbance or destruction of migratory birds, nests, and eggs. Birds not addressed under the MBCA are grouse, quail, pheasants, ptarmigan, hawks, owls, eagles, falcons, cormorants, pelicans, crows, jays, kingfishers, and some species of blackbirds. Most species not protected by the MBCA are protected by the provincial Fish and Wildlife Conservation Act (FWCA). Some species are also protected by provincial and/or federal species at risk legislation.

Birds and their nests and eggs may be inadvertently destroyed through the undertaking of certain activities (e.g., during vegetation clearing). This is referred to as "incidental take". The Migratory Bird Nest Management Plan was created to reduce the risk of harm to migratory birds due to incidental take related to the construction, operation, and closure of the Greenstone Mine (GGM 2021). The Plan is intended to apply to native bird species that nest in Ontario.

2.1.1 Methods

To support pre-construction vegetation clearing during the breeding bird nesting period for Zone C5 (April 20 to August 31), nest surveys were conducted by a qualified biologist to identify active bird nests and establish appropriate buffers. Nest sweeps were conducted on nine days in spring of 2021 (April 21, 22, 23, and May 03, 04, 10, 11, 17, 18, and 25) within the Project Development Area (PDA). Sweeps were conducted according to methods outlined in the BMMP (GGM 2020) and Stantec's Low Intensity Nest Search protocol (Stantec 2019). The nest sweep program was preceded by an operator training session on April 21.

Teams of two, led by a qualified biologist, conducted systematic sweeps of forested areas by walking parallel transects at 5 m spacing through areas to be cleared. Where nests were identified, the nest, or tree supporting the nest was flagged and a 30 m boundary flagged to maintain a vegetation and disturbance buffer around the nest.

Locations of identified and flagged nests were provided to GGM and clearing operators. Vegetation was maintained in the 30 m buffer around the nests until the end of nesting season in Zone C5 (August 31). Results of each nest sweep effort were considered valid for up to 7 days after which time the area would be re-swept if clearing had yet to occur.

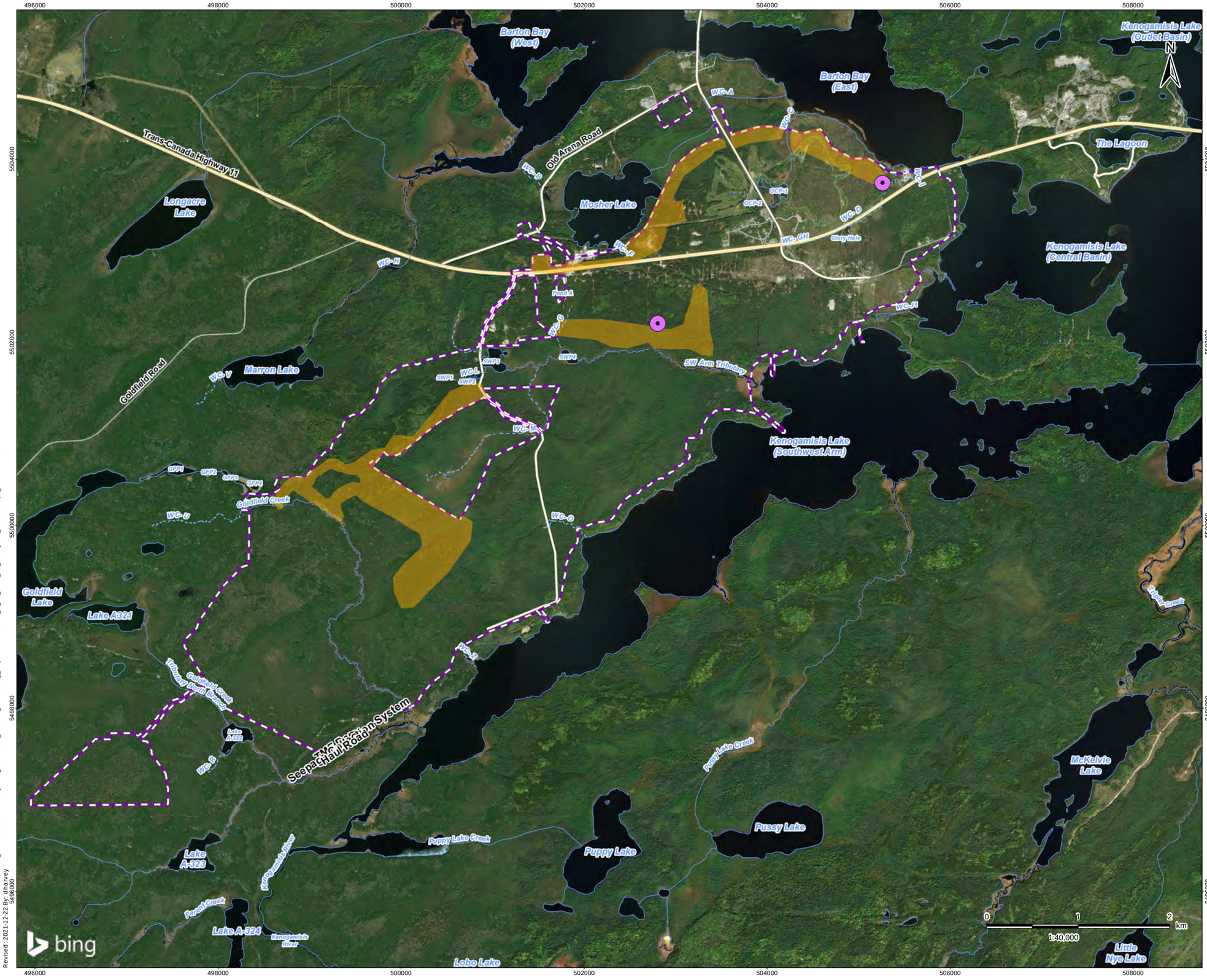
2.1.2 Results and Mitigation

A total of 251.6 ha of forested and naturally vegetated areas were swept for bird nests between April 21 and May 25, 2021, as shown in Figure 1. No vegetation clearing occurred between during the remainder of the migratory bird nesting season (i.e., between May 31and August 31).

Two active nests were identified during the nest sweeps (Figure 1). In both cases, the species of bird that constructed the nest could not be identified due to height of nests in the trees. Each tree containing a nest was flagged with a 30 m buffer and locations communicated to GGM and clearing operators via UTM coordinates and maps.

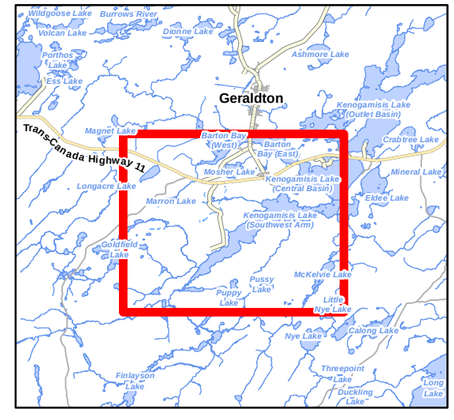
Table 2: Summary of Nest Sweeps in the PDA

Date	Area (ha)	Nests Identified
4/21/2021	21.4	-
4/22/2021	48.6	-
5/3/2021	31.5	-
5/4/2021	25.7	-
5/10/2021	13.7	-
5/11/2021	50.7	-
5/17/2021	32.1	1
5/18/2021	10.2	-
5/25/2021	17.7	1
Total	**251.6**	**2**



Legend

- Project Development Area
- Nest Location
- 2021 Bird Sweep Areas
- Flight Path
- Highway
- Major Road
- Local Road
- Watercourse- Permanent
- Watercourse- Intermittent
- Waterbody



Notes

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December 2021
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Client/Project

Greenstone Gold Mines GP Inc (GGM)
Hardrock Project

Figure No.

1

Title

Migratory Bird Nest Sweep Areas in the PDA

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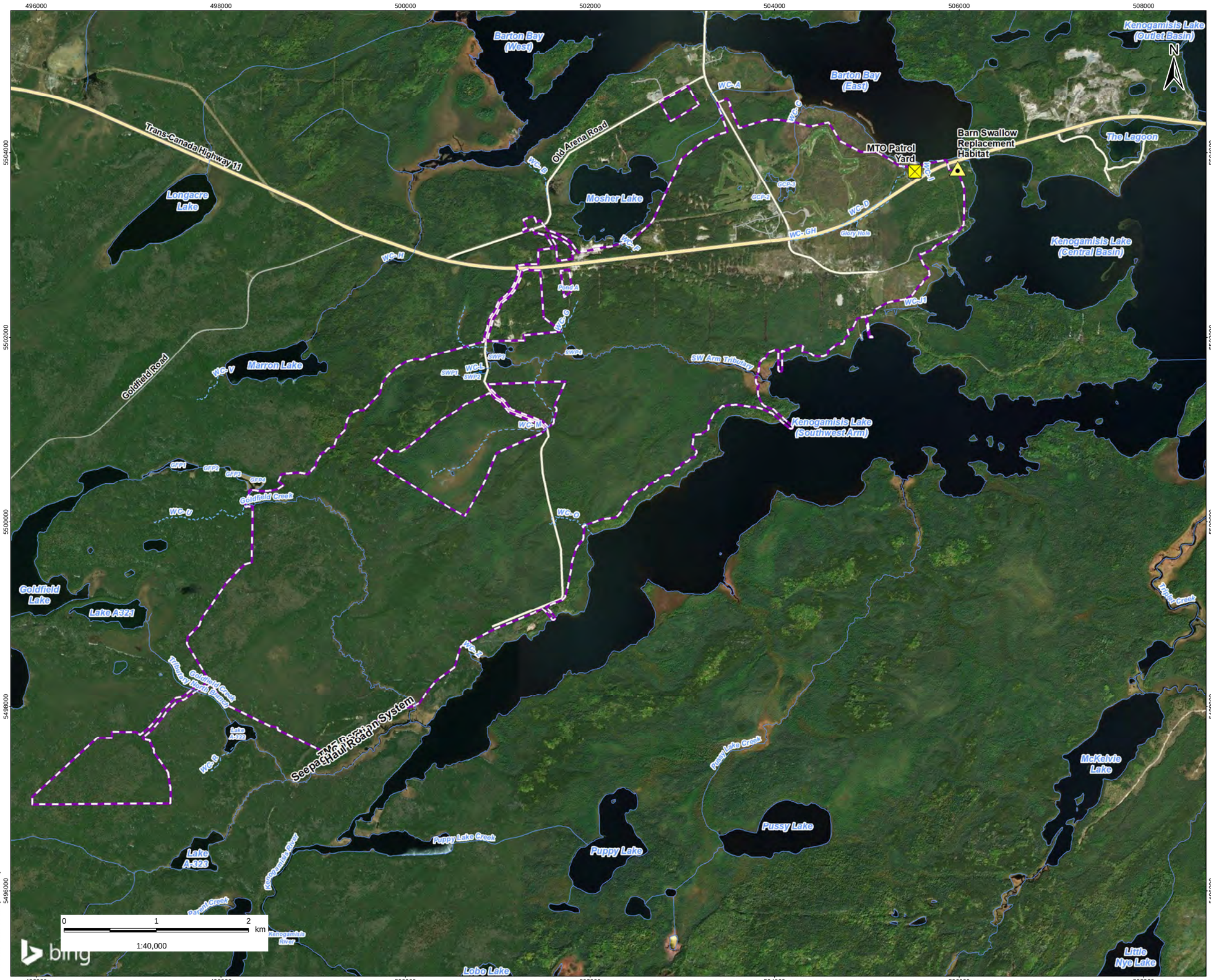
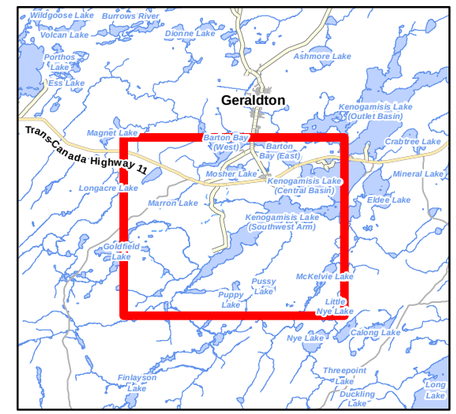
Revised: 2021-12-22 By: dharvey

2.2 Barn Swallow Mitigation and Restoration Record

The following section describes measures carried out to satisfy federal Condition 4.3 of the Decision Statement. Barn swallows (*Hirundo rustica*), an endangered species (ESA 2007, SARO 2011) occur in two buildings requiring removal by GGM in the Ministry of Transportation of Ontario (MTO) Patrol Yard (Figure 2). Removal is expected to occur in 2022 and will occur in according with the BMMP (GGM 2020).

In preparation for removal of barn swallow habitat removal, and in accordance with federal EIS Condition 4.3 habitat compensation was provided in 2021 through installation of a nesting structure with artificial cup following nesting habitat guidelines provided by the Ontario Ministry of Natural Resources (OMNRF) (2016). The structure is located approximately 500 m east of the MTO Patrol Yard, immediately outside the PDA, near ideal foraging habitat over Kenogamisis Lake (GGM 2021). As detailed in the BMMP, a Notice of Activity form will be filed with the Ministry of Environment, Conservation and Parks (MECP) in 2022.





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Client/Project

Greenstone Gold Mines GP Inc (GGM)
Hardrock Project

Figure No.

2

Title

Barn Swallow Locations in the PDA

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Revised: 2021-12-22 By: dharvey

2.3 Bald Eagle Protection Plan

The following section describes measures carried out to satisfy federal Condition 7.1, 7.1.1, and 7.1.2 of the Decision Statement. Bald eagle (*Haliaeetus leucocephalus*) nesting has been identified within 800 m of the PDA. Bald eagles are a species of special concern in Ontario but are not at risk federally. Additionally, bald eagle nests are protected by the *Fish and Wildlife Conservation Act*.

A pre-construction bald eagle survey was completed in February 2021 to understand if clearing, site preparation and early construction activities have potential to affect eagle nests or eagle nest buffer zones. The survey focused on bald eagle and other raptor nests in consideration of the occurrence of nests in locations with potential to be impacted by project development activities.

A raptor nest survey was completed on February 23, 2021, by a Stantec biologist and four GGM Environmental Technicians using a helicopter operated by Wisk Air out of Thunder Bay, Ontario.

The helicopter departed Thunder Bay at 8:00 am, arrived at the Geraldton Airport at 9:30 am for refueling and to pick up two Environmental Technicians. The first survey flight began at 10:20 am, ending at 11:20 am with a return to the Geraldton Airport for refueling and to pick up two new Environmental Technicians with the second flight ending at 12:20 pm for refueling. The helicopter returned to Thunder Bay at 14:30.

The raptor nest survey followed pre-determined survey transects located approximately 450 m apart and were consistent with lines flown in 2019 (Figure 3). Surveys covered the area from Goldfield Lake in the west to Barton Bay in the north and the Southwest Arm of Kenogamisis Lake in the east. The survey transects were flown by travelling in a southwest-northeast direction. The distance between survey lines provided good coverage of the study area to visually identify eagle and large stick nests. Bald eagle nests and other stick nests observed during the survey were recorded and geo-referenced. Stick nests identified in the 2019 baseline survey (Northern Bioscience 2019) were revisited to assess their presence/absence.

The timing of the survey occurred during leaf-off. The presence of snow on the stick nests facilitated visual identification of nests from the air. Surveys times were adjust to coincide with the raptor movement the year of surveying, however active raptor nesting had not commenced at the time of surveying.

2.3.1 Results

Three bald eagle nests (WP-008, E-583, 487) were observed in the 2021 aerial survey (Figure 3 and Table 3). All three bald eagle nests were identified in 2019 at which time two were determined to be active. One bald eagle nest identified in 2019 was not observed in 2021. The two stick nests observed in 2019 have likely been removed as part of regular forest harvesting activities (not completed by GGM). The bald eagle nest located along the Southwest Arm of Kenogamisis Lake was built in a large trembling aspen, which has since fallen, eliminating the nest.

Bald eagle nests E-535 and 487 were again observed in 2021 surveys along the shoreline of the Southwest Arm of Kenogamisis Lake. Both nests were confirmed to be active in 2019 and are within 800 m of project components.

Table 3: Aerial Survey Raptor Nest Observation Summary, February 23, 2021

Nest ID	First Year Identified	2021 Survey	Eagle Nest?	Easting	Northing	Within 800 m of PDA?	Notes
WP-008	2019	**Present**	Yes	505612.5	5504865	No	In large trembling aspen near shoreline. Nest covered in snow.
271	2019	Absent	Yes	503268.5	5500862	N/A	Broken aspen tree with missing top. Nest likely in fallen tree.
E-583	2019	**Present**	Yes	500320.5	5497932	Yes	In large trembling aspen near shoreline. Nest covered in snow.
487	2019	**Present**	Yes	499648.7	5497012	Yes	In large trembling aspen near shoreline. Nest covered in snow.

2.3.2 Mitigation

Of the four eagle nests identified in 2019, three eagle nests (487, E-535, WP-008) remain, all of which were confirmed active in 2019. Eagle nest 487 is 650 m from the tailings management facility (TMF) and nest E-535 is between 217 m and 352 m of various project components, including the TMF (Table 3). Nest WP-008 is greater than 800 m from any project component. Three nests identified in 2019 are no longer present while new nests identified to the east of the PDA (GGM11 and GGM12) are greater than 800 m from any project component. In summary, two nests (487 and E-535) observed in 2021 will require implementation of mitigation measures due to their respective proximities to site development.

Construction mitigation recommendations for eagle nests 487 and E-535 are summarized in Table 4. The Bald Eagle Habitat Management Guidelines (MNR 1987) identify three buffer zones that should be applied to bald eagle nests. Varying levels of activity restrictions apply to each buffer zone:

- Primary zone: the first 100 m around the nest and carries the highest level of restriction.
- Secondary zone: extends from 100 to 200 m around the nest and activities significantly altering the landscape are prohibited within this zone.
- Tertiary zone: extends from 200 to 800 m around the nest; this is the least restrictive zone and allows some activities except during the most critical life cycle period for nesting eagles.

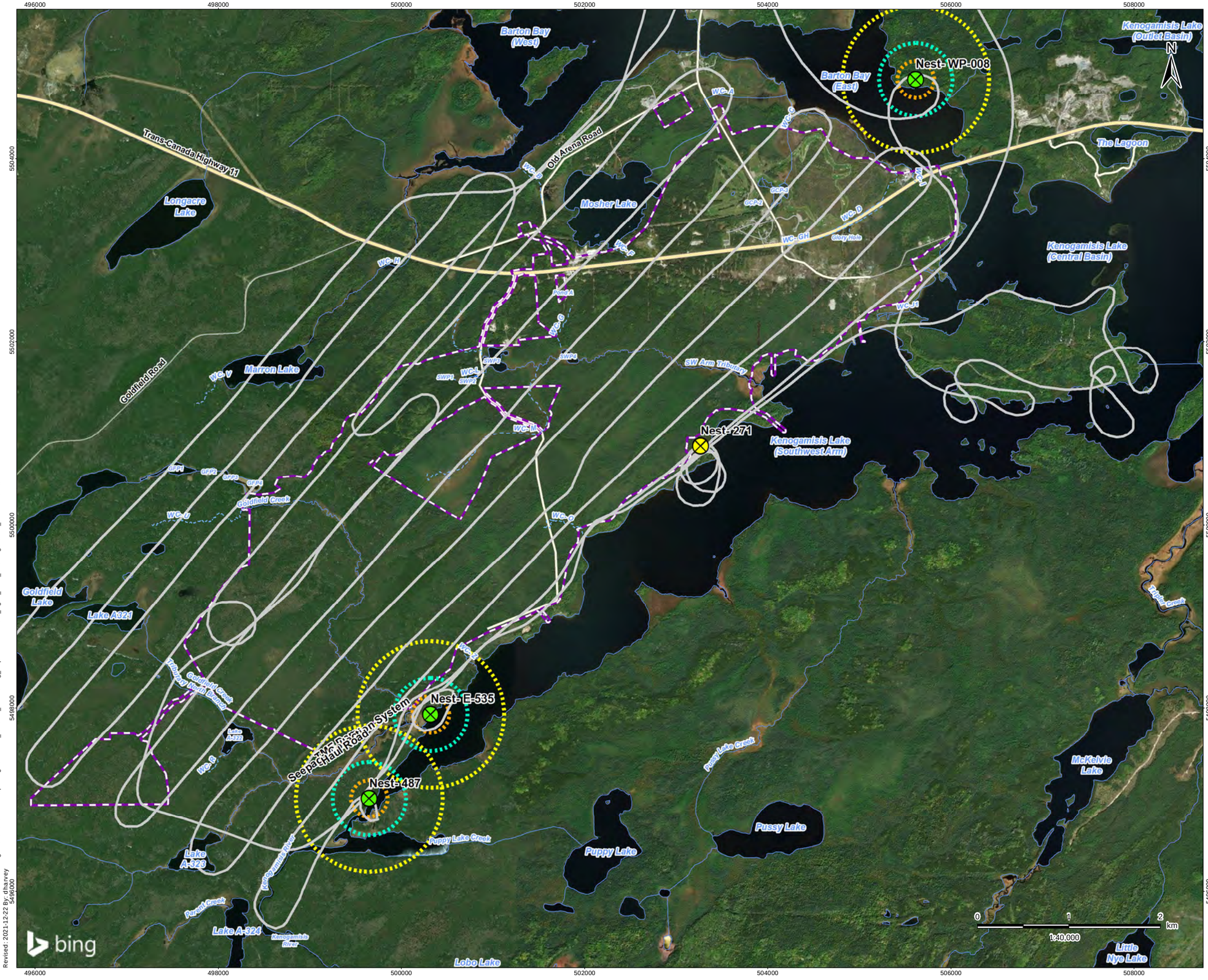
Mitigation measures during construction are as follows:

- No vegetation removal or Project activities will occur within 200 m (i.e., the primary and secondary zones, as defined by MNR, 1987) of an active nest.
- The limits of the vegetation removal and construction area within 800 m of an active nest will be staked in the field. Activities will occur inside the marked limit of work.
- A 120 m vegetated buffer zone will be retained along the shoreline of the lake; and vegetation that is present between each nest and the lakeshore will be retained.
- Large and mature trees will be retained between each nest and the closest Project components to maintain a visibility barrier to Project activities to the extent possible
- Vegetation clearing activities and site preparation activities between 400 m and 800 m of active nests will not occur from March 1 to June 30 (the incubation and nestling period for bald eagle [MNR 1987; MNR 2010]).
- If vegetation clearing or site preparation activities are required within 200- 400 m of the nest, they should occur outside of the incubation, nestling, and fledging period (March 1 to August 31 [MNR 2010]).

These mitigation measures are specific to construction activities which are currently being undertaken. Operations mitigation for raptor nests will be implemented when Operations activity commences.

Table 4: Summary of Recommended Construction Mitigation Measures for Eagle Nest within 800 m of the PDA

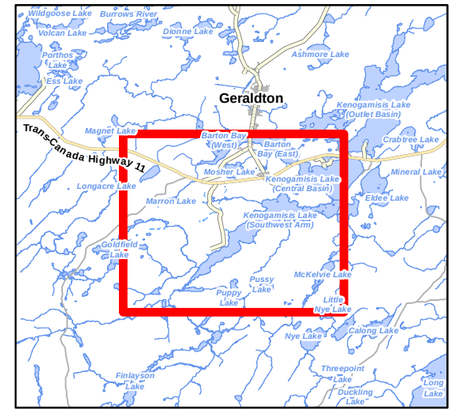
Critical Buffer Distance from Nest	Mitigation Measure	Current Applicable Nest IDs
All distances	Large and mature trees will be retained between each nest and the closest Project components to maintain a visibility barrier to Project activities to the extent possible.	487; E-535
< 120 m	Vegetated buffer zone will be retained along the shoreline of the lake; and all vegetation that is present between each nest and the lakeshore will be retained.	487; E-535
< 200 m	No vegetation removal or Project activities will occur within 200 m (i.e., the primary and secondary zones, as defined by MNR, 1987) of an active nest.	Does not currently apply to any known nests
200 m - 400 m	Vegetation clearing or site preparation activities should occur outside incubation, nestling, and fledging periods (March 1 to August 31 [MNR 2010]).	E-535
400 m - 800 m	Vegetation clearing activities and site preparation activities will not occur from March 1 to June 30 (the incubation and nestling period for bald eagle [MNR 1987; MNR 2010]).	487;E-535
< 800 m	The limits of the vegetation removal and construction area within 800 m of an active nest will be staked in the field. Activities will occur inside the marked limit of work.	487; E-535
Source: Stantec 2020		



Stantec

Legend

- Project Development Area (Optimized Site Plan, May 2019)
- Bald Eagle Nest, Absent
- Bald Eagle Nest, Present
- Bald Eagle Nest 200 m Buffer
- Bald Eagle Nest 400 m Buffer
- Bald Eagle Nest 800 m Buffer
- Flight Path
- Highway
- Major Road
- Local Road
- Watercourse- Permanent
- Watercourse- Intermittent
- Waterbody



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Client/Project

Greenstone Gold Mines GP Inc (GGM)
Hardrock Project

Figure No.

3

Title

Bald Eagle Nest Locations in the LAA

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Revised: 2021-12-22 By: dharvey

3 Summary

This report addresses the management plans and conditions of the Federal Decision Statement that are required to be implemented as a result of the commencement of Project construction activities. Other activities and associated conditions will be applicable as development of the Project proceeds towards operation and infrastructure is advanced and will be report on at that time.

Three specific Conditions of Approval related to monitoring potential effects of the Project on biodiversity were assessed including:

- Condition 4.1, avoidance of incidental take of migratory birds through nest sweeps of areas to be cleared during the breeding season.
- Condition 4.3, barn swallow habitat compensation.
- Condition 7.1, (including subsections 7.1.1, and 7.1.2), monitoring of bald eagle nests within 800 m of the PDA and implementation of a mitigation plan to avoid disturbance of bald eagle nests from Project activities during the breeding season.

Management plans for these conditions have been developed as part of the BMMP. This report confirms compliance of the implementation of the three conditions and also the performance and/or effectiveness of these conditions to maintain the function of the valued ecosystem components. As subsequent years of activities occur and additional surveys and monitoring completed, the effectiveness of the protective and mitigation techniques will be further assessed. At the time of this report, the Federal conditions related to VEC have been implemented and demonstrated to be effective in meeting their intend objective.

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