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Updated Environmental Impact Statement
Zoning Amendment and Site Plan Control Application
5360 Bank Street
Ottawa, Ontario

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Submitted to:

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Ottawa, Ontario

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EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Greely Sand and Gravel to complete an update to the existing Environmental Impact Statement (EIS) for the property located at 5360 Bank Street, Ottawa, Ontario. This EIS has been completed in support of a proposed zoning amendment and site plan control application and was completed in accordance with all federal, provincial and municipal policies and guidelines, as applicable.

In support of this EIS a desktop review and multiple field investigations were completed to identify the presence or absence of natural heritage features and species at risk (SAR) on-site. Field investigations were completed in spring and summer 2024. The focus of the field investigations was to describe, in general, the natural and physical setting of the subject property with a focus on confirming the presence or absence of natural heritage features and potential SAR or their habitat as identified in the desktop review.

Following completion of the desktop review and field investigations the following natural heritage features were identified on-site or within the study area: fish habitat, significant woodlands, significant wildlife habitat for woodland amphibian breeding habitat (*candidate*) and special concern and rare wildlife habitat (eastern wood-pewee, wood thrush and snapping turtle). The following SAR and their habitat were identified as having a potential to occur on-site: eastern small-foot myotis, little brown myotis, tri-colored bat, and butternut. Two butternut trees were observed on-site.

Impacts to the natural heritage features are associated with general landscaping to revegetate and enhance existing habitat with potential indirect impacts to fish habitat, significant wildlife habitat and habitats of species at risk.

Direct impacts to the natural heritage features are not anticipated as future components of the project will generally be limited to on-going operations associated with the existing commercial business operating on-site. Minor grading and site alteration are anticipated to construct the proposed stormwater management pipe and outlet on-site. Tree clearing, vegetation grubbing, fill placement, excavation and foundation pouring and construction of new dwellings are not anticipated or proposed as part of the zoning amendment or site plan control application.

Potential impacts to natural heritage features on-site are likely to be mitigated through the implementation of a development setback from surface water features. A 15 m setback from the top of bank of the John Boyce Municipal Drain and associated watercourses is proposed. The setback is sufficient to provide protection for the majority of significant wildlife habitat on-site as well as providing protection to fish habitat.

Existing commercial operations are not anticipated to impact butternut on-site, as all existing development occurs outside of the regulated 25 m radius of each butternut. Further regulatory

review and permitting maybe required prior to any site disturbance or development within regulated SAR habitat as discussed in Section 6 and 7. If the 25 m buffer around the identified butternut cannot be maintained, a *Butternut Health Assessment* must be completed and submitted to the Kemptville Ministry of Environment, Conservation and Parks prior to any construction or disturbance within 25 m of the butternut.

Should any SAR be discovered throughout the course of any on-going operations, work should stop and the species at risk biologist with the local MECP district should be contacted immediately for further direction. Furthermore, to ensure compliance with applicable legislation, all best management practices and adherence to vegetation clearing for birds and bats, outlined in Section 7 should be followed, if required to ensure no negative impacts occur to natural heritage features on-site.

The proposed zoning amendment and site plan control application complies with the natural heritage policies of the Provincial Policy Statement and the City of Ottawa Official Plan. No negative impacts to identified natural heritage features or their ecological functions are anticipated as a result of the proposed project as long as all mitigation measures in Section 7 are enacted and best management practices followed.

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Greely Sand and Gravel to complete an update to the existing Environmental Impact Statement (EIS) for the property municipally addressed as 5360 Bank Street, City of Ottawa, Ontario (hereafter referred to as “the subject property”). The location of the subject property is illustrated on Figure A.1 in Appendix A.

1.1 Purpose

The proponent is seeking a zoning amendment and site plan control application for a 6.75 hectare (ha) property located at 5360 Bank Street. Based on the requirements of the City of Ottawa Official Plan (Ottawa, 2022) an EIS is required showing that the proposed zoning amendment and site plan control will not negatively impact any potential natural heritage features, which may be present within the study area. The study area is defined as the property boundary and the adjacent lands encompassing an area of 120 m beyond the property boundary. The subject project and the extents of the study area are illustrated on Figure A.2 in Appendix A.

1.2 Objective

The 2020 Provincial Policy Statement (MMAH, 2020) issued under Section 3 of the Planning Act states that “development and site alteration shall not be permitted in: habitats of species at risk, significant wetlands, significant woodlands and significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.” Similarly, the 2020 Provincial Policy Statement dictates that ‘development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.”

The objective of the work presented herein is twofold; 1) to identify and evaluate the significance of any natural heritage features, as defined in the Provincial Policy Statement (MMAH, 2020), on the subject property and within the broader study area and; 2) to assess the potential impacts from the proposed zoning amendment and site plan control on any natural heritage features identified and to recommend appropriate and defensible mitigation measures to ensure the long-term protection of any natural heritage features identified.

To meet these objectives, the EIS presented herein has been completed in accordance with the following provincial and municipal regulations, policies and guidelines:

- Provincial Policy Statement (MMAH, 2020);
- Endangered Species Act (Ontario, 2007);
- Migratory Birds Convention Act (Canada, 1994);
- Conservation Authorities Act (Ontario, 1990);
- Natural Heritage Reference Manual (OMNR, 2010);
- City of Ottawa Official Plan (Ottawa, 2022); and
- City of Ottawa EIS Guidelines (Ottawa, 2023).

1.3 Physical Setting

The subject property is located on Part of Lot 4, Concession 9, in the Geographic Township of Gloucester, City of Ottawa, Ontario and is municipally addressed as 5360 Bank Street. The subject property currently consists of an active mineral extraction area and commercial buildings. The subject property is bound to the north by neighbouring properties 5304 and 5338 Bank Street. To the south the site is bound by neighbouring properties of 5370, 5420 and 5480 Bank Street. To the east the property is bound by Bank Street and to the west by 5363 Albion Road.

1.4 Land Use Context

The subject property is situated within a larger rural area, just south of the City of Ottawa's suburban boundary. The existing land use designation from the City of Ottawa is general rural area and rural employment area. The City of Ottawa zoning by-law is rural countryside zone (RU). The City of Ottawa and the South Nation Conservation Authority (SNC) have also identified flood plain on the subject property.

2.0 METHODOLOGY

2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather information relating to natural heritage features which may be present on the subject project or within 1 km of the subject property. An additional component of the desktop review was to assess the potential presence of SAR to occur on the subject property or within the study boundary based on a review of publicly accessible occurrence records and a review of SAR habitat requirements and range maps.

Information regarding the potential presence of natural heritage features and SAR within the vicinity of the site was obtained from the following sources:

- Make a Map: Natural Heritage Areas (OMNRF, 2023);
- Natural Heritage Information Centre Biodiversity Explorer (OMNRF, 2013);
- Land Information Ontario (OMNRF, 2011);
- Ontario Geological Survey (OGS, 2019);
- Fisheries and Oceans Canada SAR Maps (DFO, 2023);
- Breeding Bird Atlas of Ontario (Cadman et al., 2007);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019);
- City of Ottawa Official Plan (City of Ottawa, 2022);
- GeoOttawa Portal (Ottawa, 2023);
- Species at Risk in Ottawa (Ottawa, 2024);
- Wildlife Values Area (OMNRF, 2023a);
- Wildlife Values Site (OMNRF, 2023b); and
- South Nation Conservation Authority Geoportal (SNC, undated).

2.2 Field Investigations

Field investigations were undertaken to describe in general, the natural and physical setting of the subject property with a focus on natural heritage features and to identify any potential SAR or their habitat that may exist at the subject property.

Field investigations completed in support of this EIS are outlined in Table 2.1 below. Photographs of site features taken during field investigations are provided in Appendix B.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	Purpose
April 26, 2024	11:00 - 14:45	10°C, no cloud cover, Beaufort 1, no precipitation	Headwater Drainage Feature Assessment
May 17, 2024	09:30 - 12:30	20°C, ~50% cloud cover, Beaufort 1, no precipitation	Headwater Drainage Feature Assessment
July 29, 2024	08:00 - 11:45	19°C, no cloud cover, Beaufort 0, no precipitation	Headwater Drainage Feature Assessment, Ecological Land Classification

2.2.1 Ecological Land Classification

Vegetation communities on the subject property were delineated during the desktop review stage of this EIS using publicly available air photos and confirmed in the field on July 29, 2024, following the Ecological Land Classification System for Southern Ontario (Lee et al., 2008). Vegetation communities were confirmed in the field by employing the random meander methodology while documenting dominant vegetation species within the various vegetation community forms.

2.2.2 Headwater Drainage Feature Assessment

Field data collection of headwater drainage features on-site followed the protocol outlined in Section 4: Module 11, “Unconstrained Headwater Sampling” from the Ontario Stream Assessment Protocol (OSAP) (Stanfield, 2017). Data collected during the site investigations included flow conditions, sediment transport, feature roughness, riparian and feature vegetation, as well as upstream and downstream site features. As outlined in the OSAP manual for assessing headwater drainage features, three site visits were completed.

Classification of the headwater drainage features on-site followed the protocols outlined in the Evaluation, Classification and Management of Headwater Drainage Features Guidelines manual (TRCA/CVC, 2014). Functions of the headwater drainage feature that were evaluated included hydrology, vegetation, fish and fish habitat, and terrestrial habitat.

2.3 Data Analysis

An evaluation of the significance of natural heritage features, the sensitivity of identified flora and fauna and the potential impacts posed by the proposed development was undertaken through an analysis of desktop and field investigation data using the approaches and criteria outlined in the following documents:

- Natural Heritage Reference Manual (OMNR, 2010);
- Significant Wildlife Habitat Technical Guide (OMNR, 2000);
- Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015);
- Significant Wildlife Habitat Mitigation Support Tool (OMNRF, 2014b); and
- City of Ottawa Official Plan (City of Ottawa, 2022).

3.0 EXISTING ENVIRONMENT

3.1 Ecoregion

The site is situated Ecoregion 6E-12 (Lake Simcoe-Rideau), which extends from Lake Huron in the west to the Ottawa River in the east. The climate of Ecoregion 6E is categorized as humid, high to moderate temperate ecoclimate with a mean annual temperature range between 4.9°C to 7.8°C with annual precipitation ranging between 759 mm to 1,087 mm (Crins et al., 2009).

The eastern portion of the Ecoregion, which the subject property is located, is underlain by glaciomarine deposits as a result of the brief post-glacial incursion of salt water from the Champlain Sea along the St. Lawrence Valley. This Ecoregion falls with Rowe's (1972) Great Lakes-St. Lawrence Forest Region, including its Huron-Ontario and Upper St. Lawrence sections, and a small part of the Middle Ottawa Forest section (Crins et al., 2009).

3.2 Study Area Land Use

Figure 1 below provides an illustration of the temporal changes in land use within the study area from 1976, 1991, 2002 and 2022 aerial imagery taken from GeoOttawa.

In 1976, mineral extraction was active and on-going on the subject property. Surrounding lands were primarily populated with agricultural fields, farmhouses and other extraction areas.

By 1991, the mineral extraction area on-site continued to expanded and additional buildings were constructed. Surrounding areas saw mineral extraction areas continue to expand, and revegetation/successional growth of wooded areas north of the property. Some commercial development is occurring along Bank Street.

By 2002, the mineral extraction area continued to expand with more commercial buildings. A roadway was constructed to connect the subject property to the mineral extraction areas north of the property. The surrounding area remained dominated by mineral extraction areas with woodlands. Developments along Bank Street continue to increase in density.

By 2022, the mineral extraction area and commercial buildings on-site have reached their present day extent. Surrounding lands are in present day configuration.

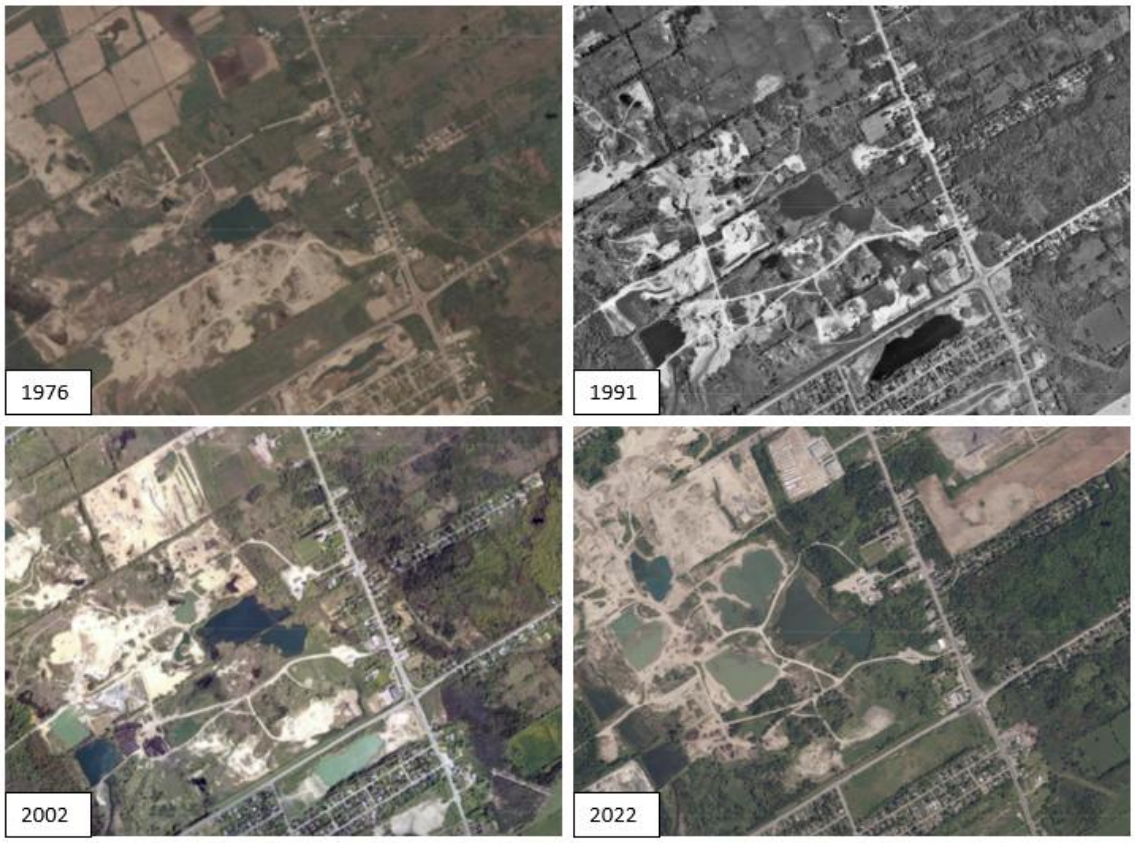

Figure 1 - Temporal Changes in Land Use within Study Area

3.3 Landforms, Soils and Bedrock Geology

The topography of the east portion of the site is relatively flat, with a topographical high of 110 mASL to a topographical low of 105 mASL along Bank Street. The topography of the west half of the site has been heavily altered through on-going aggregate extraction activities. The topography of the west side varies throughout from a topographical high of 108 mASL to a topographical low of 100 mASL.

A single topographical landform, as mapped by Chapman and Putman (1984) is described on the subject property, sand plains of the Russell and Prescott Sand Plains physiographic region.

The Ontario Geological Survey (OGS, 2019) identifies two surficial soil units on the subject property, till and glaciofluvial deposits. Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain occurs throughout the northeast corner of the property. Glaciofluvial deposits, comprised of river deposits and delta topset facies occurs throughout the remainder of the property. Two beach ridges and near shore bars are mapped along the north and south central property lines, with only a small portion of the ridge extending onto the property.

Bedrock on the site consists of the Beekmantown Group comprised of dolostone and sandstone.

3.4 Surface Water, Groundwater and Fish Habitat

Surface water features on-site consists of the John Boyce Municipal Drain (JBMD) that bisects the east portion of the property, along with the existing aggregate pond, associated watercourse along the south property boundary and flood plain. The JBMD is identified as a Class D drain from the Department of Fisheries and Oceans (DFO). DFO Class D drains are identified as those with permanent flow, with fall or combination spring/fall fish spawners present.

In addition to the JBMD, two headwater drainage features (HDF) were identified on-site. One, occurring in the west end of the property, connecting various aggregate ponds, and the second on the east side of the property connecting the aggregate pond to the JBMD.

As identified by GeoOttawa mapping and the SNC geoportal, portions of the 1:100 year floodplain for the JBMD occur on-site.

A fisheries assessment was not conducted as part of this EIS, however based on observations made during the field investigations, the municipal drain, aggregate pond and HDFs on-site provide fish habitat for cyprinids and other small-bodied fish species.

Groundwater investigations were not completed in support of this EIS.

3.4.1 Headwater Drainage Feature Assessment

A headwater drainage feature assessment (HDFA) was conducted for all watercourses on-site. The John Boyce Municipal Drain is labelled as H1and the second HDF is labelled as H2 on Figure A.2 in Appendix A.

The JBMD originates 250 m north of the property, flowing from the forest and flows in a southerly direction for approximately 305 m on-site before exiting the property along the southeastern property boundary. Off-site, the JBMD flows for approximately 4.84 km in a southeasterly direction before discharging into Findlay Creek.

H2 originates within the open water southwest of the property and flows in a northeasterly direction for approximately 41 m before discharging into open water on-site. H2 then flows from the open water and continues in an easterly direction for approximately 64 m before discharging into H1 (JBMD).

The full HFDA report, including methodologies and results field investigations is provided in Appendix D. A brief summary of the results is discussed in Section 4.7.

3.5 Vegetation Communities

Vegetation communities on-site were confirmed by GEMTEC on July 29, 2024, following protocols utilized in the Southern Ontario Ecological Land Classification System (Lee et al., 2008). Vegetation at the site represents a mosaic of deciduous woodlands, commercial development

and active extraction activities. Table 3.1 below provides a summary of the various vegetation communities identified on-site while Figure A.3 in Appendix A provides an illustration of the various vegetation communities.

Table 3.1 Vegetation Communities On-site

ELC Community	Description	Size (ha)
Dry-Fresh Poplar Deciduous Forest (FODM3-1)	This community occurred throughout the east portion of the property and was dominated by trembling poplar (*Populus tremuloides*). Lesser constituents included white birch (*Betula papyrifera*), Manitoba maple (*Acer negundo*), American elm (*Ulmus americana*), American basswood (*Tilia americana*), sugar maple (*Acer saccharum*), eastern cottonwood (*Populus deltoides*), honey locust (*Gleditsia triacanthos*), green ash (*Fraxinus pennsylvanica*), black walnut (*Juglans nigra*), Scots pine (*Pinus sylvestris*), eastern white cedar (*Thuja occidentalis*) and butternut (*Juglans cinerea*) in the canopy layer. The sub-canopy was primarily populated by green ash, common buckthorn (*Rhamnus cathartica*), honeysuckle species (*Lonicera sp.*), viburnum (*Viburnum sp.*), staghorn sumac (*Rhus typhina*), apple species (*Malus sp.*), willow species (*Salix sp.*), gooseberry (*Ribes sp.*) and eastern white cedar saplings. The herbaceous layer contained sensitive fern (*Onoclea sensibilis*), colts foot (*Tussilago farfara*), spotted joe pie weed (*Eutrochium maculatum*), common milkweed (*Asclepias syriaca*), spotted touch me not (*Impatiens capensis*), horsetail species (*Equisetum sp.*), thistle species (*Cirsium sp.*) and green ash saplings. Butternut, a plant species at risk, was observed in this community.	4.07
Light Industry (CVC_2)	Occurring in the central east portion of the property is on-going commercial business.	2.86
Extraction (CVC_4)	Occupying the west half of the property is an active aggregate extraction operation. The shrub layer around the pit included white birch, willow species and honeysuckle species. The herbaceous layer contained queen anne's lace (*Daucus carota*), goldenrod species (*Solidago sp.*), black eyed susan (*Rudbeckia hirta*), viper's bugloss (*Echium vulgare*), cinquefoil (*Potentilla sp.*), buttercup (*Ranunculus sp.*), red clover (*Trifolium pratense*), blader campion (*Silene vulgaris*), common milkweed, colts foot, cattail species (*Typha sp.*), horsetail species, purple loosestrife (*Lythrum salicaria*) and rushes (*Juncaceae sp.*).	7.21

3.6 Wildlife

Wildlife observed on-site and within the study area during field investigations completed in 2024 are summarized in Table C.1 in Appendix C.

4.0 NATURAL HERITAGE FEATURES

Natural heritage features are defined in the PPS as "features and areas, including *significant wetlands, significant coastal wetlands, fish habitat, significant woodlands* south and east of the Canadian Shield, *significant valleylands* south and east of the Canadian shield, *significant habitats of endangered species and threatened species, significant wildlife habitat* and *significant areas of natural and scientific interest*, which are important for their environmental and social values as a legacy of the natural landscape of an area".

4.1 Significant Wetlands

As described in the Natural Heritage Reference Manual (OMNR, 2010), wetlands mean "lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface." While *significant* in regards to wetlands means "an area identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time."

No provincially significant wetlands were identified during the desktop review, nor were they identified on-site. Furthermore no unevaluated wetlands have been identified on-site. As no PSW's or unevaluated wetlands are present on-site or within the study area they are not discussed or evaluated further in this EIS.

4.2 Significant Woodlands

Significant woodlands are defined in the natural heritage reference manual (OMNR, 2010) as "an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history."

At the local scale, significant woodlands are defined and designated by the local planning authority. Generally, most planning authorities have defined significant woodlands as any woodland that contains any of the four criteria listed in Section 7.2 of the natural heritage reference manual (OMNR, 2010), including: woodland size, ecological functions, uncommon characteristics and economic and social functional values. Furthermore, the City of Ottawa provides a supplementary document *Significant Woodland: Guidelines for Identification, Evaluation, and Impact Assessment* (Ottawa, 2022) to evaluate woodlands and ensure compliance with the city's policies.

As outlined in *Significant Woodlands: Guidelines for Identification, Evaluation and Impact Assessment* (Ottawa, 2022), rural area woodlands are to be identified and evaluated using all the natural heritage resource manual (OMNR, 2010) criteria. Table C.2 in Appendix C, presents the screening rationale for significant woodlands applied in this EIS. For comparison of woodland criteria used in Table C.2, it is assumed that the woodland coverage within the planning area (City

of Ottawa – Rural Planning Area – Castor River) is between 25% and 30% of the land area, therefore the minimum woodland size for determining significance is 20 ha or greater, based on the guidance outlined in the natural heritage reference manual (OMNR, 2010).

Following review of Table C.2 in Appendix C, significant woodlands are present on-site due to their size and proximity to the JBMD. Significant woodlands are illustrated on Figure A.4 in Appendix A. Impacts to significant woodlands from the proposed development are discussed in Section 6.

4.3 Significant Valleylands

Valleylands are defined in the natural heritage reference manual (OMNR, 2010) as 'a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of time". The identification and evaluation of significant valleys lands in Ontario is based on the recommended criteria from the MNRF and is the responsibility of local planning authorities.

In Southern Ontario, conservation authorities have identified valleylands as part of their regulation mapping (i.e., floodplain mapping); however, where valleys lands have not been defined, their physical boundaries are generally determined as the 'top-of-bank' or 'top-of-slope' associated with a watercourse. For less well-defined valleys, the physical boundary may be defined by riparian vegetation, flooding hazard limits, ordinary high water marks or the width of the stream meander belt (OMNR, 2010).

To be considered significant within the Ottawa planning area, valleylands must have a slope greater than 15% for a length of more than 50 m, with water present for some period of the year.

Based on a review of topographical surveys completed for the subject property, the valleylands on-site do not meet the minimum slope criteria of greater than 15% for a length of more than 50 m. As such, significant valleylands are not present on-site and they are not discussed or evaluated further in this EIS.

4.4 Flood Plain

While significant valleylands were not identified on-site during the desktop review or during the field investigations, portions of the 1:100 year flood plain for the JBMD, as discussed in Section 1.4 and 3.4 above, have been identified on-site, as identified by the SNC and GeoOttawa mapping. In accordance with City of Ottawa and SNC policies, no development is permitted within the 1:100 year flood plain.

Impacts to the 1:100 year flood plain are discussed in Section 6 below.

4.5 Significant Areas of Natural and Scientific Interest

The MNRF identifies two types of areas of natural and scientific interest (ANSI) in Ontario: life sciences ANSIs typically represent significant segments of Ontario's biodiversity and natural landscapes, while earth science ANSIs typically represent significant examples of bedrock, fossils or landforms in Ontario (OMNR, 2010).

No ANSI have been identified on-site or adjacent to the site during the desktop review or during site investigations. Therefore, ANSI are not discussed or evaluated further in this EIS.

4.6 Significant Wildlife Habitat

The natural heritage reference manual (OMNR, 2010), in combination with the significant wildlife habitat technical guide (MNRF, 2000) and the significant wildlife habitat ecoregion criterion schedules (MNRF, 2015) were used to identify and evaluated potential significant wildlife habitat on-site. The significant wildlife habitat is broadly categorized as habitats of seasonal concentration of animals, rare vegetation communities, specialized habitats for wildlife, habitats of species of conservation concern and animal movement corridors. Table C.3, C.4, C.5 and C.6 in Appendix C, provide the screening rationale for each category of significant wildlife habitat, respectively.

4.6.1 Habitats of Seasonal Concentrations of Animals

Seasonal concentration areas are habitats where large numbers of species congregate at one particular time of the year. The significant wildlife habitat technical guides (OMNR, 2000) and significant wildlife habitat ecoregion criterion schedules (OMNRF, 2015a) identify 12 types of seasonal concentration habitats that may be considered significant wildlife habitat. These 12 types of seasonal habitat are presented in Table C.3 in Appendix C, including a brief description of the rationale as to why they are or are not assessed further in this EIS.

Following review of Table C.3 in Appendix C, no habitats of seasonal concentrations of animals have been identified on-site, as such they are not discussed or evaluated further in this EIS.

4.6.2 Rare Vegetation Communities

Rare vegetation communities in the province are described generally as those with an S1 to S3 ranking by the NHIC, and typically include communities such as sand barrens, alvars, old growth forests, savannahs and tallgrass prairies.

The vegetation communities identified on-site and described in Section 3.4 of this report are not ranked by the NHIC as S1, S2 or S3 and are therefore not considered to be rare vegetation communities. As such, rare vegetation communities are not discussed or evaluated further in this EIS.

4.6.3 Specialized Habitats for Wildlife

Specialized wildlife habitats are microhabitats that provide a critical resource to some groups of wildlife. The significant wildlife habitat technical guide (OMNR, 2000), defines eight specialized habitats that may constitute significant wildlife habitat, these eight types of specialized wildlife habitats are evaluated in Table C.4 in Appendix C.

Following review of Table C.4 in Appendix C, one specialized habitats for wildlife has been identified on-site or within the study area, woodland amphibian breeding habitat.

4.6.3.1 Woodland Amphibian Breeding Habitat

Candidate woodland amphibian breeding habitat was identified on-site in association with the aggregate pond located at the west side of the property. Amphibian breeding surveys were outside of the scope of this EIS, as such the presence or absence of woodland amphibian breeding habitat was not confirmed for the site.

Potential impacts to woodland amphibian breeding habitat from the proposed project are discussed in Section 6 below.

4.6.4 Habitats of Species of Conservation Concern

Provincial rankings are used by the Natural Heritage Information Centre to set protection priorities for rare species, similar to those described in Section 4.5.2 above for vegetation communities. Provincial rankings (S-ranks), are not legal designations such as those used to define the various protection statuses of species at risk, they are only intended to consider factors within the political boundaries of Ontario that might influence a particular species abundance, distribution or population trend.

Based on the guidance provided in the Significant Wildlife Habitat Ecoregion Criterion Schedules (MNRF, 2015), when a plant or animal element occurrence is recorded for any species with an S-rank of S1 (extremely rare), S2 (very rare), S3 (rare to uncommon) or SH (historically present), the corresponding vegetation ecosite is considered to provide *candidate* habitat for species of conservation concern and further consideration within the EIS is warranted.

The Significant Wildlife Habitat Ecoregion Criterion Schedules (OMNRF, 2015), provides five general habitat types known to support a wide range of species of conservation concern in Ontario. The five general habitat types for Ecoregion 6E-11 are provided in Table C.5 in Appendix C, including a brief rationale as to why they are or are not considered further in this EIS.

Following review of Table C.5 in Appendix C, one habitat of species of conservation concern has been identified on-site, habitat for special concern and rare wildlife species for barn swallow, eastern wood-pewee, wood thrush and snapping turtle.

4.6.4.1 Special Concern and Rare Wildlife Species SWH

Based on observation data from the field investigations combined with occurrence data from various online databases (i.e., NHIC, Ontario Breeding Bird Atlas, Ontario HerpAtlas), four species of special concern have been identified on-site or within the broader study area: barn swallow, eastern wood-pewee, wood thrush and snapping turtle. No other species of special concern or rare wildlife species were identified on-site or within the broader study area.

Barn Swallow

Barn swallow is a medium-sized songbird with an S-rank of S4B (breeding is uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated a significant decline of 60% between the start of the first atlas and the end of the second atlas with a steady significant annual decline of 3.5% in Ontario (Cadman et al, 2007). Barn swallow is often found in close association with humans, using man-made structures, such as barns, to supplement suitable nesting sites and foraging over open areas, such as grasslands and agricultural fields. Barn swallow was observed foraging on-site during field investigations. No nests were observed during field investigations. Given the mosaic of open habitat on-site and the observation, there is a high potential of barn swallow or suitable foraging habitat to occur on-site.

Eastern Wood-pewee

The eastern wood-pewee is a small flycatcher bird with an S-rank of S4 (uncommon but not rare) in Ontario; the most recent Ontario Breeding Bird Atlas indicated that the eastern wood-pewee has a probability of occurrence of over 80% (Cadman et al, 2007). Furthermore, the national capital region is considered to have some of the highest density of wood-pewee in Ontario, indicating a stable, healthy population (Cadmen et al, 2007). Eastern wood-pewee is a woodland species that is often found near clearings and edges. Eastern wood-pewee was observed on-site during field investigations. Given the mosaic of woodland and open habitat on-site, the eastern wood-pewee's affinity for clearings and edges and the observation, there is a high chance of eastern wood-pewee or suitable habitat to occur on-site.

Wood Thrush

The wood thrush is a medium-sized songbird with an S-rank of S4 (uncommon but not rare) and is listed as a species of special concern in Ontario. The most recent Ontario Breeding Bird Atlas indicated that the wood thrush populations in Ontario have shown a significant annual increase of 4.4% between the first and second atlas (Cadman et al., 2007). The NHIC has identified historic observations for the subject property and surrounding study area. Wood thrush is a woodland species often found in moist, deciduous hardwood or mixed forests stands, with dense deciduous undergrowth and tall trees. Wood thrush was observed on-site during field investigations. Given the availability of forest habitat within the study area, and the observation, there is a high chance of wood thrush or suitable habitat to occur on-site.

Snapping Turtle

The snapping turtle is a highly aquatic turtle species with an S-rank of S3 (rare to uncommon) in Ontario. The NHIC identified the snapping turtle as having historically occurred within 1 km of the site. Snapping turtles are aquatic generalists, found in a variety of wetlands, water bodies and watercourses. The watercourses and flood plain on-site may provide suitable habitat conditions for snapping turtle. Snapping turtle was observed on-site during field investigations. Given the availability of potentially suitable aquatic habitat on-site, and the observation there is a high potential for snapping turtle and its habitat to occur on-site.

4.6.5 Animal Movement Corridors

Animal movement corridors are elongated areas used by wildlife to move from one habitat to another and allow for the seasonal migration of animals (OMNRF, 2015). The Significant Wildlife Habitat Ecoregion Criterion Schedules for Ecoregion 6E-11 (OMNRF, 2015), identifies two types of animal movement corridor: amphibian movement corridors and deer movement corridors. As per guidance presented in MNRF, 2015, animal movement corridors should only be identified as significant wildlife habitat when a *confirmed or candidate* significant wildlife habitat has been identified by the MNRF district office or by the regional planning authority.

Following review of Table C.6 in Appendix C, no animal movement corridors have been identified on-site. Furthermore, the MNRF has not identified any animal movement corridors on the publicly available data sets for wildlife values area (OMNRF, 2023a) or wildlife values site (OMNRF, 2023b). As such, animal movement corridors are not discussed or evaluated further in this EIS.

4.7 Fish Habitat

The protection of fish and fish habitat is a federal responsibility and is administered by the Department of Fisheries and Oceans Canada (DFO). Fish habitat as defined in the Fisheries Act (Canada, 1985) means, “spawning grounds and nursery, rearing food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

When development is unable to avoid resulting in the harmful alteration, disturbance or destruction of fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under the Fisheries Act is required for the project to proceed.

As discussed in Section 3.4, the JBMD, aggregate pond and associated watercourse are assumed to provide fish habitat for a variety of small-bodied, warm-water fish species.

No critical habitat for aquatic SAR has been identified within the subject area or any HDF present on-site.

Fish habitat is illustrated on Figure A.5 in relation to other site features. Impacts to fish habitat on-site are discussed in Section 6.

4.8 Headwater Drainage Features

As indicated above in Section 2.2.2, a headwater drainage feature assessment was completed as part of this EIS. The HDFA is presented in full, in Appendix D; the results of the HDFA identified the JBMD and one additional HDF on the subject site. HDF are illustrated on Figure A.2.

Assessment of the contribution of each HDF to downstream fish habitat was completed using the Evaluation, Classification and Management of Headwater Drainage Features Guideline (2014) jointly developed by Toronto Region Conservation Authority and Credit Valley Conservation Authority and endorsed regionally by Conservation Partners.

Using the linking classification to management flow chart provided by the TRCA and CVC (2014), illustrated in Figure 4.1 below, the characteristics of the on-site HDF were used to determine management recommendations presented in Section 7.

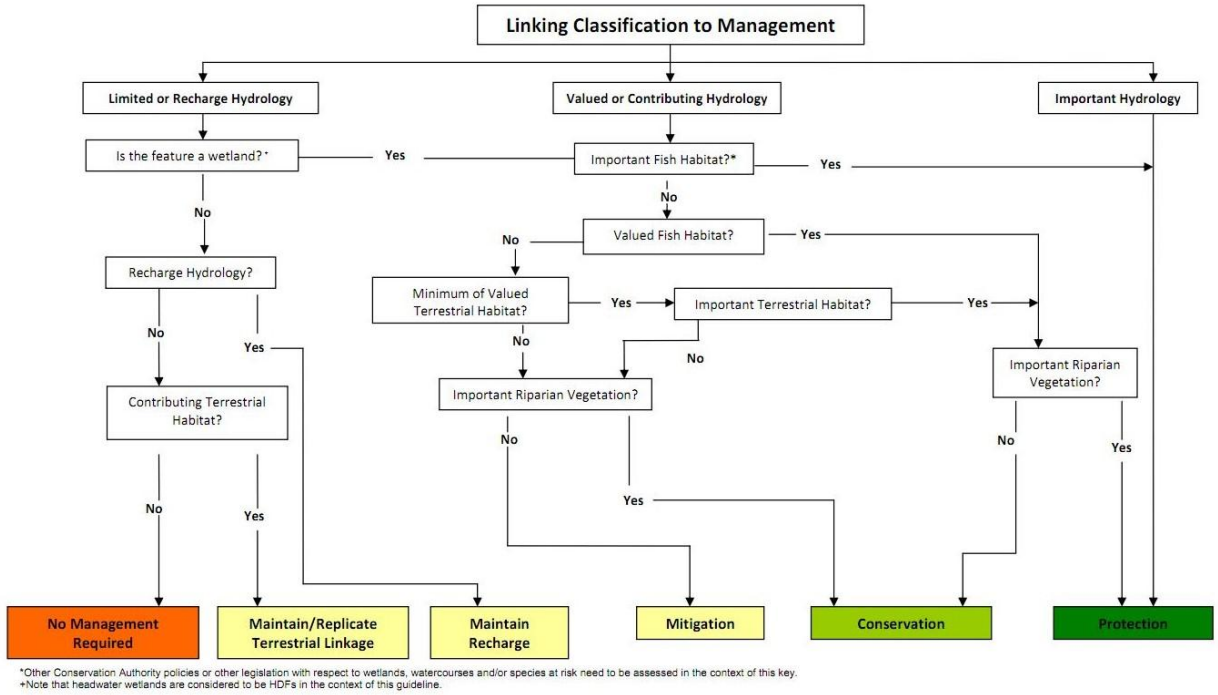

Figure 4.2 Flow Chart Providing Directions of Management Option's (TRCA/CVC, 2014)

4.9 Species at Risk

The probability of occurrence for species at risk to occur on-site and within the broader study area was determined through the desktop review stage of this EIS, as described in Section 2.1, and through the site specific surveys conducted as part of this EIS, outlined in Section 2.2.

Table C.7 in Appendix C, provides a summary of all species at risk which were determined to have the potential to occur on-site or within the broader study area, their protection status under the provincial Endangered Species Act (Ontario, 2007), their regional distribution, their probability of occurrence and a brief rationale of that probability. Impacts to endangered or threatened SAR determined to have a moderate or high potential to occur on-site or within the broader study area are discussed further in the Section 6.

5.0 PROPOSED PROJECT

The proposed project assessed for potential impacts on the natural heritage features determined to be present within the broader study area is a proposed zoning amendment and site plan control application. No new buildings, businesses or construction are proposed for the property. Minor grading and site alteration are anticipated to construct the proposed stormwater management pipe and outlet on-site..

As no development is proposed for the project, future components of the project will generally be limited to improving on-going operations associated with the existing aggregate lands and commercial business operating on-site. This may include grading and fill placement to enhance site servicing, improvements to drainage and stormwater control and landscaping activities. Excavation and foundation pouring, construction of new dwellings are not anticipated or proposed as part of the zoning amendment or site plan control application. Impacts assessed in Section 6 will include: grading and fill placement, and general landscaping activities.

6.0 IMPACT ASSESSMENT

Potential impacts to natural heritage features on-site and within the broader study area are assessed for direct, indirect and cumulative effects based on the proposed project outlined in Section 5. Natural heritage features identified in Section 4 of this report as present or likely to be present are discussed in the subsections below.

As the proposed project does not include any new building construction or development, impacts from the proposed zoning amendment and site plan control application are anticipated to be consistent with the on-going commercial business and aggregate land operations pre-established on the property. No changes in impervious surfaces, stormwater generation, sedimentation, erosion, or noise generation are anticipated as a result of the proposed project.

Potential impacts to the natural environment from the proposed landscaping outlined in Section 5 include: temporary alterations to water quality due to nutrient and sediment loading, encroachment of adjacent surface water features and trampling.

6.1 Significant Woodlands

As discussed in Section 4.2, the woodlands on-site are considered significant due to their size and proximity to the JBMD. The proposed zoning amendment and site plan control application is not anticipated to negatively impact the significant woodlands on-site. Impacts related to temporary encroachment, revegetation and enhancement associate with the proposed landscaping are not anticipated to negatively impact significant woodlands on-site. There will be no new building development and no footprint changes to existing buildings.

As such no mitigation measures are provided in Section 7 for the protection of significant woodlands and they are not discussed or evaluated further in this EIS.

6.2 Flood Plain

As discussed in Section 4.4, the 1:100 year floodplain is present on-site as mapped by the SNC and City of Ottawa.

In accordance with SNC and City of Ottawa policies, no development is permitted within the 1:100 year floodplain. Figure A.4 illustrates the 1:100 year floodplain, demonstrating that the project will occur outside of the 1:100 year floodplain. Minor landscaping will only occur within the 1:100 year floodplain where necessary to accommodate the City requested landscaping plan and any riparian enhancements required inn Section 7.

Potential direct impacts to the flood plain on-site are primarily associated with general landscaping resulting in encroachment and compaction of soils.

As there will be no changes to the pre-existing development other potential impacts such as short duration construction impacts, including: heavy machinery encroachment, fill placement, and long-term human disturbance such as noise generation, dumping of refuse and trampling are not anticipated to increased.

Avoidance and mitigation measures to protect the flood plain are provided in Section 7.

6.3 Significant Wildlife Habitat

The potential presence of significant wildlife habitat (SWH) on-site and within the study area was evaluated in Section 4.5. As a result of this assessment two significant wildlife habitats were determined to be present on-site or within the study area; woodland amphibian breeding habitat and special concern and rare wildlife species SWH.

Potential impacts to each type of SWH are discussed in greater detail in the following subsections, while mitigation measures intended to prevent such impacts are presented in Section 7.

6.3.1 Woodland Amphibian Breeding Habitat

Candidate woodland amphibian breeding habitat is confined to the aquatic habitat associated with the aggregate pond and the surrounding forested areas. Based on the description provided in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015), woodland amphibian habitat is considered to be the wetland, pond or woodland pond, plus a 230 m radius of surrounding woodland area. *Candidate* woodland amphibian breeding habitat corresponds with the existing aggregate pond and adjacent woodlands on-site.

As no in-water work and no woodland impacts is proposed as part of the project, potential impacts to *candidate* woodland amphibian breeding SWH are anticipated to be associated with indirect impacts to woodland and wetland habitat. Indirect impacts to woodland and wetland habitat resulting from landscaping practices may include temporary heavy machinery encroachment, fill placement, trampling and alterations to water quality due to nutrient and sediment loading caused by vegetation management and revegetation.

As there will be no changes to the pre-existing development other potential impacts such as long-term human disturbance such as noise generation and dumping of refuse are not anticipated to increase.

Mitigation measures are provided in Section 7 for the protection of *candidate* woodland amphibian breeding SWH.

6.3.2 Habitats of Special Concern and Rare Wildlife Species SWH

Barn Swallow

Barn swallows typically build their nests out of mud on ledges or walls on barns or other human made structures. Natural sites, including cliffs and caves are rarely used for nesting (Cadman et

al., 2007). Foraging occurs over open areas such as fields and ponds. Barn swallows are less common in highly urban area and areas with higher forest cover (Cadman et al., 2007). Barn swallow are listed as a species of special concern in Ontario.

Barn swallow were observed foraging on-site over the extraction pond during the field investigations. No nests were observed on-site. No development is proposed as part of this project and no suitable barn swallow nesting habitat occurs on-site. As such, no negative impacts are anticipated to occur to barn swallow as a result of the proposed project and no mitigation measures area provided in Section 7 for the protection of barn swallow and they are not discussed or evaluated further in this EIS.

Eastern Wood-Pewee

Eastern wood-pewee (*Contupus virens*) lives in a variety of deciduous, mixed and to a lesser extent, coniferous woodland habitat (COSEWIC, 2012a). In Ontario, the eastern wood-pewee is listed as a species of special concern.

Impacts to eastern wood-pewee and their habitat on-site from the proposed project is limited to the forest habitat on-site (ELC code FODM3-1 on Figure A.3), which may provide suitable nesting and foraging habitat. Impacts to woodlands on-site are limited to temporary impacts related to revegetation and enhancement plantings for landscaping. As such impacts to eastern wood-pewee are anticipated to be temporary and minor. .

Mitigation measures intended to prevent negative impacts to nesting and foraging eastern wood-pewee are presented in Section 7.

Wood Thrush

During the breeding season, the wood thrush is found in moist, deciduous hardwood or mixed forest stands, often in previously disturbed sites with dense, deciduous undergrowth and tall trees that are used as singing perches (COSEWIC, 2012b). Wood thrush is listed as a species of special concern in Ontario.

Impacts to wood thrush and their habitat on-site from the proposed project are limited to the forest habitat on-site (ELC code FODM3-1 Figure A.3), which may provide suitable nesting and foraging habitat. Impacts to wood thrush and wood thrush habitat resulting from landscaping practices may include the alteration of forest habitat.

Mitigation measures intended to prevent negative impacts to nesting and foraging wood thrush are presented in Section 7.

Snapping Turtle

Snapping turtle is the largest freshwater turtle found in Canada, occupying a variety of permanent aquatic habitats including lakes, ponds and rivers. In Ontario the snapping turtle is listed as a species of special concern.

Snapping turtle observations were provided by the NHIC within 1 km of the subject property. Snapping turtle was observed on-site during the field investigations.

As no in-water work is proposed as part of the project, potential impacts to snapping turtle and their habitat are anticipated to be temporary and indirect in nature. Potential indirect impacts resulting from landscaping practices may include temporary heavy machinery encroachment, fill placement, trampling and increased human-wildlife interaction, particularly during nesting season when turtles are more transient. However, impacts are anticipated to be negligible when considering the scope of the project and abundance of habitat available on the subject property.

As there will be no changes to the pre-existing development other potential impacts such as long-term human disturbance such as noise generation and dumping of refuse are not anticipated to be increased.

Mitigation measures to protect snapping turtle and their habitat from the proposed development are presented in Section 7.

6.4 Fish Habitat

According to the Provincial Policy Statement (MMAH, 2020), “development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.” Fish habitat as defined in the Fisheries Act (Canada, 1985) means “spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.”

The Fisheries Act states that work must avoid “the harmful alteration, disruption or destruction (HADD) of fish habitat” (Canada, 1985). When activities are unable to avoid or mitigate HADD to fish or fish habitat from typical project impacts such as temperature change, sedimentation, infilling, reduction of nutrient and food supply, etc., an authorization under Subsection 35 (2) of the Fisheries Act is required for the project to proceed without contravening the Act.

As discussed in Section 3.4 and 4.7, the JBMD, aggregate pond and associated HDF are assumed to provide fish habitat for a variety of small-bodied, warm-water fish species.

As no in-water work is anticipated as part of the proposed project and given that there will be no changes in grading, impervious surfaces or development on the site, impacts are anticipated to be minimal, mostly indirect and temporary in nature.

Potential indirect impacts to surface water features resulting from landscaping activities may include temporary overland flow and concomitant sediment transport caused by vegetation management and revegetation practices.

Mitigation measures, intended to protect fish and fish habitat from negative impacts are presented in Section 7.

6.5 Headwater Drainage Features

As per the proposed project, no in-water work is anticipated and given that there will be no changes in grading, impervious surfaces or development on the site, impacts are anticipated to be minimal, mostly indirect and temporary in nature.

As such, the HDF segments designated protection will be able to be afforded complete mitigation measures as per TRCA/CVC guidance. To maintain the ecological functions associated with fish habitat, it is recommended that future stormwater management systems be designed and constructed to avoid impacts to the features.

Mitigation measures, intended to protect baseflow conditions of the site and the ecological functions of the HDFs are provided below in Section 7.

6.6 Species at Risk

As outlined in the Endangered Species Act (Ontario, 2007), only species listed as threatened or endangered and their general habitat receive automatic protection. When a species-specific recovery strategy is developed, a specific habitat regulation will be established, which eventually replaces the automatic habitat protection. Species of special concern and their habitat do not receive protection under the ESA.

Potential impacts associated with the proposed project to threatened or endangered species identified as having a moderate or high potential to occur on-site in Section 4.8, are discussed on a species-by-species basis in the subsections below.

6.6.1 Eastern Small-footed Myotis

Eastern small-footed myotis (*Myotis leibii*) is the smallest (typically 3-5 g), insectivorous bat found in Ontario. The fur of an eastern small-footed myotis is golden-brown in colour, with a distinct black mask across the face. The eastern small-footed myotis is very similar in appearance to the little brown myotis, and is distinguishable by their small foot and keeled calcar (Fraser, MacKenzie & Davy, 2007).

The eastern small-footed myotis is found throughout eastern North America. In Ontario the species has been observed in the areas sough of Lake Superior across to the Ontario-Quebec border (Humphrey, 2017).

Eastern small-footed myotis overwinter primarily in caves and abandoned mines with low humidity and temperatures and stable microclimates (Humphrey, 2017). In comparison to other Ontario bat species, they are able to tolerate much colder temperatures, drier conditions and draftier locations for hibernating (Humphrey, 2017). During the spring and summer months, they utilize a variety of habitats for roosting, including under rocks or rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees (Ontario, 2021a).

While the on-site forest habitat is unlikely to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for eastern small-footed myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to eastern small-footed myotis are primarily associated with encroachment and habitat loss. Mitigation measures intended to protect eastern small-footed myotis from impacts of the proposed project are discussed in Section 7.

6.6.2 Little Brown Myotis

Little brown myotis (*Myotis lucifugus*) is a small (typically 4-11 g), insectivorous bat. The fur of a little brown myotis is bi-coloured; fur is a glossy brown with a darker coloured base. The tragus of the little brown myotis is long and thin, with a rounded tip (Fraser, MacKenzie & Davy, 2007).

In Canada, little brown myotis' occur throughout all of the provinces and territories (except Nunavut), with its range extending south through the majority of the United States as well. In Ontario, the little brown myotis is widespread in southern Ontario and has been found as far north as Moose Factory and Favourable Lake (Ontario, 2021b).

Little brown myotis overwinter in caves and abandoned mines, they require highly humid conditions and temperatures that remain above the freezing mark (Ontario, 2021b). During the summer months, maternity colonies are often located in buildings or large-diameter trees. Little brown myotis roost in trees and buildings. Foraging occurs over water and along waterways, forest edges and in gaps in the forest. Open fields and clear-cuts are not typically utilized for foraging (COSEWIC, 2013b).

While the on-site forest habitat is unlikely to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for little brown myotis to occur on the property, primarily for foraging or non-maternal roosting. Impacts to little brown myotis are primarily associated with encroachment and habitat loss. Mitigation measures intended to protect little brown myotis from impacts of the proposed project are discussed in Section 7.

6.6.3 Tri-colored Bat

Tri-colored bat (*Perimyotis subflavos*) is a small (typically 5-7 g), insectivorous bat. The fur is uniformly coloured on the ventral and dorsal sides, however when parted fur shows three distinct colour bands. The base of the hair is blackish, with a blonde middle and brownish tip. The snout

of the tri-coloured bat is also distinct, with swollen bulbous glands present (Fraser, MacKenzie & Davy, 2007).

In Canada, the tri-colored bat has only been recorded in southern parts of Nova Scotia, New Brunswick, Quebec and central Ontario. In Ontario it occurs primarily from the southern edge of Lake Superior across to the Ontario-Quebec border and south (COSEWIC, 2013).

Tri-colored bat overwinter in in caves or mines, and have very rigid habitat requirements; they typically roosting the deepest parts where temperatures are the least variable, and have the strongest correlation with humidity levels and warmer temperatures (COSEWIC, 2013). In the spring and summer, tri-colored bat utilize trees, rock crevices and buildings for maternity colonies. Foraging is mainly done over watercourses and streamside vegetation (COSEWIC, 2013).

While the on-site forest habitat is unlikely to support bat maternity colonies, given the availability of habitat and buildings on-site and within the study area, there is a potential for tri-colored bat to occur on the property, primarily for foraging or non-maternal roosting. Impacts to tri-colored bat are primarily associated with encroachment and habitat loss. Mitigation measures intended to protect tri-colored bat from impacts of the proposed project are discussed in Section 7.

6.6.4 Butternut

Butternut (*Juglans cinerea*) is a short lived, medium-sized tree that can reach up to 30 m in height. Butternut is easily recognized by its compound leaves, made up of 11 to 17 leaflets, each 9 to 15 centimetres long, arranged in a feather-like pattern. The bark is grey and smooth in younger trees, and becomes rigid with age. Butternut is a member of the walnut family and produces edible nuts in the fall.

The range of butternut trees in Canada extends from southern Ontario into southern Quebec and New Brunswick (COSEWIC, 2003). It is shade intolerant and prefers riparian habitats or sites with rich, moist, well-drained loams and gravels with limestone origin. Common associates for butternut include: basswood, black cherry, beech, black walnut, elm, hickory, oak, red maple, sugar maple, yellow poplar, white ash and yellow birch.

Two butternut trees were observed on the subject property during the field investigations. The location of the butternut trees are illustrated on Figure A.4 in Appendix A. Based on the location of the butternut trees, there is no proposed development or existing disturbance occurring within 25 m of the butternut on-site. If any disturbance is to occur within a 25 m radius of the butternut trees on-site, the trees will need to be assessed by a qualified professional and a Butternut Health Assessment (BHA) submitted to the Kemptville district Ministry of Environment, Conservation and Parks (MECP) office.

6.7 Cumulative Impacts

Cumulative impacts to the natural environment at the site due to increased human presence, increased wildlife and human interaction and increased noise, are expected to be negligible given that no additional development or change in operations is proposed for the site.

Cumulative impacts such as those listed above can be mitigated by implementing the proposed setbacks and recommended mitigation measures outlined in Section 7 below.

7.0 RECOMMENDED AVOIDANCE AND MITIGATION MEASURES

The following avoidance and mitigation measures have been recommended by GEMTEC in order to minimize or eliminate potential environmental impacts identified in Section 6.

For this report, a setback is defined as the minimum required distance between any structure, development or disturbance and a specified line. A buffer, for the purpose of this report, is defined as the area located between a natural heritage feature (NHF) and the prescribed setback. For the following subsections, buffers should be located between NHFs and lands subject to development or alteration, be permanently vegetated by native or non-invasive, self sustaining vegetation and protect the natural heritage feature against the impact of the adjacent land use.

Vegetated buffers, particularly buffers that are vegetated with a mix of grassy herbaceous vegetation and shrubby or woody vegetation are most effective in mitigating impacts associated with anthropogenic activities in adjacent lands (Beacon, 2012). Buffers recommended in the following subsections and illustrated on Figure A.5. In the subsections below, where possible, literature references for studies used as the basis of the recommended buffer widths are provided.

7.1 Flood Plain

No new development is proposed for this project, and all current development occurs outside of the 1:100 year floodplain. Figure A.5 in Appendix A illustrates a 15 m setback from the top of bank of the JBMD. Only work related to stormwater grading will occur within this 15 m setback.

7.2 Fish Habitat

No negative impacts on the integrity of fish habitat are anticipated as a result of the proposed project if all mitigation measures recommended below are enacted and best management practices followed. Fish habitat on-site can be protected against potential impacts of the proposed project through the implementation of a setback.

As outlined in the City of Ottawa Official Plan (2022), the minimum setback from a surface water feature shall be the development limits as established by a Council-approved watershed, sub-watershed, or environmental management plan. Where a council-approved watershed, sub-watershed or environmental management plan does not exist, or provides incomplete recommendations, the minimum setback shall be the greater of the following:

a. Development limits as established by the Conservation Authorities hazard limit, which includes the regulatory flood line, geotechnical hazard limit and meander belt;
b. Development limits as established by the geotechnical hazard limit, in keeping with Council-approved Slope Stability Guidelines for Development Applications;
c. 30 metres from the top of bank, or the maximum point to which water can rise within the channel before spilling across the adjacent land; or

d. 15 metres from the existing top of slope, where there is a defined valley slope or ravine.

The Official Plan further outlines that exceptions to the above policies will be considered by the City in consultation with the Conservation Authority in situations where development is proposed on existing lots where, due to the historical development in the area, it is impossible to achieve the minimum setback because of the size or location of the lot, approved or existing use on the lot or other physical constraint, provided the following conditions are met to the City's satisfaction:

a. The ecological function of the site is restored and enhanced, to the greatest extent possible, through naturalization with native, non-invasive vegetation and bioengineering techniques to mitigate erosion and stabilize soils; and
b. Buildings and structures are located, or relocated, to an area within the existing lot that improves the existing setback, to the greatest extent possible, and does not encroach closer to the surface water feature.

In consideration of the site-specific characteristics pertaining to the exception above, development on the existing lot of record provides a physical constraint for achieving the minimum setback distance of 30 m from top of bank, as outlined in the City of Ottawa Official Plan. Existing development of the site includes, an existing and actively used commercial building, parking lot, and storage yard, all occurring within the 30 m from top of bank setback.

With consideration to the above exemption, GEMTEC recommends implementation of a 15 m setback from the top of bank of the JBMD. In consultation with the City of Ottawa's Drainage Team and Environmental Planners, the Drainage Team "require a minimum 15 m setback (working space) from the top of bank along both sides of the drain to be kept free of all obstructions (plantings, berms, permanent structures, buildings, fences, bioswale, etc.) so we are able to access the Municipal Drain". Based on the above requirements of the City of Ottawa's Drainage Team, due to the nature and functional requirements of the municipal drain, in-stream plantings and/or in-water structure enhancements, or additional plantings within the 15 m setback are not feasible. Areas of existing disturbance (I.e. existing gravel areas) within the 15 m setback will have the gravel removed and the areas will be reinstated with 150 mm of topsoil and a native riparian seed mix.

In consideration of the City of Ottawa's official plan policies, GEMTEC offers the following site-specific considerations and ecological functions of each tributary to address the setback exceptions (point a above) for restoring and enhancing the ecological function as outlined in the City of Ottawa Official Plan, as summarized in Table 7.1 below.

Table 7.1 Summary of Tributaries Ecological Functions

City of Ottawa Official Plan Setback Ecological Function	Site-Specific Considerations
Slope and Bank Stability	The JBMD and HDF on-site are well defined surface water features with well defined banks and minimal to no evidence of erosion. No hazardous slopes, slope stability or bank stability hazards have been identified for the subject property. Existing vegetation within the proposed buffer provides stability and erosion prevention.
Natural Vegetation and Ecological Function of the Setback Area	The forest around JBMD and H2 will be preserved within the proposed tributary setbacks. Existing riparian vegetation within the woodlands on-site is comprised primarily of tree and shrub species, with a variety of forbs in the understory. Implementation of the 15 m setback from the top of bank will thereby preserve the majority of tree cover on-site.
Functions of the Waterbody and the Presence of the Floodplain	City of Ottawa floodplain mapping shows the floodplain of the JBMD on-site. The floodplain is captured by the proposed 15 m from the top of bank setback.
Fish Habitat	On-site, small-bodied fish species were observed in the JBMD and H2. While the JBMD is identified as a Class D drain by the DFO, fish habitat conditions on-site are limited in function and availability. The JBMD on-site is at the upper reaches of the watercourse and have been heavily influenced by historic and on-going aggregate work both on-site and upstream of site. Flow within the JBMD on-site is impacted by discharge from upstream aggregate pond outlets. No high-quality fish habitat, such as spawning beds or flooded grassy areas were observed. No in-stream vegetation or in-stream habitat such as log jams, undercut banks, etc. were observed within the JBMD or H2 on-site. Fish habitat within JBMD and H2 are well protected by the proposed setbacks of 15 m from the top of bank. Existing tree and vegetation within the 15 m setback provides shade and cooling to the habitat within the drain and provides riparian functions along the banks.

In consideration of the subject properties biophysical features and considerations outlined above, GEMTEC proposes a proposed setback of 15 m from the top of bank for the JBMD and H2 on-site.

As discussed above the 15 m buffer will be kept free of obstructions to allow for access to the JBMD for maintenance. Any existing disturbed areas within the 15 m setback will be reinstated, and in areas of disturbance 150 mm of Topsoil will be placed along with a native riparian seed mix to reinstate the areas and avoid obstructions for drain maintenance.

In accordance with the above, a proposed setback of 15 m from the top of bank for surface water features on-site is sufficient, as long as all the general mitigation measures outlined below are enacted.

General mitigation measures recommended for the protection of water quality and fish habitat include:

- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.
- No in-water work should occur. All in-water habitat features, including aquatic vegetation, natural woody debris and boulders should be left in their current locations in the near shore area. Riparian areas within the 15 m buffer should remain in a natural state.
- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any site of alteration adjacent to waterbodies.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks to prevent machinery encroachment and sediment transport.
- Erosion and Sediment Control (ESC) fencing is recommended at the limit of the site of alteration to reduce impacts to the adjacent watercourse. No construction activities (i.e. grading, equipment storage, vegetation removal, refueling, etc.) are to be completed beyond the limits of the ESC fencing.
- Schedule work to avoid wet, windy and rainy periods.
- Maintain erosion and sediment control measures until all disturbed ground has been permanently stabilized, suspended sediment has resettled, and runoff water is clear.
- Stabilize shoreline or banks disturbed by any project activity to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
- In order to protect fish habitat from contamination, all machinery must be maintained in good working condition and all machinery must be fueled a minimum of 30 m from the high watermark.
- Any temporary storage of aggregate material shall be set back from the water's edge by no less than 40 m and be contained by heavy-duty silt fencing.
- Maintain as much of the natural vegetation as possible within and around the construction project. Post-construction, degraded vegetation within the disturbed areas should be replaced by planting of native plant species, or seeded, as to prevent further soil erosion.

7.3 Headwater Drainage Features

As detailed in Appendix D, a headwater drainage feature assessment (HDFA) was completed and the John Boyce Municipal Drain, labelled as H1, and a second HDF, labelled as H2, were identified on-site. Recommended management for on-site HDFs was protection.

Following the classification guidance from TRCA/CVC, H1 and H2 are recommended for protection management. Protection management typically requires protecting or enhancing the existing features and its riparian zone corridor, maintaining the hydroperiod, incorporating shallow groundwater and base flow protection techniques (e.g. infiltration treatment), using natural channel design or wetland design techniques to restore or enhance existing habitat features, while realignment is not generally permitted, and the design and location of stormwater management systems are to avoid impacts to the features.

The 15 m setback presented in Section 7.2 to protect fish habitat on-site is sufficient to meet the management recommendations outlined above and protect H1 and H2 from development impacts.

7.4 Significant Wildlife Habitat

7.4.1 *Candidate* Woodland Amphibian Breeding Habitat

The 15 m setback presented in Section 7.2 above, to protect the flood plain and JBMD on-site is sufficient to protect core *candidate* woodland amphibian breeding habitat. Furthermore, the proposed setbacks ensure that surrounding forest cover is maintained, which is important for wildlife moving between habitats throughout the year.

To protect migrating amphibians associated with *candidate* breeding habitat on-site, exclusion fencing should be installed around areas of site alteration prior to commencing and remain in place until all work is completed to prohibit the movement of turtles and amphibians into the area.

7.4.2 Habitats of Species of Conservation Concern

7.4.2.1 Eastern Wood-Pewee and Wood Thrush

Impacts to eastern wood-pewee and wood thrush are primarily associated with habitat alteration, the 15 m setback presented above to protect the flood plain and John Boyce Municipal Drain on-site is sufficient to protect special concern and rare wildlife habitat from increased disturbance during site alteration. To minimize the impact of the proposed landscaping activities on eastern wood-pewee and wood thrush habitat, vegetation removal should occur outside the key breeding bird period (typically March 31 to August 31) as identified by Environment Canada for the protection of nesting and foraging eastern wood-pewee and to avoid contravention of the Migratory Bird Convention Act. If vegetation clearing activities must take place during the aforementioned timing window than a nest survey will be required.

Nesting surveys shall be completed by a qualified professional, be conducted no more than 48 hours prior to vegetation clearing and be repeated if removal takes more than 2 days. Vegetation with active nests may not be removed until the nesting period has past, or the nest becomes vacant.

7.4.2.2 Snapping Turtle

The 15 m setback presented above, to protect the flood plain and John Boyce Municipal Drain is sufficient to protect special concern and rare wildlife habitat (snapping turtle).

To further protect potential migrating reptiles, exclusion fencing shall be installed around the entire construction area for the proposed SWM pipe, earth berm and SWM outlet prior to commencing to prohibit the movement of reptiles into the construction area. Exclusion fencing must follow the protocols outlined in the Species at Risk Branch: Best Practices Technical Note: Reptile and Amphibian Exclusion Fencing Version 1.1 (MNRF, July 2013). Following the installation of exclusion fencing, the area of site alteration shall be swept daily by a qualified person (i.e. a trained/competent member of contractor staff). Exclusion fencing must be installed around the entirety of active landscaping areas to prevent the movement of wildlife into areas with active heavy machinery use.

Additionally, all stock piled material shall be covered with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.

7.5 Species at Risk

7.5.1 Eastern Small-footed Myotis, Little Brown Myotis & Tri-colored Bat

As no critical habitat (i.e. overwintering caves or crevasses, or maternity roosts) were identified on-site, in accordance with MECP best management practices, to protect roosting and foraging bats, tree removal and building/barn removal where required shall take place outside of the spring and summer active season (typically March 15 to November 30), when bats are more likely to be using forest habitat. If vegetation clearing cannot avoid the active season, the consultation with the MECP is needed to determined whether the project will require an authorization

To further protect bat species during vegetation removal, trees and vegetation (during the appropriate timing window) should be cleared in stages, working from the outer edge, in towards the centre, in order to provide wildlife time to migrate out.

In GEMTECs experience on similar development applications and consultation with the MECP for projects and properties of similar size and scale, the above mitigation/avoidance measures are sufficient to ensure no negative impacts to SAR bats. In eastern Ontario habitat is not a limiting factor, as such the MECP recommends the use of avoidance timing window for clearing of trees (>10cm in diameter) and building/barn removal in order to avoid impacts to SAR bat species. As

long as timing windows can be adhered to, the project will not impact SAR bats, and it is GEMTECs opinion that no further consultation with the MECP is required.

Should any components of the proposed project require tree clearing within between March 15 and November 30, further consultation with the MECP is required.

7.5.2 Butternut

As indicated in Section 6.4, two butternut trees, a plant SAR were identified on-site. While the zoning amendment, site plan control application and ongoing commercial operations is not anticipated to encroach on the 25 m setback of either butter, should any work be required to occur within the 25 m setback, a Butternut Health Assessment shall be completed by a certified Butternut Health Assessor and an Information Gathering Form submitted to the Kemptville district MECP office prior to any construction activity or disturbance on-site.

7.6 Wildlife

The following avoidance and mitigation measures are provided in effort to minimize impacts to on-site and off-site wildlife:

- While vegetation removal is not anticipated as a result of this proposed zoning amendment, to avoid the key breeding bird period, bat summer active season, and reptile and amphibian active season, vegetation removal if required, should occur outside of March 15 to November 30. The timing windows provides protection of migratory birds, roosting bats, migrating reptiles and amphibians and avoids contravention of the Migratory Bird Convention Act and Endangered Species Act. If vegetation clearing activities must take place during the timing window than a nest and roost survey shall be conducted by a qualified professional.
- Cover all stock piled material with a geotextile to prevent turtles from nesting in the material between May 1 and August 1 of any year.
- Should any species at risk be discovered throughout the daily operation on the business, the species at risk biologist with the local MECP district shall be contacted immediately and operations ceased to avoid any negative impacts to species at risk or their habitat until further direction is provided by the MECP.

7.7 Best Practice Measures for Mitigation of Cumulative Impacts

The following best management practice measures are provided for the mitigation of cumulative impacts resulting from general landscaping activities.

- To protect trees identified to be retained during landscaping, the Critical Root Zone (CRZ) should be identified and fenced. The CRZ is defined as 10 cm from the base of the tree for every centimetre in diameter of the tree trunk measured at breast height.

- Maintain as much permeable surface as possible in future development plans to minimize the generation of storm water runoff.
- Silt fencing should be installed along all setbacks to provide visual demarcation of the setbacks and to prevent machinery encroachment and sediment transport.
- Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized.
- In effort to offset the effect of potential vegetation clearing, consideration should be given to landscape planting with native tree species indicative of the Great Lakes – St. Lawrence Forest Region, such as white cedar, white spruce, red maple and red oak.

8.0 CONCLUSIONS

The proposed project supported by this scoped EIS is a zoning amendment and site plan control application for the property located on 5360 Bank Street, Ottawa.

Based on the results of the impact analysis, impacts to the natural environment are anticipated to be minimal. Provided that mitigation measures recommended in Section 7 are implemented as proposed, no significant residual negative impacts are anticipated from the proposed zoning amendment and site plan control application.

Following review of the information pertaining to the natural heritage features of the site, the following general conclusions are provided by GEMTEC in regards to the Environmental Impact Statement.

- No significant negative impacts to natural heritage features identified on-site, including significant woodlands, significant wildlife habitat, habitats of species at risk or fish habitat are anticipated as a result of the zoning amendment and site plan control.
- The proposed project complies with the natural heritage policies of the Provincial Policy Statement.
- The proposed project complies with the natural heritage policies of the City of Ottawa Official Plan.

9.0 LIMITATION OF LIABILITY

This report and the work referred to within it have been undertaken by GEMTEC Consulting Engineers and Scientists Ltd (GEMTEC), and prepared for Greely Sand and Gravel and is intended for the exclusive use of Greely Sand and Gravel. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC, Greely Sand and Gravel. Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by GEMTEC with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of GEMTEC based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared.

This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, or portions of the site that were unavailable for direct investigation

Should new information become available during future work or other studies, GEMTEC should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Sincerely,

Taylor Warrington, B.Sc.
Biologist

Drew Paulusse, B.Sc.
Senior Biologist

10.0 REFERENCES

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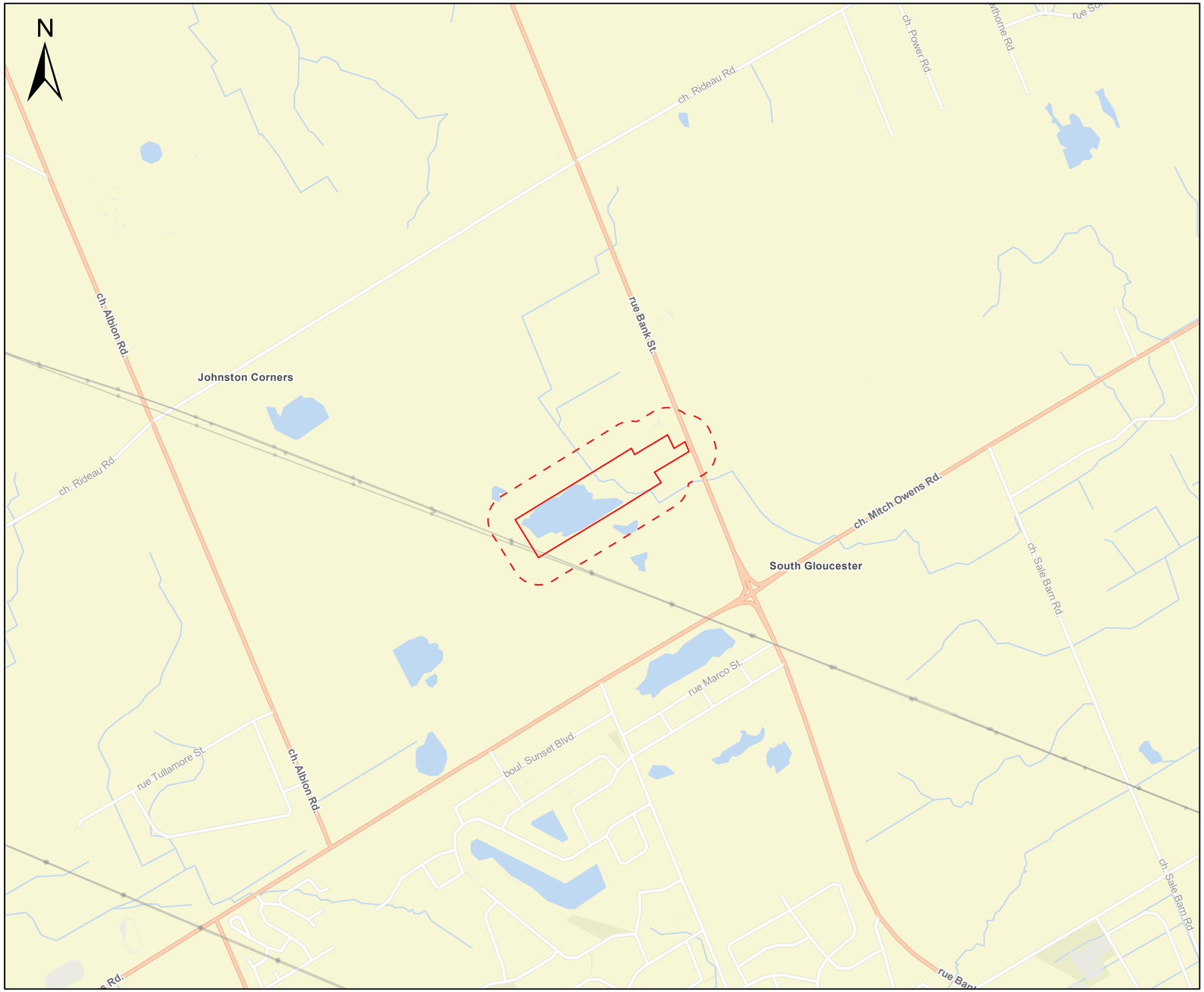
APPENDIX A

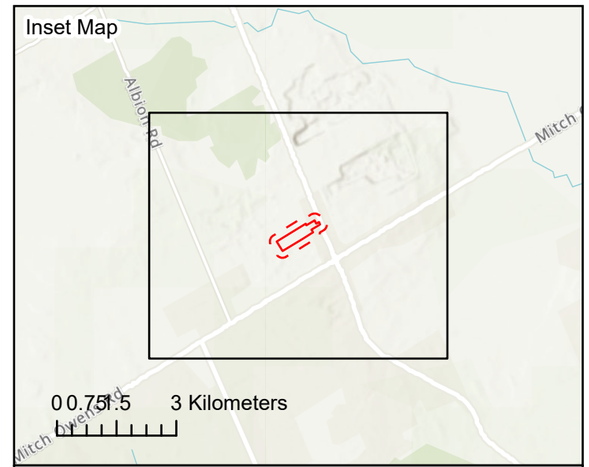
Report Figures
Figure A.1 – Site Location
Figure A.2 – Site Layout
Figure A.3 – Vegetation Communities
Figure A.4 – Natural Heritage Features
Figure A.5 – Mitigation Measures



Legend

- Property Boundary
- Study Area

Inset Map



Scale

1:25,000

0 200 400 800 1,200 1,600 Meters

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Client:	Project:
Greely Sand and Gravel	100227.101

Location

5360 Bank Street
Ottawa, Ontario

Drwn By:	Chkd By:	
EP	TW	Site Location

Date: September 2024	Rev.	
	0	Figure: A.1

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada
World Street Map Background (Community Map of Canada): City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada

Legend

- Property Boundary
- Study Area
- Waterbody
- Watercourse
- Headwater Drainage Feature

Scale
1:5,000
0 50 100 200 300 Meters

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Client: Greely Sand and Gravel

Project: 100227.101

Location: 5360 Bank Street
Ottawa, Ontario

Drwn By: EP | Chkd By: TW | Site Layout

Date: September 2024

Rev. 0

Figure: A.2

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada
Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada

Legend

- Property Boundary
- Study Area
- Waterbody
- Watercourse
- Vegetation Community

FODM3-1 = Dry-Fresh Poplar Deciduous Forest
CVC_4 = Extraction
CVC_2 = Light Industry

Scale
1:5,000
0 50 100 200 300 Meters

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Project: 100227.101

Location: 5360 Bank Street
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Drwn By: EP | Chkd By: TW

Vegetation Communities

Date: September 2024

Rev. 0

Figure: A.3

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada
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Legend

- Property Boundary
- Study Area
- Waterbody
- Watercourse
- Headwater Drainage Feature
- Significant Woodland
- Top Of Bank
- 1:100 Year Floodplain
- Butternut Occurrence

Scale
1:5,000
0 50 100 200 300 Meters

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Project: 100227.101

Location: 5360 Bank Street
Ottawa, Ontario

Drwn By: EP | Chkd By: TW

Natural Heritage Features

Date: September 2024

Rev. 0

Figure: A.4

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada
Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA

Legend

- Property Boundary
- Study Area
- Waterbody
- Watercourse
- Headwater Drainage Feature
- Significant Woodland
- Top Of Bank
- 1:100 Year Floodplain
- Butternut Occurrence (25 m Radius)
- 15 m Setback

Scale
1:5,000
0 50 100 200 300 Meters

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Project: 100227.101

Location: 5360 Bank Street
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Drwn By: EP | Chkd By: TW

Mitigation Measures

Date: September 2024

Rev. 0

Figure: A.5

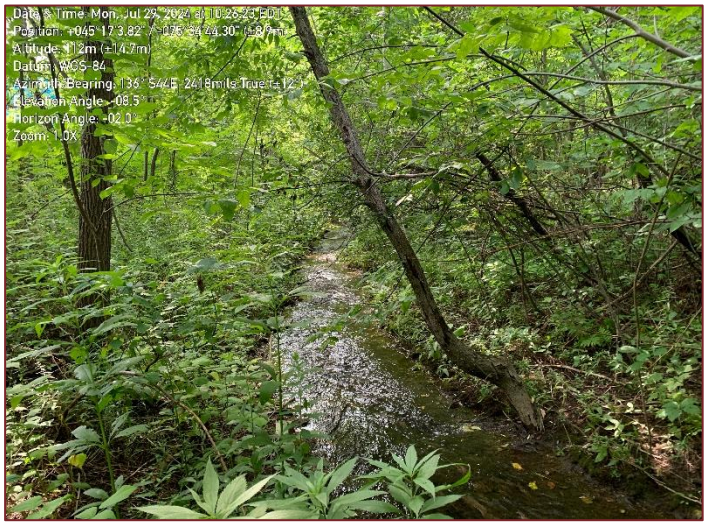
Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada
Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada

APPENDIX B

Site Photographs

Site Photograph 1 – Dry-Fresh Poplar Deciduous Forest (FODM3-1)

Site Photograph 2 – Extraction (CVC_4)



Site Photograph 3 – John Boyce Municipal Drain

Site Photograph 4 – HDF2

GEMTEC Consulting Engineers and Scientists	Project Environmental Impact Statement Zoning Amendment and Site Plan Control Application 5360 Bank Street Ottawa, Ontario	**ATTACHEMNT B**	**Site Photographs**
		File No. 100227.101	

APPENDIX C

Report Summary Tables

TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJCENT TO SITE

Common Name	Scientific Name	S-Rank	Evidence
Avian Species			
American crow	*Corvus brachyrhynchos*	S5	Heard calling, observed on-site
American goldfinch	*Spinus tristis*	S5	Heard calling
American redstart	*Setophaga ruticilla*	S5B	Heard calling, observed on-site
American robin	*Turdus migratorius*	S5	Heard calling, observed on-site
Baltimore oriole	*Icterus galbula*	S4B	Heard calling, observed on-site
* Barn swallow	*Hirundo rustica*	S4B	Heard calling, observed on-site
Belted kingfisher	*Megaceryle alcyon*	S5B,S4N	Heard calling
Black-and-white warbler	*Mniotilta varia*	S5B	Heard calling, observed on-site
Black-billed cuckoo	*Coccyzus erythropthalmus*	S4S5B	Observed on-site
Black-capped chickadee	*Poecile atricapillus*	S5	Heard calling, observed on-site
Blue jay	*Cyanocitta cristata*	S5	Heard calling, observed on-site
Canada goose	*Branta canadensis*	S5	Heard calling, observed on-site
Cedar waxwing	*Bombycilla cedrorum*	S5	Heard calling, observed on-site
Common grackle	*Quiscalus quiscula*	S5	Heard calling, observed on-site
Common raven	*Corvus corax*	S5	Heard calling
Common yellowthroat	*Geothlypis trichas*	S5B,S3N	Heard calling, observed on-site
Downy woodpecker	*Dryobates pubescens*	S5	Heard calling, observed on-site
Eastern kingbird	*Tyrannus tyrannus*	S4B	Heard calling, observed on-site
Eastern phoebe	*Sayornis phoebe*	S5B	Heard calling, observed on-site
* Eastern wood-pewee	*Contopus virens*	S4B	Heard calling
European starling	*Sturnus vulgaris*	SNA	Heard calling
Gray catbird	*Dumetella carolinensis*	S5B,S3N	Heard calling, observed on-site
Hairy woodpecker	*Dryobates villosus*	S5	Heard calling, observed on-site
House wren	*Troglodytes aedon*	S5B	Heard calling
Mallard	*Anas platyrhynchos*	S5	Observed on-site
Mourning dove	*Zenaida macroura*	S5	Heard calling, observed on-site
Northern cardinal	*Cardinalis cardinalis*	S5	Heard calling, observed on-site
Northern flicker	*Colaptes auratus*	S5	Heard calling, observed on-site
Red-eyed vireo	*Vireo olivaceus*	S5B	Heard calling, observed on-site
Red-winged blackbird	*Agelaius phoeniceus*	S5	Heard calling, observed on-site
Rose-breasted grosbeak	*Pheucticus ludovicianus*	S5B	Heard calling
Savannah sparrow	*Passerculus sandwichensis*	S5B,S3N	Heard calling, observed on-site
Song sparrow	*Melospiza melodia*	S5	Heard calling, observed on-site
Spotted sandpiper	*Actitis macularius*	S5B	Heard calling, observed on-site
Turkey vulture	*Cathartes aura*	S5B,S3N	Observed on-site
Warbling vireo	*Vireo gilvus*	S5B	Heard calling
White-breasted nuthatch	*Sitta carolinensis*	S5	Heard calling, observed on-site
Wild turkey	*Meleagris gallopavo*	S5	Observed on-site
* Wood thrush	*Hylocichla mustelina*	S4B	Heard calling
Yellow-bellied sapsucker	*Sphyrapicus varius*	S5B,S3N	Heard calling, observed on-site
Yellow warbler	*Setophaga petechia*	S5B	Heard calling, observed on-site
Amphibian Species			
Gray treefrog	*Dryophytes versicolor*	S5	Heard calling
Green frog	*Lithobates clamitans*	S5	Observed on-site
Northern leopard frog	*Lithobates pipiens*	S5	Observed on-site
Wood frog	*Lithobates sylvaticus*	S5	Observed on-site
Mammalian Species			
Beaver	*Castor canadensis*	S5	Observed activity on-site
Coyote	*Canis latrans*	S5	Observed activity on-site
Red fox	*Vulpes vulpes*	S5	Observed activity on-site
Red squirrel	*Tamiasciurus hudsonicus*	S5	Observed on-site
White-tailed deer	*Odocoileus virginianus*	S5	Observed activity on-site
Reptilian Species			

TABLE C.1
SUMMARY OF WILDLIFE OBSERVED ON-SITE AND ADJCENT TO SITE

Midland painted turtle	*Chrysemys picta marginata*	S4	Observed on-site
Snapping turtle	*Chelydra serpentina*	S4	Observed on-site

Notes:
* Denotes a Species at Risk
Subnational Conservation Status Ranks:
S1 - Critically Imperilled, at very high risk of extirpation, very few populations or occurrences or very steep population decline
S2 - Imperiled, at high risk of extirpation, few populations or occurrences or steep population decline
S3 - Vulnerable, at moderate risk of extirpation, relatively few populations or occurrences, recent and widespread population decline
S4 - Apparently Secure, at a family low risk of extirpation, many populations or occurrences, some concern for local population decline
S5 - Secure, at very low or no risk of extirpation, abundant populations or occurrences, little to no concern for population decline
Qualifiers:
S#B - Conservation status refers to the breeding population of the species
S#N -Conservation status refers to the non-breeding population of the species
S#M - Migrant species, conservation status refers to the aggregating transient population of the species

TABLE C.2
SCREENING RATIONAL FOR SIGNIFICANT WOODLANDS

Woodland Criteria	Further Considered in EIS	Rationale
Woodland Size	Yes	Contiguous woodlands on-site meet the minimum size requirements for the planning area (>20 ha NHRM criteria).
Ecological Functions		
a) Woodland Interior	No	Interior woodlands on-site does not meet the minimum size requirement for the planning area (> 2 ha).
b) Proximity	Yes	Woodlands on-site are proximate to fish habitat within the John Boyce Municipal Drain.
c) Linkages	No	Woodlands on-site do not provide linkages to other natural heritage features.
d) Water Protection	Yes	Woodlands on-site are proximate to the John Boyce Municipal Drain.
e) Diversity	No	Species composition within the on-site woodland is well represented on the landscape and no rare species communities were observed on-site.
Uncommon Characteristics	No	The woodlands on-site do not have a unique species composition, vegetation communities with a ranking of S1, S2 or S3, or a mature size structure.
Economical and Social Functional Values	No	The woodlands on-site do not contain high productivity in terms of economically valuable products, high social value such as recreational use, identified historical cultural or educational values.

TABLE C.3
SCREENING RATIONALE FOR HABITATS OF SEASONAL CONCENTRATION AREAS

Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Stopover and Staging Areas	No	Based on review of publically available data from the OMNRF on Land Information Ontario Geo-hub, no waterfowl stopover and staging areas were identified on-site. Wetland habitat on-site unlikely to provide suitable conditions to support waterfowl stopover and staging areas (aquatic). No habiat for terrestrial stopover and staging areas was present on-site.
Shorebird Migratory Stopover Area	No	Shorebird stopover sites are typically well-known and have a long history of use. The site does not contain suitable shoreline habitat for shorebird foraging.
Raptor Wintering Area	No	The site contains both forest and upland habitat, however it does not meet the minimum size criteria of greater than 20 ha with greater than 15 ha of upland habitat on-site.
Bat Hibernacula	No	Cave and crevice habitat is not present on-site or within the study area.
Bat Maternity Colonies	No	Woodlands on-site do not meet minimum snag density (>10 snags/hectare) requirement to be considered SWH for bat maternity colonies.
Turtle Wintering Area	No	While the aggregate pool on-site has the potential to provide turtle habitat, as outlined in the Significant Wildlife Habitat Criteria Schedules (OMNRF, 2015) man-made ponds, including aggregate ponds and SWM ponds, should not be considered SWH. As such no turtle wintering SWH occurs on-site.
Reptile Hibernaculum	No	No rock formations were identified on-site with fractures that may extend below the frostline.
Colonial Bird Nesting Habitat	No	No suitable habitat located on-site or within the study area to support colonial bird nesting.
Migratory Butterfly Stopover Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.
Landbird Migratory Stopver Area	No	The site is not located within 5 km of Lake Ontario and therefore does not meet the defining criteria.
Deer Yarding Areas and Winter Congregation Areas	No	As outlined in the the Signficant Wildlife Habitat Criteria Schedules (OMNRF, 2015) winter deer yards and deer managment are an MNRF responsibility. Based on review of publically available data from the OMNRF on Land Information Ontario Geo-hub, no deer yards or winter congregation areas have been identified on-site.

TABLE C.4
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS

Specialized Wildlife Habitat	Further Considered in EIS	Rationale
Waterfowl Nesting Area	No	No suitable wetland habitat present on-site to support waterfowl nesting area.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No	The site is located adjacent habitat which could support foraging bald eagles or osprey however, no nests were observed on-site or within 120 m of the property.
Woodland Nesting Raptor Habitat	No	Nesting may occur in any ecosite and species preference is towards mature forest stands >30 ha with >10 ha of interior habitat with a 200 m buffer. Contiguous forest stands >30 ha are not present and interior forest habitat with a 200 m buffer does not occurr on-site. No sticks nests were observed on-site.
Turtle Nesting Habitat	No	Exposed mineral soil with minimal vegetation cover is present however, suitable wetland within 100 m (ELC codes: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1 or BOO1) does not occur on-site.
Seeps and Springs	No	No seeps or springs where identified on-site.
Woodland Amphibian Breeding Habitat	Yes	Suitable pond habitat adjacent to a woodland occurs on-site to support woodland amphibian breeding habitat.
Wetland Amphibian Breeding Habitat	No	No suitable wetland habitat occurs on-site to support wetland amphibian breeding habitat.
Woodland Area-Sensitive Bird Breeding Habitat	No	Woodland area-sensitive birds require interior forest habitat located >200 m from the forest edge in large (>30 ha) forest stands. Woodlands on-site do not meet the defining size criteria.

TABLE C.5
SCREENING RATIONALE FOR SPECIALIZED WILDLIFE HABITATS

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Marsh Breeding Bird Habitat	No	Suitable habitat not present on-site to support marsh breeding birds.
Open Country Breeding Bird Habitat	No	No meadow habitat occurs on-site to support open country breeding bird habitat.
Shrub/Early Successional Breeding Bird Habitat	No	Candidate early successional breeding bird habitat typically includes fallow fields transitioning to early successional forest habitats that are >10 ha but have not been actively used for farming. No thicket habitat on-site to support early successional breeding bird habitat.
Terrestrial Crayfish Habitat	No	Terrestrial crayfish are only found within southwestern Ontario (MNRF, 2012).
Special Concern and Rare Wildlife Species	Yes	Based on site observations and occurrence data from the NHIC and Ontario Breeding Bird Atlas, the following species of special concern have occurred on-site and/or within the surrounding area: barn swallow, eastern wood-pewee, wood thrush and snapping turtle.

TABLE C.6
SCREENING RATIONALE FOR HABITATS OF SPECIES OF CONSERVATION CONCERN

General Habitats of Species of Conservation Concern	Further Considered in EIS	Rationale
Amphibian Movement Corridor	No	No *confirmed* amphibian movement corridors have been identified on-site.
Deer Movement Corridor	No	No winter deer yards have been identified on-site.

TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Species	ESA Status	Regional Distribution	Habitat Use	Probability of Occurrence On-Site or Within Study Area	Rationale
Avian					
Bank Swallow	Threatened	12 confirmed, 2 probable and 8 possible nests in recent OBBA.	Colonial nester, burrows in eroding silt, to sand banks, sand pit walls, etc.	Low	Suitable cliffs, banks or dune habitat not present on-site for species.
Barn Swallow	Special Concern	33 confirmed, 2 probable, and 3 possible nests in recent OBBA.	Nests in barns and other semi-open structures. Forages over open fields and meadows.	High	Suitable grassland habitat available for foraging within the broader study area. No historical data records for species within the study area. Species observed on-site during field investigations.
Bobolink	Threatened	Widespread in the Ottawa region, confirmed and probable nests found in 39 or 40 local atlas squares during recent OBBA.	Nests in dense tall grass fields and meadows, low tolerance for woody vegetation.	Low	NHIC data indicates species has been observed within 1 km of the site. However, no suitable grassland habitat available on-site or within the study area. Species not observed on-site during field investigations.
Canada Warbler	Special Concern	1 confirmed, 2 probable, 6 possible nests during recent OBBA. No critical habitat identified in region.	Prefers wet forests with dense shrub layers	Low	Preferred wet forests not present on-site. No historical data records for species within the study area. Species not observed during field investigations.
Cerulean Warbler	Threatened	No nests reported during recent OBBA. SARO and SARA range maps include part of Ottawa.	Prefers mature deciduous forest habitat.	Low	Preferred mature forests not present on-site. No historical data records for species within the study area. Species not observed during field investigations.
Chimney Swift	Threatened	3 confirmed, 2 probable, and 11 possible nests in recent OBBA.	Nests in traditional-style open brick chimneys.	Low	No suitable nesting structures on-site. No recent observations within 1 km of site. Species not observed during field investigations.
Common Nighthawk	Special Concern	6 probable, 5 possible nests reported in recent OBBA. No critical habitat identified in Ottawa region.	Nests in a variety of open sites: beaches, fields and gravel rooftops.	Low	No suitable habitat on-site to support common nighthawk. No historical data records for species within the study area. Species not observed on-site during field investigations.
Eastern Meadowlark	Threatened	22 confirmed, 11 probably and 3 possible nests during recent OBBA.	Nests and forages in dense tall grass fields and meadows, higher tolerance to woody vegetation.	Low	No suitable grassland habitat available on-site or within the study area. Species not observed on-site during field investigations.
Eastern Whip-poor-will	Threatened	7 probable and 10 possible nests in recent OBBA. Critical habitat tentatively identified in 4 squares in western Ottawa.	Nests on the ground in open deciduous or mixed woodlands with little underbrush, and bedrock outcrops.	Low	Suitable woodland and exposed rock habitat not present on-site or within study area. No historical data records for species within the study area. Species not observed during field investigations.
Eastern Wood-Pewee	Special Concern	4 possible, 15 probable and 19 confirmed nests in recent OBBA for Ottawa area	Woodland species, often found near clearings and edge habitat.	High	Woodland habitat on-site and within study area may provide suitable habitat to support species. Species was observed on-site during field investigations.
Evening Grosbeak	Special Concern	5 confirmed, 6 probable, 8 possible nests in recent OBBA (mostly in west).	Nests in trees or large shrubs, preference to large coniferous forests, will use deciduous. Overwinters in Ottawa.	Low	Site outside of known breeding range. No suitable habitat present on-site. No historical data records for species within the study area. Species not observed during field investigations.
Golden Eagle	Endangered		Nests on remote, bedrock cliffs, overlooking large burns, lakes or tundras	Low	Site outside of known breeding range. No suitable habitat present on-site. No historical data records for species within the study area. Species not observed during field investigations.
Golden-winged Warbler	Special Concern	1 confirmed, 1 probable nest in recent OBBA. Critical habtiat identified in Quebec, northwest of Ottawa.	Ground nesting, edge species. Breeds in successional scrub habitats surrounded by forests.	Low	Site lacks successional scrub habitats surrounded by forests. No recent observations within 1 km of site. Species not observed during field investigations.
Grasshopper Sparrow	Special Concern	4 confirmed, 5 probable and 2 possible nests in recent OBBA.	Ground-nesting grassland species. Prefers fields with low sparse vegetation on sand, alvars or poor soils.	Low	Suitable grassland habitat present on-site to support species. No historical data records for species within the study area. Species not observed during field investigations.
Henslow's Sparrow	Endangered		Prefers open, moist, tallgrass fields.	Low	No suitable habitat present on-site. No historical data records for species within the study area. Species not observed during field investigations.
Least Bittern	Threatened	Confirmed nesting in 1 square, 3 probable and 4 possible during recent OBBA. Mississippi Snye identified as critical habitat in federal recovery strategy.	Prefers marshes, shrub swamps, usually near cattails	Low	No suitable marsh habitat present on-site to support species. No historical data records for species within the study area. Species not observed during field investigations.
Loggerhead Shrike	Endangered	Possible nests reported in Burnt Lands Provincial Park (2018) and Richmond area (2019). Critical habitat identified in Montague Township.	Prefers grazed pastures with short grass and scattered shrubs, especially hawthorn.	Low	Preferred pasture habitat not present on-site. No historical data records for species within the study area. Species not observed during field investigations.
Olive-sided Flycatcher	Special Concern	1 probable, 1 possible nest in recent OBBA.	Forest edge species, forages in open areas from high vantage points in trees.	Low	Suitable nesting habitat may be present on-site. No historical data records for species within the study area. Species not observed during field investigations.
Peregrine Falcon	Special Concern	1 confirmed nest in recent OBBA and second nest established in 2011 in the Ottawa downtown.	Nests on cliffs near water and on more anthropogenic structures such as tall buildings, bridges, and smokestacks.	Low	Suitable nesting habitat not present on-site. No recent observations within 1 km of site. Species not observed during field investigations.
Red-headed Woodpecker	Endangered	1 confirmed, 1 probable and 1 possible during recent OBBA. Nesting pair reported from village of Constance Bay in recent years.	Prefers open deciduous woodlands, particularly those dominated by oak and beech.	Low	No suitable deciduous woodlands are present on-site to support species. No recent observations within 1 km of site. Species not observed during field investigations.
Rusty Blackbird	Special Concern	No nests in recent OBBA. Primarily observed during migration only.	Wet wooded or shrubby areas (nests at edges of Boreal wetlands)	Low	No boreal wetlands present on-site or in study area.
Short-eared Owl	Threatened	1 confirmed, 2 probable, 2 possible nests in recent OBBA.	Ground nester, prefers open habitats, fields and marshes.	Low	No suitable open fields present on-site. No recent observations within 1 km of site. Species not observed during field investigations.
Wood Thrush	Special Concern	5 possible, 15 probable, and 16 confirmed nests in recent OBBA for Ottawa area.	Prefers deciduous or mixed woodlands.	High	Woodland habitat on-site and within study area may provide suitable habitat to support species. NHIC indicates species has been observed within 1 km of the site. Species was observed on-site during field investigations.
Mammalian					
Eastern small-footed Myotis	Endangered	Rare throughout its range. Historical records in downtown Ottawa.	Roosts in rock crevices, barns and sheds. Overwinters in abandoned mines. Summer habitats are poorly understood in Ontario, elsewhere prefers to roost in open, sunny rocky habitat and occasionally in buildings (Humphrey, 2017).	Moderate	Potentially suitable anthropogenic structures on-site and adjacent to site. Available habitat on-site may meet bat maternity colony requirements and provide foraging and non-maternal roost habitat.

TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Little Brown Myotis	Endangered	Various sites in central and western parts of the Ottawa area. Critical habitat (hibernacula) identified to northwest of Ottawa.	Maternal colonies known to use buildings, may also roost in trees during summer. Affinity towards anthropogenic structures for summer roosting habitat and exhibit high site fidelity (Environment Canada, 2015).	Moderate	Potentially suitable anthropogenic structures on-site and adjacent to site. Available habitat on-site may meet bat maternity colony requirements and provide foraging and non-maternal roost habitat.
Northern myotis (Northern Long-eared Bat)	Endangered	Historical records in downtown Ottawa, more recently in sites to east (Orleans, Clarence-Rockland). Critical habitat (hibernacula) identified to northwest of Ottawa.	Occurs throughout eastern North America in associated with Boreal forests. Roosts mainly in trees, occasionally anthropogenic structures during summer (Environment Canada, 2015). Overwinters in caves and abandoned mines.	Low	Species affinity is for Boreal forests and rarely roosts in anthropogenic structures.
Tri-colored Bat	Endangered	Unknown; historical records from sites in urban Ottawa, Lanark County. Critical habitat (hibernacula) identified to northwest of Ottawa.	Roosts in trees, rock crevices and occasionally buildings during summer. Overwinters in caves and mines.	Moderate	Potentially suitable anthropogenic structures on-site and adjacent to site. Available habitat on-site may meet bat maternity colony requirements and provide foraging and non-maternal roost habitat.
Reptilian					
Blanding's Turtle	Threatened	Scattered throughout, with numerous sites in western half of City. Critical habitat present in Ottawa.	Inhabits quiet lakes, streams and wetlands with abundant emergent vegetation. Frequently occurs in adjacent upland forests.	Low	Based on data obtained from the Herp Atlas (Ontario Nature, 2019), Blanding's turtle have been observed once in 2018 within the 10 km2 grid square that encompasses the site. No NHIC occurrence records within 2 km of the site. The site does not provide preferred aquatic habitat for Blanding's turtle.
Snapping Turtle	Special Concern	Widespread and abundant in Ottawa and surrounding region.	Highly aquatic species, found in a wide variety of wetlands, water bodies and watercourses.	High	Based on data obtained from the Herp Atlas (Ontario Nature, 2019) snapping turtle have been observed 5 times between 2011 and 2013 within the 10 km2 grid square that encompasses the site. NHIC data indicates species has been observed within 1 km of the site. The site may provide suitable aquatic habitat for snapping within the on-site watercourse and waterbody for snapping turtle. Species was observed on-site during field investigations.
Plants					
American Ginseng	Endangered	Critical habitat broadly identified in the Ottawa area. Specific locations are confidential.	Rich, moist, relatively mature deciduous forests.	Low	Suitable deciduous forests not present on-site. No historical data records for species within study area. Species was not identified on-site during the site investigations.
Black Ash	Endangered	Scattered throughout.	Predominantly a wetland species, found in swamps, floodplains and fens.	Low	No suitable wet habitat present on-site. Species was not identified during site investigations. No historical data records for species within the study area.
Butternut	Endangered	Range is confined to eastern and southern Ontario. Widespread in Ottawa and region.	Inhabits a wide range of habitats including upland and lowland deciduous and mixed forests.	High	Potentially suitable areas in a regenerative state on-site. Species was identified on-site during the site investigation. NHIC data indicates species has been observed within 1 km of the site.
Fish					
American Eel	Endangered	Ottawa, Mississippi, Carp (including Poole Creek), South Nation and Rideau Rivers	Primarily nocturnal, hiding in soft substrate or submerged vegetation during the day.	Low	Suitable habitat to support species does not occur on-site. No historical data records for species within the study area. Watercourses on-site do not provide suitable habitat to support species during any stage of their lifecycles.
Bridle Shiner	Special Concern	Rideau River	Prefers clear water with abundant vegetation over silty or sandy vegetation	Low	Suitable habitat to support species does not occur on-site. No historical data records for species within the study area. Watercourses on-site do not provide suitable habitat to support species during any stage of their lifecycles.
Channel Darter	Special Concern	Ottawa River	Prefers clear water with abundant vegetation over silty or sandy vegetation	Low	Suitable habitat to support species does not occur on-site. No historical data records for species within the study area. Watercourses on-site do not provide suitable habitat to support species during any stage of their lifecycles.
Lake Sturgeon	Endangered	Ottawa River	Large lakes and rivers. Forages in cool water, 4-9m deep over soft substrates. Spawns in shallower, fast-flowing areas over rocks or gravel.	Low	Suitable habitat to support species does not occur on-site. No historical data records for species within the study area. Watercourses on-site do not provide suitable habitat to support species during any stage of their lifecycles.
Northern Brook Lamprey	Special Concern	Ottawa River	Prefers shallow areas with warm water. Larvae burrows in soft substrate for up to 7 years.	Low	Suitable habitat to support species does not occur on-site. No historical data records for species within the study area. Watercourses on-site do not provide suitable habitat to support species during any stage of their lifecycles.
River Redhorse	Special Concern	Ottawa and Mississippi Rivers; unconfirmed reports from Rideau River	Prefers fast-flowing, clear rivers over rocky substrate	Low	Suitable habitat to support species does not occur on-site. No historical data records for species within the study area. Watercourses on-site do not provide suitable habitat to support species during any stage of their lifecycles.
Silver Lamprey	Special Concern	Ottawa River and mouths of tributaries from Rideau Canal east (downtown).	Larvae live 4-7 years in burrows, preference to soft substrate.	Low	Suitable habitat to support species does not occur on-site. No historical data records for species within the study area. Watercourses on-site do not provide suitable habitat to support species during any stage of their lifecycles.
Insects					
American Bumble Bee	Special Concern	Unknown; COSEIWC identifies historical sightings in Ottawa and one nearby in 2012.	Nests at or above ground level, often in mats of long grass but also in other available shelters.	Moderate	Potentially suitable habitat available on-site.
Bogbean Buckmoth	Endangered	Richmond Fen	Preferred food plant is bog bean, present in a variety of wetlands including bogs, swamps and fens.	Low	Preferred wetland habitat is not present on-site.
Gypsy Cuckoo Bumble Bee	Endangered	Historic occurences only. Range in Ontario uncertain.	Inhabits a wide range of habitats: open meadows, agricultural and urban areas, boreal forests and woodlands.	Low	Currently the only known population is in Pinery Provincial Park

TABLE C.7
SCREENING RATIONALE FOR POTENTIAL SPECIES AT RISK ON-SITE OR WITHIN STUDY AREA

Monarch Butterfly	Special Concern	Widespread in the region	Caterpillars require milkweed plants confined to meadow and open areas. Adult butterflies use more diverse habitat with a variety of wildflowers	Moderate	Potentially suitable foraging vegetation available for Monarch on-site.
Mottled Duskywing	Endangered	Constance Bay area, Burnt Lands Alvar	Larval food plant (New Jersey Tea) found in sandy areas and alvars.	Low	Sandy areas and alvars not present in the study area.
Nine-spotted Lady Beetle	Endangered	Historically present but no reports in Ontario since mid-1990s	Habitat generalist	Low	No recent occurrence reports in the area, thought to be locally extirpated.
Rusty-patched Bumble Bee	Endangered	Historic records only from scattered sites in Ottawa and Gatineau.	Habitat generalist	Low	Currently the only known population occurs in Pinery Provincial Park.
Transverse Lady Beetle	Endangered	Unknown in Ottawa region. No southern Ontario records since 1985	Habitat generalist	Low	No new records of traverse lady beetle in Ontario, species thought to be absent in former habitats.
West Virginia White Butterfly	Special Concern	Unknown. No NESS or NHIC records. SARO range map includes Ottawa.	Requires mature moist deciduous woods with larval host plant toothwort.	Low	Necessary vegetation and toothwort plant are not present on-site or within study area.
Yellow-banded Bumble Bee	Special Concern	Unknown. Historic occurrences and a few recent occurrences in Eastern Ontario/Western Quebec region.	Habitat generalist; mixed woodlands, variety of open habitat	Moderate	Potentially suitable foraging habitat available for yellow-banded bumble bee on-site.

APPENDIX D

Headwater Drainage Feature Assessment (GEMTEC, 2024)

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October 1, 2024 File: 100227.101

Greely Sand and Gravel Inc.
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Re: Headwater Drainage Feature Assessment
Proposed Zoning Amendment and Site Plan Control Application
5360 Bank Street, City of Ottawa, Ontario

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Ltd. (GEMTEC) was retained by Greely Sand and Gravel Inc. to complete an update to the existing Environmental Impact Statement (EIS) for the proposed zoning amendment and site plan control application of the property located at 5360 Bank Street, the City of Ottawa, Ontario hereafter referred to as the "subject property". As a component of the EIS a headwater drainage feature assessment (HDFA) is required. This letter provides the methodologies and results of the HDFA conducted at the subject property.

1.1 Purpose

The proponent is seeking a zoning amendment and site plan control application for the subject property. An EIS was prepared by GEMTEC in support of the application in 2022. The City of Ottawa has reviewed the EIS and identified the need to update the EIS to be in accordance with the City of Ottawa Official Plan Policies (2022). A headwater drainage feature assessment was conducted to address impacts to the John Boyce Municipal Drain on- site.

1.2 Objective

Under Section 28(1) of the Conservation Authorities Act, conservation authorities have the ability to define the definition of a watercourse, which is defined under Section 28 (5) of the Act as "*An identifiable depression in the ground in which a flow of water regularly or continuously occurs*". Headwater drainage features are defined as "*non-permanently flowing drainage features that may not have defined bed or banks; they are first-order and zero-order intermittent and ephemeral channels, swales and connected to headwater wetlands, but do not include rills or furrows*". According to conservation authorities in Ontario, headwater drainage features meet the definition of a watercourse.

The objective of the work presented herein is twofold; 1) to identify headwater drainage features and 2) to evaluate and classify any headwater drainage features on-site, in accordance with *"Evaluation, Classification and Management of Headwater Drainage Features Guidelines*" from

the Toronto Region Conservation Authority and the Credit Valley Conservation (TRCA/CVC, 2014), and to recommend mitigation and conservation measures for headwater drainage features present on-site.

2.0 METHODOLOGY

2.1 Desktop Review

A desktop information gathering exercise was completed to aid in the scoping of field investigations and to gather background information relating to headwater drainage features on-site. Information relating to the presence and assessment of headwater drainage features on-site was obtained from the following sources:

- Evaluation, Classification and Management of Headwater Drainage Features Guidelines (TRCA/CVC, 2014);
- Ontario Stream Assessment Protocol, Section 4, Module 11 (OSAP, 2017);
- Land Information Ontario (OMNR, 2011);
- South Nation Conservation Authority Geoportal (SNC, undated);
- City of Ottawa Official Plan (Ottawa, 2022); and
- Make a Map: Natural Heritage Areas (OMNRF, 2023).

2.2 Field Investigations

Three field investigations were undertaken to evaluate the headwater drainage feature identified on-site. Field investigations completed in support of this HDFA are outlined in Table 2.1 below.

Table 2.1 Summary of Field Investigations

Date	Time	Weather	HDFA Visit Number
April 26, 2024	11:00 – 14:45	10°C, no cloud cover, Beaufort 1, no precipitation	1
May 17, 2024	09:30 – 12:30	20°C, ~50% cloud cover, Beaufort 1, no precipitation	2
July 29, 2024	08:00 – 11:45	19°C, no cloud cover, Beaufort 0, no precipitation	3

2.2.1 Headwater Drainage Feature Assessment

Field data collection of headwater drainage features on-site followed the protocol outlined in Section 4: Module 11, “Unconstrained Headwater Sampling” from the Ontario Stream Assessment Protocol (OSAP) (Stanfield, 2017).

Data collected during the site investigations included flow conditions, sediment transport, feature roughness, riparian and feature vegetation, as well as upstream and downstream site features. As outlined in the OSAP manual for assessing headwater drainage features, three site visits were completed.

Classification of the headwater drainage features on-site followed the protocols outlined in the Evaluation, Classification and Management of Headwater Drainage Features Guidelines manual (TRCA/CVC, 2014). Functions of the headwater drainage feature that were evaluated included hydrology, vegetation, fish and fish habitat, and terrestrial habitat. Mitigation and management recommendations are provided for the headwater drainage features (HDFs) based on the results of the classification.

3.0 HEADWATER DRAINAGE FEATURES ASSESSMENT

3.1 Site Characteristics

The subject property currently consists of light industry, an extraction area and a deciduous forest vegetation community. The site is located within the 'Castor River' watershed and is under the jurisdiction of the SNC.

Based on the desktop review and the site investigations, the John Boyce Municipal Drain (JBMD), labelled as HDF1, and one headwater drainage feature (HDF) identified as HDF2 occurs on-site. Both surface water features are illustrated on Figure C.1 in Attachment C.

The JBMD originates north of the property and flows in a southerly direction for approximately 305 m before exiting the property along the southeastern property boundary. Off-site, the JBMD flows for approximately 4.84 km in a southeasterly direction before discharging in the Findlay Creek.

HDF2 originates within the open water pit southwest of the property and flows in a northeasterly direction for approximately 41 m before discharging into an open water pit on-site. HDF2 then flows from the open water and continues in an easterly direction for approximately 64 m before discharging into HDF1 (JBMD).

Each surface water feature is identified and described in more detail in the subsections below, with summaries of collected field data included in Attachment B.

3.1.1 HDF1

The JBMD is identified in this assessment as and is a tributary of Findlay Creek. HDF1 is comprised of a single, channeled branch, with one confluence along its upstream path on-site. Differences in flow and feature conditions were observed throughout the different reaches of the features. As such, HDF1 has been further divided into five sections, H1A, H1B, H1C, H1D and

H1E. Due to observed differences in flow and riparian vegetation, each segment is evaluated as an individual feature in the subsections below.

3.1.1.1 H1A

H1A is a channelized feature that was observed to have substantial flow during the first visit and minimal flow during the second and third site investigations. No vegetation was found within H1A while the riparian zone was dominated by forest. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H1A observed during the site investigations. During the site investigations, H1A was assessed as one continuous feature with no site break triggers.

3.1.1.2 H1B

H1B is a channelized feature that was observed to have substantial flow during the first visit and minimal flow during the second and third site investigations. No vegetation was found within H1B while the riparian zone was dominated by forest. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H1B observed during the site investigations. During the site investigations, H1B was assessed in segments based on site break triggers, but the segments displayed similar site features and conditions and have been grouped for evaluation purposes.

3.1.1.3 H1C

H1C is a channelized feature that was observed to have substantial flow during the first visit and minimal flow during the second and third site investigations. No vegetation was found within H1C while the riparian zone was dominated by forest. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H1C observed during the site investigations. During the site investigations, H1C was assessed as one continuous feature with no site break triggers.

3.1.1.4 H1D

H1D is a channelized feature that was observed to have minimal flow during all three site investigations. No vegetation was found within H1D while the riparian zone was dominated by forest. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H1D observed during the site investigations. During the site investigations, H1D was assessed as one continuous feature with no site break triggers.

3.1.1.5 H1E

H1E is a channelized feature that was observed to have substantial flow during the first visit and minimal flow during the second and third site investigations. No vegetation was found within H1E while the riparian zone was dominated by forest. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H1E observed during the site investigations. During the site investigations, H1E was assessed as one continuous feature with no site break triggers.

3.1.2 HDF2

HDF2 is comprised of a single, channelized feature, with an in-line pond along its upstream path and flows through one culvert on-site. Differences in flow conditions and feature type were observed throughout the different reaches of the feature. As such, HDF2 has been further divided into H2A and H2B. Due to the observed differences in flow and feature type, each segment is evaluated as an individual feature in the subsections below.

3.1.2.1 H2A

H2A is a channelized feature that was observed to have minimal but sustained flow during all three site investigations. No vegetation was found within H2A while the riparian zone was dominated by forest. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H2A observed during the site investigations. During the site investigations, H2A was assessed as one continuous feature with no site break triggers.

3.1.2.2 H2B

H2B is a wetland that was observed to have substantial flow during the first site visit and minimal flow during the second and third site investigations. Vegetation within H2B was dominated by wetland vegetation and the riparian vegetation was dominated by scrubland. Table B.1 in Attachment B summarizes the existing conditions and characteristics of H2B observed during the site investigations. During the site investigations, H2B was assessed as one continuous feature with no site break triggers.

4.0 CLASSIFICATION

All HDFs on-site were classified based on the information collected during the site investigations pertaining to hydrology, riparian habitat, fish and fish habitat and terrestrial components. Using the linking classification to management flow chart provided by the TRCA and CVC (2014), illustrated in Figure 1 below, the classification of each HDF was used to determine management recommendations.

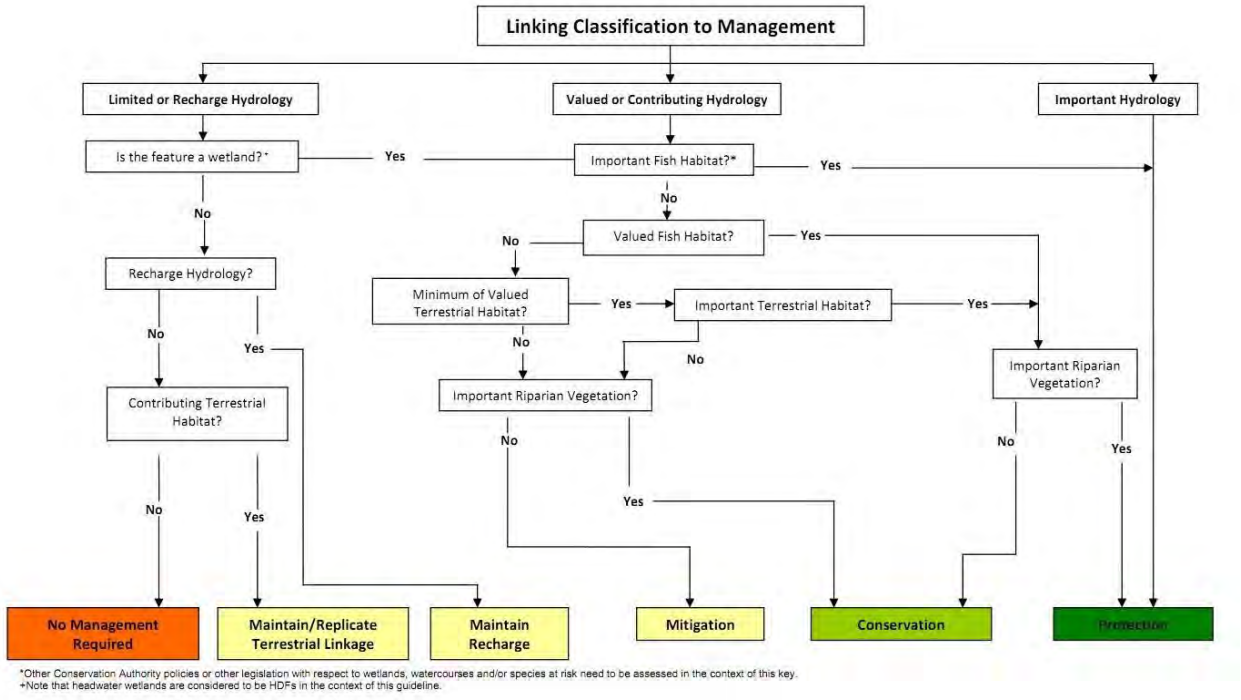

Figure 1 Flow Chart Providing Directions of Management Option's (TRCA/CVC, 2014)

H1A, H1B, H1E and H2A had water conveyance throughout all three site investigations. In conjunction with the HDF feature type channelized, it was determined that the feature had important hydrology. In accordance with the TRCA/CVC guidance, the important hydrology results in the determination that the above noted HDFs require **protection**.

H1D and H2B had water conveyance throughout all three site investigations. In conjunction with the HDF feature types channelized or wetland, it was determined that the features had important hydrology. All the features had important fish habitat and riparian vegetation and as such **protection** is required for these features.

H1C had water conveyance throughout all three site investigations. In conjunction with the HDF feature type channelized, it was determined that the feature had important hydrology. H1C had limited fish habitat, contributing terrestrial habitat and important riparian vegetation and as such **protection** is required for H1C.

A summary of the classification and management recommendation for all HDFs is provided in Table B.1 in Attachment B.

5.0 MANAGEMENT RECOMMENDATIONS AND MITIGATION MEASURES

In accordance with the guidance document (TRCA/CVC, 2014), HDFs classified as important functions require **protection**; these are typically features characterized by important hydrology, fish habitat and/or riparian vegetation. Based on the classification in Section 4 above, H1A, H1B, H1C, H1D, H1E, H2A and H2B have been field verified to provide important hydrology, important, valued or limited fish habitat, valued or contributing terrestrial habitat and/or important riparian vegetation, as such **protection** is required for these features.

As outlined in the guidance document, protection management includes: protecting or enhancing the existing feature and its riparian zone corridor, maintaining the hydroperiod, incorporate shallow groundwater and base flow protection techniques (e.g. infiltration treatment), use natural channel design techniques or wetland design to restore or enhance existing habitat features, realignment is not generally permitted, and design and locate the stormwater management system to avoid impacts to the feature (TRCA/CVC, 2014).

In addition to the management recommendations outlined above, the following mitigation measures are provided by GEMTEC in order to minimize or eliminate potential impacts to fish habitat.

- All future development and construction activities within the study area, including ditching, culvert installation, erosion and sediment control and storm water management should be completed in accordance with Ontario Provincial Standard Specification 182 and OPSS 805.
- No in-water work should occur between March 15 and June 30 of any year to protect spawning fish habitat adjacent to the development area. All in-water habitat features, including aquatic vegetation, natural woody debris and boulders should be left in their current locations in the near shore area.
- When native soil is exposed, sediment and erosion control work in the form of heavy-duty sediment fencing shall be positioned along the down gradient edge of any construction envelopes adjacent to waterbodies.
- In order to protect fish habitat from contamination, it is recommended that all machinery be maintained in good working condition and that all machinery be fueled a minimum of 30 m from the high water mark.
- Any temporary storage of aggregate material shall be set back from the water's edge by no less than 40 m and be contained by heavy-duty silt fencing.

6.0 SUMMARY

A headwater drainage feature assessment was completed and the John Boyce Municipal Drain, labelled as HDF1, and one HDF was identified on-site, identified as HDF2. Protection is required for all surface water features on-site, identified as H1A, H1B, H1C, H1D, H1E, H2A and H2B. Protection management should include: protecting and/or enhancing the existing feature and riparian zone corridor or wetland in-situ, maintaining hydroperiod, incorporate shallow groundwater and base flow protection techniques, restore or enhance existing features and design and locate stormwater management systems to avoid impacts to the feature (TRCA/CVC, 2014).

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Sincerely,

Emily Young, B.Sc.
Junior Biologist

Taylor Warrington, B.Sc.
Biologist

7.0 REFERENCES

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ATTACHMENT A

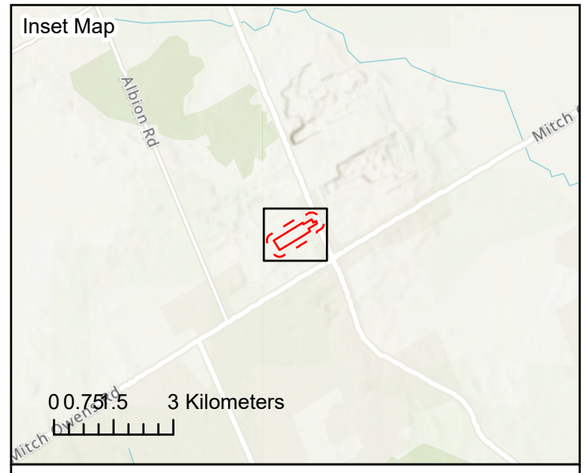
Figure A.1 – Site Layout

Legend

- Property Boundary
- Study Area
- Waterbody
- Watercourse

Headwater Drainage Feature Assessment

- Protection



Scale
1:5,296
0 50 100 200 300 Meters

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Client:	Project:
Greely Sand and Gravel	100227.101

Location
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Ottawa, Ontario

Drwn By:	Chkd By:	Headwater Drainage Feature Assessment
EP	TW	

Date: September 2024	Rev.	Figure: A.1
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Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Topographic Map: City of Ottawa, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada
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ATTACHMENT B

Headwater Drainage Feature Assessment Summary Tables

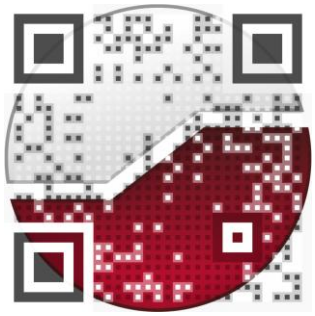
Table B.1
Summary of Headwater Drainage Features

Site Visit	Hydrology			Vegetation Assessment		Channel Form			Sediment Transport		
	Flow Influence (FI)	Flow Condition (FC)	Feature Type (FT)	Feature	Riparian	Average Wetted Width (m)	Average Depth (range) (cm)	Average Bankfull Width (m)	Substrate	Sediment Transport	Sediment Dep.
H1A											
1	Freshet (1)	Substantial Flow (5)	Channelized (2)	None (1)	Forest (7)	1.3	18.8 (16-20.5)	1.32	Silty Sand	Instream Bank Erosion (7)	Substantial (4)
2	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1	14.8 (13.5-15.5)	1.21	Silty Sand	Instream Bank Erosion	Moderate (3)
3	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	0.81	7.8 (7-8.5)	1.45	Silty Clay	Instream Bank Erosion	Extensive (5)
H1B											
1	Freshet (1)	Substantial Flow (5)	Channelized (2)	None (1)	Forest (7)	1.12	18 (12-25)	4.6	Silty Sand	Instream Bank Erosion (7)	Substantial (4)
2	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1.41	28 (20-42)	6	Silty Sand	Instream Bank Erosion	Moderate (3)
3	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1.4	21.9 (18-27)	4.5	Silty Clay	Instream Bank Erosion	Substantial (4)
H1C											
1	Freshet (1)	Substantial Flow (5)	Channelized (2)	None (1)	Forest (7)	1.45	6 (5-7.5)	1.69	Cobble Gravel	None	None
2	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1	11.3 (10-12)	6	Cobble Gravel	Instream Bank Erosion	None
3	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1.2	8.6 (7-10)	6	Cobble Bedrock	Instream Bank Erosion	None
H1D											
1	Freshet (1)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1.5	8.8 (7-10)	2.5	Silty Sand	Instream Bank Erosion	Substantial (4)
2	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1.5	14 (12-15)	8	Silty Sand	Instream Bank Erosion	Moderate (3)
3	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1.5	13.6 (12-15)	10	Silty Clay	Instream Bank Erosion	Moderate (3)
H1E											
1	Freshet (1)	Substantial Flow (5)	Channelized (2)	None (1)	Forest (7)	0.93	8 (6-9)	1.5	Silty Gravel	Instream Bank Erosion	Moderate (3)
2	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1.3	14 (13-16)	8	Sandy Silt	Instream Bank Erosion	Minimal (2)
3	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1.4	14 (12-17)	6	Silty Sand	Instream Bank Erosion	Moderate (3)
H2A											
1	Freshet (1)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	1.85	26.3 (24-29)	3.5	Silty Sand	Instream Bank Erosion	Moderate (3)
2	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	2.2	31 (24-35)	4	Silty Sand	Instream Bank Erosion	Moderate (3)
3	Baseflow (3)	Minimal Flow (4)	Channelized (2)	None (1)	Forest (7)	2.5	40 (38-41)	4	Silty Clay	Instream Bank Erosion	Substantial (4)
H2B											
1	Freshet (1)	Substantial Flow (5)	Wetland (6)	Wetland (6)	Scrubland (5)	2	11.3 (10-12)	3	Silty Sand	None	Minimal (2)
2	Baseflow (3)	Minimal Flow (4)	Wetland (6)	Wetland (6)	Scrubland (5)	4.5	17 (16.5-17.5)	5	Silty Sand	None	Minimal (2)
3	Baseflow (3)	Minimal Flow (4)	Wetland (6)	Wetland (6)	Scrubland (5)	2.5	19.3 (18-20)	10	Silty Sand	None	Moderate (3)

Table B.1
Summary of HDF Classification and Management Recommendations

HDF	Step 1		Step 2	Step 3	Step 4	Management Recommendation
	Hydrology	Modifiers	Fish Habitat	Terrestrial Habitat	Riparian Vegetation	
H1A	Important-Perennial	None	Valued	Contributing	Important - Forest	Protection
H1B	Important-Perennial	None	Valued	Contributing	Important - Forest	Protection
H1C	Important-Perennial	None	Limited	Contributing	Important - Forest	Protection
H1D	Important-Perennial	None	Important	Contributing	Important - Forest	Protection
H1E	Important-Perennial	None	Valued	Contributing	Important - Forest	Protection
H2A	Important-Perennial	Lake	Valued	Contributing	Important - Forest	Protection
H2B	Important-Perennial	Culvert, Lake	Important	Valued	Important - Scrubland	Protection

experience • knowledge • integrity



civil	civil
geotechnical	géotechnique
environmental	environnementale
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité