

Greenstone Mine 2024 Biodiversity Federal Follow-Up Monitoring Annual Report

(To satisfy Federal EIS Conditions 4 and 7)

December 23, 2024

OP-GGM-EV-136-1001_0


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Appendix A 2024 Raptor Nest Survey Report

List of Abbreviations

2024 Monitoring Period	October 1, 2023 through September 30, 2024
BMMP	Biodiversity Monitoring and Management Plan
CEAA	Canadian Environmental Assessment Agency
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ETP	Effluent Treatment Plant
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
PDA	Project Development Area
the Mine	Greenstone Gold Mine
SARO	Species at Risk in Ontario
SWAT	Southwest Arm Tributary
TMF	Tailings Management Facility

1 Introduction

Greenstone Gold Mines GP Inc. (GGM) has constructed, is operating, and ultimately decommissioning/closing a new open pit gold mine, process plant, and associated ancillary facilities, collectively known as the Greenstone Mine (the Mine), formerly the Hardrock Project. The Mine site is located at 7921 Highway 11, within the municipality of Greenstone, near the intersection of Highway 11 and Highway 584.

A federal Environmental Impact Statement (EIS) was required for the Mine under the *Canadian Environmental Assessment Act* (CEAA 2012). The federal EIS Decision statement was issued on December 13, 2018 and amended on February 10, 2021 to account for detailed design of the Mine. Another amendment to the Decision Statement is currently being processed by the Impact Assessment Agency of Canada (IAAC), who issued a draft Decision Statement on June 1, 2024 for consultation to incorporate the temporary bypass channel.

A Biodiversity Management and Monitoring (BMMP; HP-MG004-EV-130-0002) (GGM 2022) was prepared to address Conditions of Approval related to monitoring potential effects of the Mine on biodiversity. The BMMP contained a series of appendices that each deal with specific federal or provincial monitoring requirements.

2 Review of Applicable Conditions

The purpose of this 2024 Biodiversity Monitoring Report is to describe monitoring activities and results for the period of October 1, 2023, through September 30, 2024, that were undertaken to satisfy Federal EIS Conditions in Table 1.1.

The overall objectives related to each condition are provided in Table 1.1, which also references the applicable section of this 2024 Biodiversity Monitoring Report. This report focuses on those Federal conditions that are relevant to activities during the 2024 monitoring period. Other conditions apply to activities that will commence in subsequent years, and they will be reported on those development activities and associated conditions are initiated.

Table 1.1: Objectives for Federal Conditions of Approval Related to Biodiversity Monitoring and Management

Federal Condition	Objective (from federal Decision Statement)
2.9.5	<p>2.9 The Proponent shall, commencing in the reporting year during which the Proponent begins the implementation of the conditions set out in this Decision Statement, prepare an annual report that sets out:</p> <p>2.9.5 the results of the follow-up program requirements identified in conditions 3.15, 3.16, 3.17, 4.6, 4.7, 5.3, 5.4, 5.5 and 6.9</p>
4.1	<p>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 consider Environment and Climate Change Canada’s <i>Avoidance Guidelines</i> and the risk of incidental take. The Proponent’s actions when carrying out the Designated Project shall be in compliance with the <i>Migratory Birds Convention Act, 1994</i>, the <i>Migratory Birds Regulations</i> and the <i>Species at Risk Act</i>.</p>
4.2	<p>The Proponent shall undertake, in consultation with Indigenous groups and relevant authorities, progressive reclamation of the project development area. The Proponent shall identify, prior to the start of progressive reclamation and in consultation with Indigenous groups and relevant authorities, plant species native to the area of the Designated Project to use for revegetation as part of the progressive reclamation, including species suitable to create habitat for migratory birds.</p>
4.3	<p>Compensate the loss of barn swallow (<i>Hirundo rustica</i>) nesting sites as a result of the Project, taking into account Ontario’s <i>Recovery Strategy for Barn Swallow (Hirundo rustica)</i>. Install, prior to construction, and maintain, for three years, artificial barn swallow nesting structures.</p>
4.4	<p>The Proponent shall establish, during construction, a speed limit of no more than 65 kilometres per hour on all roads within the project development area, including the portion of Highway 11 to be realigned by the Proponent located within the project development area, and shall require employees and contractors associated with the Designated Project to abide by this limit.</p>
4.5	<p>The Proponent shall establish, during operation and decommissioning, a speed limit of no more than 65 kilometres per hour on all roads within the project development area, excepting the portion of Highway 11 located within the project development area, and shall require employees and contractors associated with the Designated Project to abide by this limit.</p>
4.6	<p>The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, a follow-up program to verify the accuracy of the environmental assessment as it pertains to the use by migratory birds of surface water facilities in the project development area. As a part of the implementation of the follow-up program, the Proponent shall:</p> <p>4.6.1 monitor, at times migratory birds may be present in the project development area, the use by migratory birds of the tailings management facility, contact water collection ditches and collection ponds during all phases of the Designated Project until such time that water quality in these structures meet legislative requirements and water quality objectives. The water quality objectives are to be established using an ecological risk based approach, developed in consultation with Indigenous groups and relevant authorities;</p> <p>4.6.2 monitor, at times migratory birds may be present in the project development area, the use by migratory birds of the pit lake from the start of filling of the pit lake and until the end of decommissioning; and</p>

Federal Condition	Objective (from federal Decision Statement)
	<p>4.6.3 if results of the monitoring referred to in conditions 4.6.1 or 4.6.2 indicate that migratory birds use the tailing management facility, the contact water collection ditches, the collection ponds or the pit lake, develop and implement deterrent measures pursuant to condition 2.7. The Proponent shall submit these measures to the Agency before implementing them.</p>
4.7	<p>The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, a follow-up program to verify the accuracy of the environmental assessment and to determine the effectiveness of all mitigation measures to avoid harm to migratory birds, their eggs and nests, including the mitigation measures used to comply with conditions 4.1 to 4.5. As part of the development of the follow-up program, the Proponent shall identify performance indicators that shall be used by the Proponent to evaluate the effectiveness of the progressive reclamation referred to in condition 4.2. The Proponent shall implement the follow-up program during all phases of the Designated Project. As part of the implementation of the follow-up program, the Proponent shall:</p> <ul style="list-style-type: none"> 4.7.1 conduct migratory bird surveys annually for the first five years following completion of construction to assess migratory bird use of the project development area. The Proponent shall determine the methodology for the migratory bird surveys in consultation with Indigenous groups and relevant authorities. The Proponent shall determine, in consultation with Indigenous groups and relevant authorities and based on the results of the initial surveys, if additional surveys within the project development area are required after the first five years following completion of construction and at what frequency and in which locations these additional surveys shall occur; 4.7.2 monitor the effectiveness of the progressive reclamation referred to in condition 4.2, including the establishment of native plant species to create habitat for migratory birds, annually during operation and during the first five years of decommissioning and every five years thereafter until the Proponent has determined, in consultation with Indigenous groups and relevant authorities, that the performance indicators have been met; 4.7.3 monitor barn swallow (<i>Hirundo rustica</i>) nesting activity and use of the artificial nesting structures referred to in condition 4.3 annually during the first three years following the installation of the nesting structures and at times barn swallow (<i>Hirundo rustica</i>) may be present in the project development area; and 4.7.4 monitor collisions between vehicles associated with the Designated Project and migratory birds within the project development area during all phases of the Designated Project.
7.1	<p>Develop, prior to construction, a Bald Eagle (<i>Haliaeetus leucocephalus</i>) protection plan that considers Ontario’s Management Plan for the Bald Eagle (<i>Haliaeetus leucocephalus</i>) 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:</p> <ul style="list-style-type: none"> 7.1.1 Conduct, once prior to construction and annually until vegetation clearing is completed within the project development area, surveys of active Bald Eagle (<i>Haliaeetus leucocephalus</i>) 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.

Federal Condition	Objective (from federal Decision Statement)
	<p>7.1.2 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.</p>

3 Monitoring Activities

The following sections provide a description of monitoring activities undertaken in the 2024 monitoring year to satisfy Conditions per Table 1.1.

3.1 Migratory Bird Nest Surveys – Condition 4.1

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. 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, nests and/or eggs may be inadvertently destroyed during certain activities (e.g., vegetation clearing; referred to as “incidental take”). The Migratory Bird Nest Management Plan was created to reduce the risk of harm to native migratory birds that nest in Ontario due to incidental take related to the construction, operation, and closure of the Mine (Appendix J of the BMMP).

3.1.1 Methods

To support pre-construction vegetation clearing during the breeding bird nesting period for Zone C5 (April 20 to August 31), nest surveys/sweeps are completed by trained individuals to identify active bird nests and establish appropriate buffers according to methods outlined in the BMMP (GGM 2022).

Where nests were identified, a 30 m boundary was delineated and flagged to maintain a vegetation and disturbance buffer around the nest. Any delineated areas are identified to operators. The 30 m buffer is maintained around any nest(s) until the end of nesting season or confirmation the young have fledged the nest. Results of each nest sweep effort are considered valid for up to 7 days after which time the area would be re-swept if clearing had yet to occur.

3.1.2 Monitoring Results

GGM continued to prioritize vegetation clearing outside of the nesting season for Zone C5 when the Mine schedule allowed. Bird nest surveys were completed prior to vegetation disturbance during the nesting season window to allow for the following Mine activities to progress:

- Geotechnical investigations near the TMF Southwest Buttress
- Dust Suppressant Trial monitoring along the haul road
- Transmission line construction for the Hydro One substation relocation
- Pit expansion to the northeast and southeast

Majority of the bird nest surveys completed confirmed the absence of active nests, apart from three bird nest surveys in July 2024, which resulted in the discovery of two active bird nests and two potentially active bird nests. Each of the discovered active nests, or potentially active, had a buffer established and marked off and the applicable department notified of the protected area. Disturbance of the vegetation within the established buffers was avoided, or was postponed until after the nesting season window ended, and nests were confirmed inactive.

3.2 Migratory Bird Presence in Water Containment Facilities – Condition 4.6

Surface water containment facilities at the Mine will contain open water that have the potential to attract migratory birds. Per Condition 4.6, GGM has developed and implemented a Wildlife-Water Monitoring and Management Plan (Appendix E of the BMMP). The following section provides details on GGM's compliance per Conditions 4.6, 4.6.1 and 4.6.3. Compliance with Condition 4.6.2 will be assessed upon closure when the pit lake forms.

3.2.1 Methods

Vegetation growth and migratory bird use around surface water containment facilities (e.g. B1 pond, TMF etc.) was monitored in the 2024 monitoring period. Species and number of individuals were recorded when possible, including behaviour and specific location. As per GGM policy, employees and contractors continued to be instructed to report sightings of wildlife.

3.2.2 Monitoring Results

Waterfowl were observed consistently utilizing the Tailings Management Facility in the 2024 monitoring period. There were no consistent observations of waterfowl in any other water collection ponds on site.

As per Appendix E of the BMMP, corrective actions identified in the BMMP will be implemented if wildlife use monitoring records consistent observations of waterfowl use over a one-month period. In the 2024 monitoring period, waterfowl was consistently observed in the TMF. In response to these results, GGM has procured auditory deterrents (i.e. propane bangers) and visual deterrents (i.e. predator decoys). The deterrents were tested out in the 2024 monitoring period to confirm operational and will be installed for immediate use at the start of the 2025 open water season. Monitoring will continue in the 2025 monitoring period to monitor vegetation growth and wildlife use, and success of implemented mitigation measures.

3.3 Migratory Bird Presence in PDA – Condition 4.7.1

GGM has developed and will implement a Breeding Bird Monitoring Plan (Appendix H of the BMMP) that will be utilized when required to monitoring migratory bird presence in the PDA per Condition 4.7.1. The Breeding Bird Monitoring Plan identifies survey methods to assess migratory bird use of the PDA, which are to commence in the first five years of operation. Compliance with Condition 4.7.1 will be assessed in the next annual report after the first survey event is completed.

3.4 Progressive Reclamation – Conditions 4.2 and 4.7.2

GGM has developed and implemented a Revegetation Implementation and Monitoring Plan (Appendix K of the BMMP) that will be utilized when required to start progressive reclamation. The Revegetation Implementation and Monitoring Plan identifies plant species native to the area to be used for progressive reclamation. Compliance with Conditions 4.2 and 4.7.2 will be assessed later in the Mine life as components of the Mine are ready for progressive reclamation.

3.5 Barn Swallows – Conditions 4.3 and 4.7.3

The following section describes measures carried out to satisfy federal Conditions 4.3 and 4.7.3 of the Decision Statement. Barn swallows (*Hirundo rustica*) were a threatened species at the time of approval, however were reclassified in January 2023 on the Species at Risk in Ontario List (Ontario Regulation 230/08) as a special concern species. The change in classification means that subsections 9 (1) and 10 (1) of the ESA no longer apply to Barn Swallow. Despite the change in status of Barn Swallow, GGM honoured previous commitments for compensation and monitoring.

Barn swallows were present in two original Ministry of Transportation of Ontario (MTO) buildings requiring removal. In preparation for removal, and in accordance with Condition 4.3, habitat compensation was provided in 2021 through installation of a nesting structure with artificial nesting cups following nesting habitat guidelines provided by the MNR. The structure is located approximately 500 m east of the former MTO Patrol Yard, near suitable foraging habitat over Kenogamisis Lake (Appendix I of the BMMP). The two buildings in the MTO Patrol Yard were removed prior to the 2023 nesting period.

3.5.1 Methods

The nesting structure was monitored during the 2024 Barn Swallows breeding period. GGM also opportunistically monitored for barn swallows around the project development area, including the new MTO yard.

3.5.2 Monitoring Results

The Barn Swallow habitat compensation structure was monitored six times during the 2024 nesting season (Table 2.1). The habitat compensation structure was in good condition during the 2024 nesting season, including the overall structure, nest cups, and predator controls (Photo 1). There was no evidence of use of the structure by any wildlife in 2024.

Table 2.1: Barn Swallow Habitat Compensation Structure Monitoring

Survey Date	Is the structure in good condition?	Are nest cups in good condition?	Evidence of Barn Swallow nesting?	Are predator controls in good condition?	Other Birds/Bats Using the Structure?
May 11, 2024	Y	Y	N	Y	N
May 27, 2024	Y	Y	N	Y	N
June 2, 2024	Y	Y	N	Y	N
June 7, 2024	Y	Y	N	Y	N
June 8, 2024	Y	Y	N	Y	N
July 5, 2024	Y	Y	N	Y	N



Photo 1. Barn swallow habitat compensation structure. May 11, 2024.

As the required monitoring period per condition 4.3 (three years) has been fulfilled, the program is complete and will no longer be implemented. Barn Swallows were observed nesting in the new MTO building in 2024 and it is anticipated they will continue to use the new building as habitat (Photo 2). Opportunistic monitoring of barn swallows elsewhere on site also confirmed two other nests established and utilized in the process plant area.



Photo 2. Barn swallow nests present in new MTO building. July 5, 2024.

3.6 Speed Limits – Conditions 4.4, 4.5 and 4.7.4

Speed limits are required to be no more than 65 km/hr on all roads within the PDA per Conditions 4.5, except the portion of Highway 11 located within the PDA. Condition 4.4 is no longer applicable as the Mine has progressed past the construction phase.

Speed limits along the site access roads are limited to 50 km/hr, and 15km/hr around the process plant area. Haul roads are restricted to a speed limit of 60km/hr. These limits are below the 65 km/hr requirement of Conditions 4.4 and 4.5. All employees and contractors are trained on speed limits during site orientation, and limits are posted around site as a reminder.

There were no collisions associated with the Mine in the 2024 monitoring period between vehicles and migratory birds.

3.7 Bald Eagles – Conditions 7.1, 7.1.1, 7.1.2

The following section describes measures carried out to satisfy federal Conditions 7.1, 7.1.1, and 7.1.2 of the Decision Statement. Bald Eagle (*Haliaeetus leucocephalus*) has been confirmed nesting within 800 m of the PDA. The following section is a summary of the 2024 monitoring period, with more details found in the 2024 Raptor Nest Survey Report submitted in 2024 per Condition 7.1.1 (HP-GGM-EV-136-1013; Appendix A).

3.7.1 Methods

Per Condition 7.1, GGM has developed and implemented a Bald Eagle Protection Plan (Appendix G of the BMMP). As vegetation clearing is not yet complete for Mine development, GGM was required to complete an annual survey of Bald Eagle nests either within the PDA or within 800m of the PDA, per Condition 7.1.1 in the 2024 monitoring period.

An aerial raptor nest survey was conducted in February 2024 by the MNR (Eric Kahkonen, personal communication). Due to the time of year, the status of nest activity could not be determined. GGM conducted additional targeted ground based observation surveys of eagle nests E-487, E-623, and E-622 in May and June 2024 (Appendix A). Trail cameras were installed in February 2024 pointed at the base of nests E-487 and E-623 to monitor any potential nearby ground disturbance.

3.7.2 Monitoring Results

The GGM ground based survey confirmed the presence of nests E-487, E-622, and E-623. Routine wildlife monitoring documented the first reported sightings of eagles in the vicinity of the Mine on March 4, 2024. There continued to be reported sightings of eagles in the spring, throughout March, April and June in the vicinity of the Mine. A summary of the survey results is provided in Table 2.2. Nest E-623 was confirmed active and successful in 2024 with the observation of an eaglet in June through September 2024. For further details on monitoring results, refer to the 2024 Raptor Nest Survey Report (Appendix A).

Table 2.2: Summary of Eagle Nest Surveys

MNR Nest ID (GGM/BMMP ID)	UTM Coordinates	2021 Survey (Helicopter)	2022 Survey (Drone)	2023 Survey (Drone)	2024 Survey (Ground)	Notes
E-622 (WP-008)	505612.5 5504865	Present	Unknown	Present	Present	In large trembling aspen near Kenogamisis shoreline. Eagle observed in the nest in 2024.
E-271 (WP-005)	503268.5 5500862	Absent	n/a	n/a	n/a	Was in a large trembling aspen near Kenogamisis shoreline. Last observed by MNR in 2018. In 2021 a broken tree was observed that likely had contained the nest.
E-535 (WP-003)	500320.5 5497932	Present	Present	Absent	n/a	Was in a large trembling aspen near Kenogamisis shoreline. Tree containing the nest was felled in February 2023.
E-487 (WP-004)	499648.7 5497012	Present	Unknown	Unknown	Present	In large trembling aspen near Kenogamisis shoreline. Deceased eagle found at the base of the tree containing the nest in 2024.

MNR Nest ID (GGM/ BMMP ID)	UTM Coordinates	2021 Survey (Helicopter)	2022 Survey (Drone)	2023 Survey (Drone)	2024 Survey (Ground)	Notes
E-623 (GGM-001)	503989.2 5501170	n/a	n/a	n/a	Present	In large trembling aspen near Kenogamisis shoreline. New nest that was built in 2023. Successful nest activity and an eaglet observed in 2024.

Nest E-487 is approximately 650 m south of the tailing management facility. Nest E-622 is greater than 800 m from project infrastructure. Nest E-623 is within the PDA near the Effluent Treatment Plant Discharge location into Kenogamisis Lake and is greater than 600m from the current active mining areas (e.g. ore stockpiles). Construction mitigation recommendations are outlined in Appendix G.2.1 of the BMMP (GGM 2022) and Appendix A, which are applicable for eagle nests E-487, E-622 and E-623.

4 Summary

This report addresses the Conditions of the Federal Decision Statement outlined in Table 1.1 that are required to be implemented during the 2024 monitoring period. Additional activities and associated conditions will be implemented as the Project progresses in operation and infrastructure is advanced, and will be reported on at that time.

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 the performance and/or effectiveness of these conditions to maintain the function of the valued ecosystem components. Upon completion of additional surveys and monitoring in subsequent years, the effectiveness of the protective and mitigation techniques will be further assessed. At the time of this report, the Federal conditions related to valued ecosystem components have been implemented and demonstrated to be effective in meeting their intended objective.

5 References

GGM. 2022. Biodiversity Management and Monitoring Plan. HP-MG004-EV-130-0002_2. June 3, 2022.

Appendix A

2024 Raptor Nest Survey Report

Greenstone Mine

2024 Raptor Nest Survey Report

HP-GGM-EV-136-1013_0

August 19, 2024

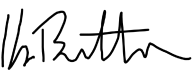

Date	Rev		Prepared By	Checked By	Approved By
August 19, 2024	0	Signature:			
		Name:	Kendra Button Environmental Assistant Superintendent	Braeden Connor Environmental Superintendent	Braeden Connor Environmental Superintendent

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Appendix A Photo Log

1 Introduction

Greenstone Gold Mines GP Inc. (GGM) is commissioning, operating and ultimately decommissioning/closing a new open pit gold mine, process plant, and associated ancillary facilities, collectively known as Greenstone Mine (the Mine).

A Federal Environmental Impact Statement (EIS) was required for the Mine under the Canadian Environmental Assessment Act (2012). The federal EIS Decision Statement for the Mine was provided on December 13, 2018 and amended on February 10, 2021. In addition to the federal EIS, GGM entered into a Voluntary Agreement with the Ministry of the Environment and Climate Change, now Ministry of Environment, Conservation and Parks (MECP), to complete a provincial individual Environmental Assessment (EA) under the Ontario Environmental Assessment Act. The provincial EA for the Mine was approved on March 12, 2019 and received a Notice of Approval to Proceed with the Undertaking under Section 9 of the Environmental Assessment Act. Conditions of Approval were issued by both the federal and provincial governments.

As part of the approvals process and Project implementation initiatives, a Biodiversity Management and Monitoring Plan (BMMP) was developed to address regulatory and permit requirements and provide a guide to management and monitoring. The BMMP (GGM 2022) requires identification of bald eagle and raptor nests prior to development activities to mitigate impacts from project activities. Development of the Mine has the potential to encroach on bald eagle nests through removal of forest cover and mine construction and operation activities such as moving of vehicles, and construction of roads and other mine infrastructure. The purpose of raptor nest surveys is to confirm the presence of nests where there is potential for nests to be impacted by site preparation, tree clearing, and road construction within the Project Development Area (PDA).

The bald eagle is a provincial species of special concern but is federally not at risk. This species was also identified as having traditional value and interest to Indigenous communities. Bald eagle nests typically occur near water, usually on large lakes and are protected by the *Fish and Wildlife Conservation Act*. During baseline studies completed as part of the combined EIS/EA (Stantec 2017), bald eagle nesting with potential to be impacted by the Project was identified at two locations. Follow-up monitoring in 2019 confirmed the presence of three active bald eagle nests and one empty nest, as well as two additional stick nests (Northern Bioscience 2019). These bald eagle nests were subsequently monitored from 2021 to 2024.

Monitoring of stick nests is conducted annually by the Ministry of Natural Resources and Forestry (MNRF) in February and March for forestry planning. When the geographic coverage of annual MNRF does not overlap with GGM monitoring needs, GGM conducts targeted nest surveys for nests within 1 km of the PDA (GGM 2022).

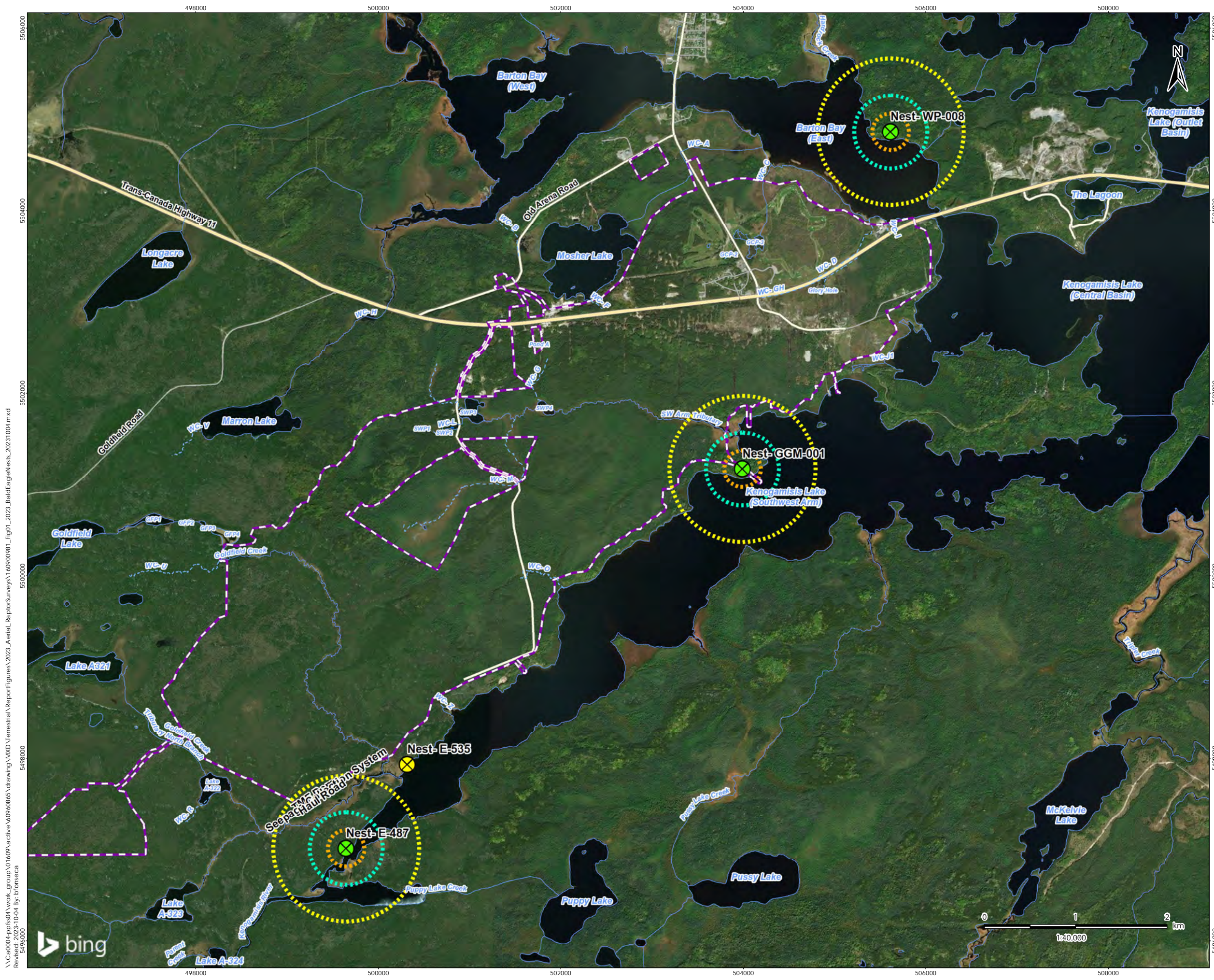
This report presents the results of the GGM survey conducted in 2024.

2 Methods

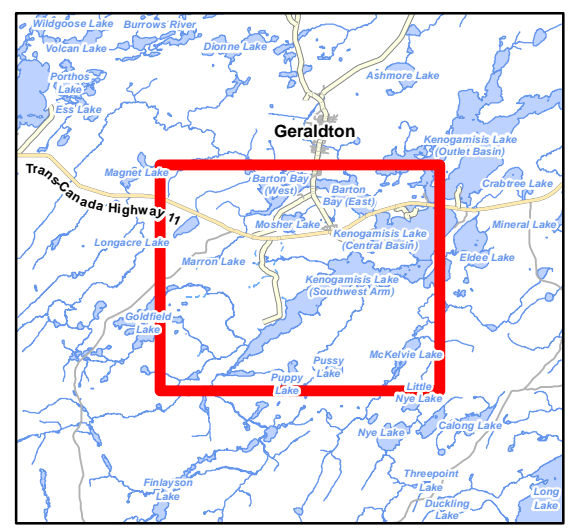
An aerial raptor nest survey was conducted in February 2024 by the Ministry of Natural Resources and Forestry (Eric Kahkonen, personal communication). Due to the time of year, the status of nest activity could not be determined.

GGM conducted additional targeted ground based observation surveys of eagle nests E-487, E-623, and E-622 in May and June 2024 (Figure 1). A ground based survey was conducted to supplement MNR's aerial survey to determine nest activity.

Trail cameras were installed in February 2024 pointed at the base of nests E-487 and E-623 to monitor any potential nearby ground disturbance.



- 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
 - Highway
 - Major Road
 - Local Road
 - Watercourse- Permanent
 - Watercourse- Intermittent
 - Waterbody



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 16N
 2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
 3. Orthographic Imagery Source: © 2023 Microsoft Corporation © 2023 Maxar © CNES (2023) Distribution Airbus DS Imagery Date- Unknown

October 2023
160900981

Client/Project
Greenstone Gold Mines GP Inc (GGM)
Hardrock Project

Figure No.
1

Title
Bald Eagle Nest Locations in the LAA

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 Revised: 2023-10-04 By: bronsca
 5496000



3 Results

Aerial nest surveys conducted by the MNRF in February 2024 confirmed the presence of nest E-487, and the continued absence of nest E-535 due to tree felling in 2023. The GGM ground based survey confirmed the presence of nests E-487, E-622, and E-623. Each nest observed in 2024 was constructed in large trembling aspen trees near the shoreline of Kenogamisis Lake (Figure 1).

Routine wildlife monitoring documented the first reported sightings of eagles in the vicinity of the Mine on March 4, 2024. There continued to be reported sightings of eagles in the spring, throughout March, April and June in the vicinity of the Mine.

3.1 Nest E-487

A trail camera was installed on February 29, 2024 pointed at the base of the tree containing nest E-487. On April 8, 2024, an eagle sighting was reported in the vicinity of the nest, at GGM monitoring station 1A (Appendix A, Photo 8). On April 21, 2024, GGM's trail camera captured a photo of an eagle on the ground, at the base of the tree containing nest E-487 (Appendix A, Photo 9).

On May 30, 2024, GGM conducted a ground-based survey to assess nest activity. During the survey of nest E-487, presence of the nest was confirmed (Appendix A, Photos 10-11) and surveyors discovered a deceased eagle adjacent to the nest. The carcass was fairly decomposed (Appendix A, Photo 12). The deceased eagle was reported to MNRF on May 31, 2024, and MNRF reached out to the Canadian Wildlife Health Cooperative however they advised that the eagle was too far decomposed and could not be tested or donated. The eagle carcass was left to naturally decompose, at the suggestion of MNRF.

3.2 Nest E-622

On June 18, 2024, GGM conducted their ground-based survey to assess nest activity. During the survey of nest E-622, an adult eagle was observed sitting in the nest (Appendix A, Photo 7). Due to the large distance between the nest and the Mine, continued nest activity is not monitored at this location.

3.3 Nest E-623

A trail camera was installed on February 26, 2024 pointed at the base of the tree containing nest E-623. Nest E-623 was observed to be actively used by eagles in spring of 2024, and eagles were reported sighted in the vicinity of the nest throughout the spring (Appendix A, Photos 2 and 3). The first reported sighting of an eagle in Nest-623 was on April 30, 2024, and continued sightings occurred throughout the spring (Appendix A, Photo 1). On June 10, 2024, an eaglet was first

observed in Nest E-623. The eaglet continued to be observed throughout June and July in the nest (Appendix A, Photos 4-5). The trail camera captured photos of the eaglet venturing to the ground starting July 25, 2024 (Appendix A, Photo 6).

As the nest is within the PDA and within 200 m of some project activities, access to the road to the peninsula where Nest E-623 is located was restricted. During this time no vegetation clearing or large vehicle traffic was permitted, with access limited to non-disturbing activities (e.g., sampling and inspections).

Table 3-1 Summary of Eagle Nest Surveys

MNRF Nest ID (GGM/ BMMP ID)	UTM Coordinates	2021 Survey (Helicopter)	2022 Survey (Drone)	2023 Survey (Drone)	2024 Survey (Ground)	Notes
E-622 (WP-008)	505612.5 5504865	Present	Unknown	Present	Present	In large trembling aspen near Kenogamisis shoreline. Eagle observed in the nest in 2024.
E-271 (WP-005)	503268.5 5500862	Absent	n/a	n/a	n/a	Was in a large trembling aspen near Kenogamisis shoreline. Last observed by MNRF in 2018. In 2021 a broken tree was observed that likely had contained the nest.
E-535 (WP-003)	500320.5 5497932	Present	Present	Absent	n/a	Was in a large trembling aspen near Kenogamisis shoreline. Tree containing the nest was felled in February 2023.
E-487 (WP-004)	499648.7 5497012	Present	Unknown	Unknown	Present	In large trembling aspen near Kenogamisis shoreline. Deceased eagle found at the base of the tree containing the nest in 2024.
E-623 (GGM-001)	503989.2 5501170	n/a	n/a	n/a	Present	In large trembling aspen near Kenogamisis shoreline. New nest that was built in 2023. Successful nest activity and an eaglet observed in 2024.

4 Conclusions and Recommendations

Of the three eagle nests observed in 2024 (E-487, E-622 and E-623), all three are assumed active due to retention over the years and observations of eagles in the vicinity or in the nests. Nest E-623 was confirmed active and successful in 2024 with the observation of an eaglet in June and July, 2024.

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.

The Forest Management Guide for Conserving Biodiversity at Stand and Site Scales (MNR 2010), the Significant Wildlife Habitat Mitigation Support Tool (MNR 2014), and the Management Plan for the Bald Eagle in Ontario (Armstrong 2014) also provide recommendations for bald eagle mitigation measures and management.

Nest E-487 is 650 m south of the tailing management facility. Nest E-622 is greater than 800 m from project infrastructure. Nest E-623, found newly constructed in 2023, is within the PDA and is greater than 600m from the current active mining areas (i.e., WRSA B). Construction mitigation recommendations following Appendix G.2.1 of the BMMP (GGM 2022) for eagle nests E-487, E-622 and E-623 are summarized in Table 4-1.

Table 4-1 Summary of recommended construction mitigation measures for eagle nests within 800 m of GGM PDA.

Critical Buffer Distance from nest	Mitigation Measure	Nest ID
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.	E-487, E-623
< 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.	E-623
< 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.	E-623
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-623
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]).	E-487, E-623
< 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.	E-487, E-623

5 References

- Armstrong, T. 2014. Management Plan for the Bald Eagle (*Haliaeetus leucocephalus*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
- GGM (Greenstone Gold Mines). 2022. Biodiversity Management and Monitoring Plan. Appendix G.
- Northern Bioscience. 2019. Greenstone Gold Mine Raptor Nest and Beaver Dam Survey, 2019.
- Ontario Ministry of Natural Resources (MNR). 1987. Bald Eagle Habitat Management Guidelines. June 1987. 15 pp.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2010. Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales. Toronto: Queen's Printer for Ontario. 211 pp.
- Ontario Ministry of Natural Resources and Forestry (MNRF). 2014. Significant Wildlife Habitat Mitigation Support Tool. 532 pp.
- Stantec. 2017. Hardrock Project Final Environmental Impact Statement. Prepared for Greenstone Gold Mines. Prepared by Stantec Consulting Ltd. File No. 160961111, June 2017.

Appendix A Photo Log



Photo 1: May 07, 2024 in Nest E-623



Photo 2: May 20, 2024 in the vicinity of Nest E-623 (Station FS-02)



Photo 3: May 28, 2024 in the vicinity of Nest E-623 (ETP discharge road)



Photo 4: June 18, 2024 in Nest E-623



Photo 5: July 03, 2024 in Nest E-623

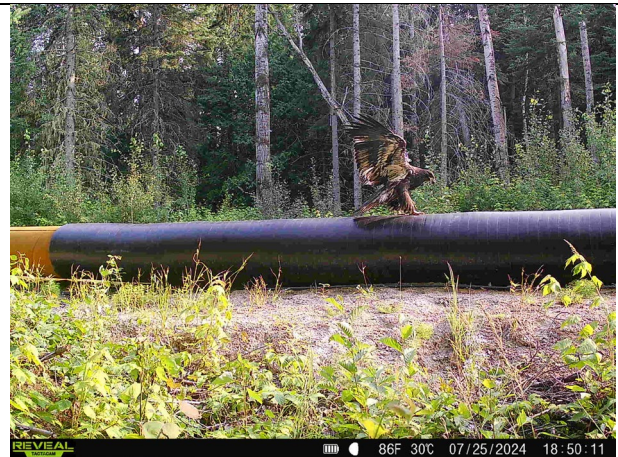


Photo 6: July 25, 2024 at the base of Nest E-623



Photo 7: June 18, 2024 in Nest E-622



Photo 8: April 08, 2024 in the vicinity of Nest E-487 (Station 1A)



Photo 9: April 21, 2024 at the base of the tree containing Nest E-487



Photo 10: May 30, 2024 Nest E-487 present, no eagles observed



Photo 11: May 30, 2024 Nest E-487 present, no eagles observed



Photo 12: May 30, 2024 deceased eagle found at the base of the tree containing Nest E-487