

# DOUGAN & ASSOCIATES

ECOLOGICAL CONSULTING & DESIGN

3-7 EDINBURGH ROAD SOUTH GUELPH ON N1H 5N8 T 519.822.1609 F 519.822.5389 www.dougan.ca

September 27, 2024

Township of Puslinch  
7404 Wellington Rd. 34  
Puslinch, Ontario N0B 2J0  
Attn. Justine Brotherston, Interim Municipal Clerk, Deputy Clerk

**RE: Ecology Peer Review – Dufferin Aggregates Mill Creek Pit Phase 6 2023 Ecological Monitoring Report (GEC, 2024)**

Dear Justine,

Dougan has reviewed the 2023 Ecological Monitoring Report for the Dufferin Aggregates Mill Creek Pit – Phase 6 prepared by Goodban Ecological Consulting Inc (GEC).

We offer the following comments on the monitoring report:

- Please clarify how plant survivorship was assessed (e.g. fair vs good). Survivorship and performance should be quantified based on percent cover, composition and abundance, or another metric.
- It would be beneficial to include a quantification of adventitious weeds vs. planted target species, as well as a summary of the floristic quality of the adventitious species.
- Please provide clarification on when remedial actions would be required, as noted in section 6.0 Summary and Recommendations. For example, is there a certain target for plant survivorship or percent coverage in 2024 that would qualify for remedial action/ replanting? This should be quantified.
- Attachment A appears to be incomplete with only a couple of the recommended species for planting being included on Page 5. Please clarify.
- The Table outlining restoration work mentioned specific pollinator plantings/strips as well as common milkweed clusters (e.g. Unit SB1 in the South Berm is slated to have 10, 3mx10m pollinator strips planted. EB2 on the East berm mentions common milkweed will be established.) Please clarify the timeline for these plantings as they do not appear to have been completed thus far (i.e. is this part of the 2024 scope?)

Please do not hesitate to contact the undersigned with any questions on the above.

Regards,

  
Christina Olar, HBSc, Eco. Mgmt. Tech.  
Operations Lead, Ecology

  
Todd Fell, OALA, CSLA, CERP  
Principal, Landscape Arch., Rest. Ecologist



Goodban  
Ecological  
Consulting Inc.

## **2023 Ecological Monitoring Report**

**Dufferin Aggregates Mill Creek Pit - Phase 6**

**June 2024**

Submitted to:

**Dufferin Aggregates**

A CRH Company

Prepared by:

**Goodban Ecological Consulting Inc.**

Milton, Ontario

[ This page left blank intentionally. ]

# 2023 ECOLOGICAL MONITORING REPORT

## Dufferin Aggregates Mill Creek Pit - Phase 6

### Table of Contents

1.0	Introduction .....	1
2.0	Ecological Management Plan (EMP) Overview.....	2
3.0	Ecological Management Plan (EMP) – Spring 2020 Follow-up Work.....	3
4.0	Progressive and Final Rehabilitation.....	4
5.0	2023 Monitoring Summary .....	5
6.0	Summary and Recommendations.....	6

### LIST OF FIGURES

Figure 1	Location Map
Figure 2	Revised Extraction Footprint
Figure 3	Ecological Management Plan (for lands that will not be extracted)
Figure 4	Rehabilitation Plan (for lands that will be extracted)

### LIST OF TABLES

Table 1	Ecological Management Plan and Rehabilitation Plan - Unit Summary
---------	---

### LIST OF ATTACHMENTS

Attachment A	Sections 3.1 and 3.2 of the Ecological Management Plan (GEC, April 2017)
Attachment B	Mill Creek Pit – Dufferin Aggregates - Phase 6 2023 Ecological Monitoring Photographs

[ This page left blank intentionally. ]

## 1.0 Introduction

Goodban Ecological Consulting Inc. (GEC) was initially retained by Dufferin Aggregates (Dufferin), a CRH Company, in 2016 to assist in addressing agency comments on their Mill Creek Pit Phase 6 Major Site Plan Amendment.

Dufferin submitted their Major Site Plan Amendment to the Mill Creek Pit (Licence 5738) in 2015, along with applications for related Official Plan and Zoning By-law Amendments to the Township of Puslinch. The Mill Creek Pit is owned by the University of Guelph and is located on Part Lot 24 Concession 1 and Part Lots 21-24 Concession 2 in the Township of Puslinch, County of Wellington (**Figure 1**). The Mill Creek site is approximately 188.6 ha in size. The 6.53 ha Phase 6 extraction area is a southerly extension, within the licensed boundary, of existing Phase 2 (**Figure 2**).

GEC's work included the preparation of the *Ecological Management Plan & Rehabilitation Plan, Dufferin Aggregates Mill Creek Pit - Proposed Phase 6* (GEC, April 2017). That report provides details on the management of features on Dufferin land surrounding the proposed Phase 6 extraction area and details on the proposed Rehabilitation Plan for the Phase 6 extraction area. The *Ecological Management Plan* (EMP) covers the 2.55 ha of Phase 6 that will not be extracted (**Figure 3**). The *Rehabilitation Plan* covers the 6.53 ha of Phase 6 that will be extracted (**Figure 4**).

Dufferin successfully implemented EMP Section 3.1 (Pre-Extraction and Site Preparation – Ecological Management Activities) by November 30, 2019, as documented in the December 5, 2019 Letter Report prepared by GEC. The Letter Report contained some recommendations for follow-up actions to be completed by Dufferin in spring 2020. This work was completed in 2020 and subsequently, progressive and final rehabilitation has been underway, with the latest work documented in this 2023 Phase 6 Ecological Monitoring Report.

Sheet 8 of the Site Plans details the reporting requirements for the Ecological Management Plan and Rehabilitation Plan. An Annual Monitoring Report is to be submitted by June 30 of the following year to the Ministry of Natural Resources and Forestry (MNR), County of Wellington, Township of Puslinch and the Grand River Conservation Authority (GRCA), demonstrating the implementation of the Ecological Management Plan (EMP) and Rehabilitation Plan within Phase 6.

For ease of reference, Sections 3.1 and 3.2 of the Ecological Management Plan (EMP) and Rehabilitation Plan Report (GEC 2017) are provided in **Attachment A. Figures 1 to 4** and **Table 1** from the *Ecological Management Plan & Rehabilitation Plan* are also attached.

The remainder of this 2023 Ecological Monitoring Report is organized under the following headings:

- 2.0 Ecological Management Plan (EMP) Overview
- 3.0 Ecological Management Plan (EMP) - Spring 2020 Follow-up Work
- 4.0 Progressive and Final Rehabilitation Plan
- 5.0 2023 Monitoring Summary
- 6.0 Summary and Recommendations

## 2.0 Ecological Management Plan (EMP) Overview

The Ecological Management Plan covers the 2.55 ha of Phase 6 that will not be extracted. An overall goal of this Ecological Management Plan is to expand the extent of Significant Woodland areas through an integrated planting approach covering the property setbacks, woodland management zones, acoustic berms and, ultimately, the rehabilitation side slopes. Habitat conditions will be enhanced by controlling invasive woody species, increasing woodland diversity through species selections for reforestation, providing new habitat structures (e.g., rock piles, logs, woody debris, etc.), creating wildlife shrub patches, creating grassland patches with wildflowers for pollinators, and creating shoreline wetlands with habitat structures. The various management zones and rehabilitation areas are shown on **Figures 3** and **4**, and described in **Table 1**.

The main components of the Ecological Management Plan for land that will not be extracted were as follows:

- Stake extraction limits.
- Mark trees for retention and/or removal within setbacks and Woodland Management Zones.
- Cut trees and shrubs marked for removal along the extraction limit and within management areas.
- Install habitat features (e.g., log piles, brush piles) in wooded areas to be retained along the west side of the property.
- Plant trees and shrubs within management areas during spring and/or fall planting periods.
- Install silt fencing as shown on **Figure 3**.
- Strip topsoil from within berm footprints for use on berms. Strip other topsoil as necessary in order to complete the berm construction.
- Salvage field stones and large rocks for use in management areas and on future rehabilitation slopes.
- Construct south and east berms with irregular, naturalistic contouring, to the extent feasible.
- Install root wads, stumps, logs, rock piles and large boulders on berms.
- Install one (1) snake hibernaculum at the location shown on **Figure 3**.
- Plant trees and shrubs on south and east berms during spring and/or fall planting periods.

Dufferin successfully implemented EMP Section 3.1 (Pre-Extraction and Site Preparation – Ecological Management Activities) by November 30, 2019, as documented in the December 5, 2019 Letter Report prepared by GEC. Puslinch Township’s ecological peer reviewer, Mr. Greg Scheifele of GWS Ecological & Forestry Services Inc., reviewed GEC’s letter report and attended a site visit with Mr. Anthony Goodban (GEC) and Mr. Ron Van Ooteghem (Dufferin Aggregates) on March 11, 2020, to review the EMP work completed by Dufferin.

GWS Ecological & Forestry Services Inc. then prepared a brief letter report dated March 13, 2020, which included the following summary:

*“In summary, the required tree and shrub removal work and follow-up ecological restoration work completed to date was effectively and professionally implemented. I commend Dufferin staff, consultants and contractors on this work and encourage them to perform the same quality of workmanship elsewhere on this site during ongoing progressive rehabilitation.”*

GEC’s December 5, 2019 Letter Report contained some recommendations for follow-up actions to be completed by Dufferin in spring 2020. This work was completed in 2020 and documentation is provided below.

### **3.0 Ecological Management Plan (EMP) - Spring 2020 Follow-up Work**

The following ecological management activities were completed by Dufferin as of May 2020:

- From March to May 2020, GEC and Dufferin Aggregates site staff monitored the south and east berms for any signs of erosion or washouts. No corrective measures were required.
- GEC staff walked the south and east berms in May 8, 2020, to check on the berm plantings and identify any follow-up work that the planting contractor should complete, which included the following action items:
  - Tamp down and stake, if necessary, approximately 95 plantings that show signs of frost-heaving and/or are leaning;
  - Replace approximately 195 plantings that are dead or in poor condition; and,
  - Over-seed and reseed any bare or sparsely covered areas where the groundcover seeding from late 2019 did not take.
- Scott’s Landscaping and Lawn Care completed the following work in May 2020:
  - All plantings that were leaning or showing signs of frost-heaving were tamped down and staked as necessary;
  - Approximately 250 tree seedlings in 1-gallon containers (or larger) were planted, including Basswood, Sugar Maple, Red Oak, White Birch, White Pine and White Spruce; and,
  - Bare or sparsely covered areas on the berms were seeded with 22.7 kg of the Custom Cover Mix comprising 77% Canada Bluegrass (*Poa compressa*), 20%



Kentucky Bluegrass (*Poa pratensis*) and 3% White Clover (*Trifolium repens*), and 10 kg of Canada Wild-rye (*Elymus canadensis*).

#### 4.0 Progressive and Final Rehabilitation

**Figure 4** shows the various rehabilitation units included in the Rehabilitation Plan. The progressive rehabilitation of Phase 6 commenced in November 2020. Pit Rehabilitation Unit RSW2 and the southern portion of Unit RSW1 were created in 2021; this work included the creation of the side slopes, placement of habitat features including boulders, rock piles and woody debris (e.g., stumps root wads, logs, etc.), and seeding with a non-invasive seed mix.

Rehabilitation Units RSW3, RSW4 and RSM2 were created in 2022. Below water extraction was completed in late 2022 and the remainder of side slope Unit RSW1 was completed in early 2023, prior to tree-planting.

Wetland Units SW1, SW2 and SW3 were created in 2022. Units SW1 and SW2 have a surface water connection to the Phase 2/6 Lake. Unit SW3 is separated from the Phase 2/6 Lake by a low gravel bar. Habitat features such as gravel bars, boulders, rock piles and logs were placed around the small newly-created wetland features. On November 9, 2022, GEC and CRH staff sowed 2 kg of the Ontario Seed Company's *Valleyland Native Seed Mixture (Problem Solver) 8260* around/in the 3 wetland features. This seed mix includes the following species:

- Fowl Bluegrass (*Poa palustris*)
- Fowl Manna Grass (*Glyceria striata*)
- Fox Sedge (*Carex vulpinoidea*)
- Path Rush (*Juncus tenuis*)
- Virginia Wild Rye (*Elymus virginicus*)

Late in 2022, Dufferin removed the silt/exclusion fencing surrounding the naturalized berms and around Woodland Protection Zones 'A' and 'B'. These fences no longer serve a purpose because the berms are now naturalized and there is low risk of erosion/sedimentation, and the adjacent rehabilitation Unit RSW2 and the south portion of Unit RSW1 have been created.

The pit rehabilitation side slopes were planted with native trees and shrubs by Tamarack Reforestation on April 25 to 27, 2023. Refer to **Attachment B** for representative photographs.

A total of 3814 native tree plugs were planted on the rehabilitation side slopes. The species and relative numbers are listed below:

- 50 Balsam Poplar (*Populus balsamifera*)
- 10 Bur Oak (*Quercus macrocarpa*)
- 325 Red Cedar (*Juniperus virginiana*)
- 150 Red Maple (*Acer rubrum*)
- 55 Red Oak (*Quercus rubra*)
- 120 Silver Maple (*Acer saccharinum*)
- 250 Trembling Aspen (*Populus tremuloides*)
- 550 White Birch (*Betula papyrifera*)
- 2004 White Cedar (*Thuja occidentalis*)
- 300 White Oak (*Quercus alba*)

- 3814 Total Trees

A total of 1121 native shrub plugs were planted on the rehabilitation side slopes. The species and relative numbers are listed below:

- 50 Alternate-leaved Dogwood (*Cornus alternifolia*)
- 75 American Hazel (*Corylus americana*)
- 78 Chokecherry (*Prunus virginiana*)
- 228 Fragrant Sumac (*Rhus aromatica*)
- 228 Gray Dogwood (*Cornus racemosa*)
- 78 Highbush Cranberry (*Viburnum trilobum*)
- 78 Nannyberry (*Viburnum lentago*)
- 228 Staghorn Sumac (*Rhus typhina*)
- 78 Wild Crab (*Malus coronaria*)

- 1121 Total Shrubs

An additional 30 trees and 100 shrubs were planted around the three Shoreline Wetlands (SW1, SW2 and SW3). The species and relative numbers are listed below:

- 30 Silver Maple (*Acer saccharinum*)
- 50 Sandbar Willow (*Salix interior* [*S. exigua*])
- 50 Meadow Willow (*Salix petiolaris*)

Overall, a total of 3844 trees and 1221 shrubs were planted in the rehabilitation areas of Phase 6 of the Mill Creek Pit.

All of the plantings were installed with Cocodisc weed control mats. These mats reduce weedy competition and promote soil moisture retention.

## 5.0 2023 Monitoring Summary

Photographs are provided in **Attachment B**. The locations of the photo stations are shown on **Figure 3**.

Survivorship of woody plantings on the berms was generally good in 2023. Some deciduous plantings had previously been affected by the local Ldd Moth infestation; White Birch and Red Oak were most affected. Deer browsing also mainly affected White Birch and Red Oak. Survivorship continued to be best for Black Cherry (*Prunus serotina*), Chokecherry (*Prunus virginiana*), White Cedar (*Thuja occidentalis*), White Pine (*Pinus strobus*) and Red Cedar (*Juniperus virginiana*).

The groundcover seed mix was initially applied to the naturalized berms late in 2019, so cover was patchy in the spring due to relatively dry conditions and the resultant slow establishment of the groundcovers. Through the 2020 season annual weeds such as Common Ragweed (*Ambrosia artemisiifolia*), Red-root Amaranth (*Amaranthus retroflexus*), White Goosefoot (*Chenopodium album*), White Amaranth (*Amaranthus albus*), Common Groundsel (*Senecio vulgaris*), Canada Thistle (*Cirsium arvense*), etc., became established. This trend continued in 2021 to 2023, but some of the species included in the 2019 seed mix were more prevalent, especially Canada Wild-rye (*Elymus canadensis*).

The groundcovers in Rehabilitation Unit RSW2 and the southern portion of Unit RSW1 continued to develop in 2023. Groundcovers are a mix of cool season grasses (mostly *Festuca rubra*, *Lolium perenne* and *Poa pratensis*), White Clover (*Trifolium repens*) and Red Clover (*Trifolium pratense*), as well as many of the annual weeds listed in the preceding paragraph. Similar groundcovers were developing on Rehabilitation Units RSW3, RSW4 and RSM2 as the 2023 season progressed.

The tree and shrub plugs that were planted in 2023 on the rehabilitation side slopes showed fair to good survivorship. Conditions were wetter than normal during the spring and early summer period and drier than normal later in the year.

Around the newly created small wetland units (SW1, SW2 and SW3), the Silver Maple, Sandbar Willow and Meadow Willow plantings showed good survivorship in 2023 and a number of volunteer shrub willows were observed, including Sandbar Willow, Meadow Willow and Heart-leaved Willow (*Salix eriocephala*).

## **6.0 Summary and Recommendations**

In 2023 Goodban Ecological Consulting Inc. (GEC) observed that the naturalized berms surrounding Phase 6 were generally in good condition and survivorship of planted trees and shrubs was generally good. GEC also observed that the rehabilitation landforms had all been completed by early 2023. A large-scale tree and shrub planting project was completed in late April, 2023, that involved planting a total of 3844 trees and 1221 shrubs in the rehabilitation areas of Phase 6 of the Mill Creek Pit.

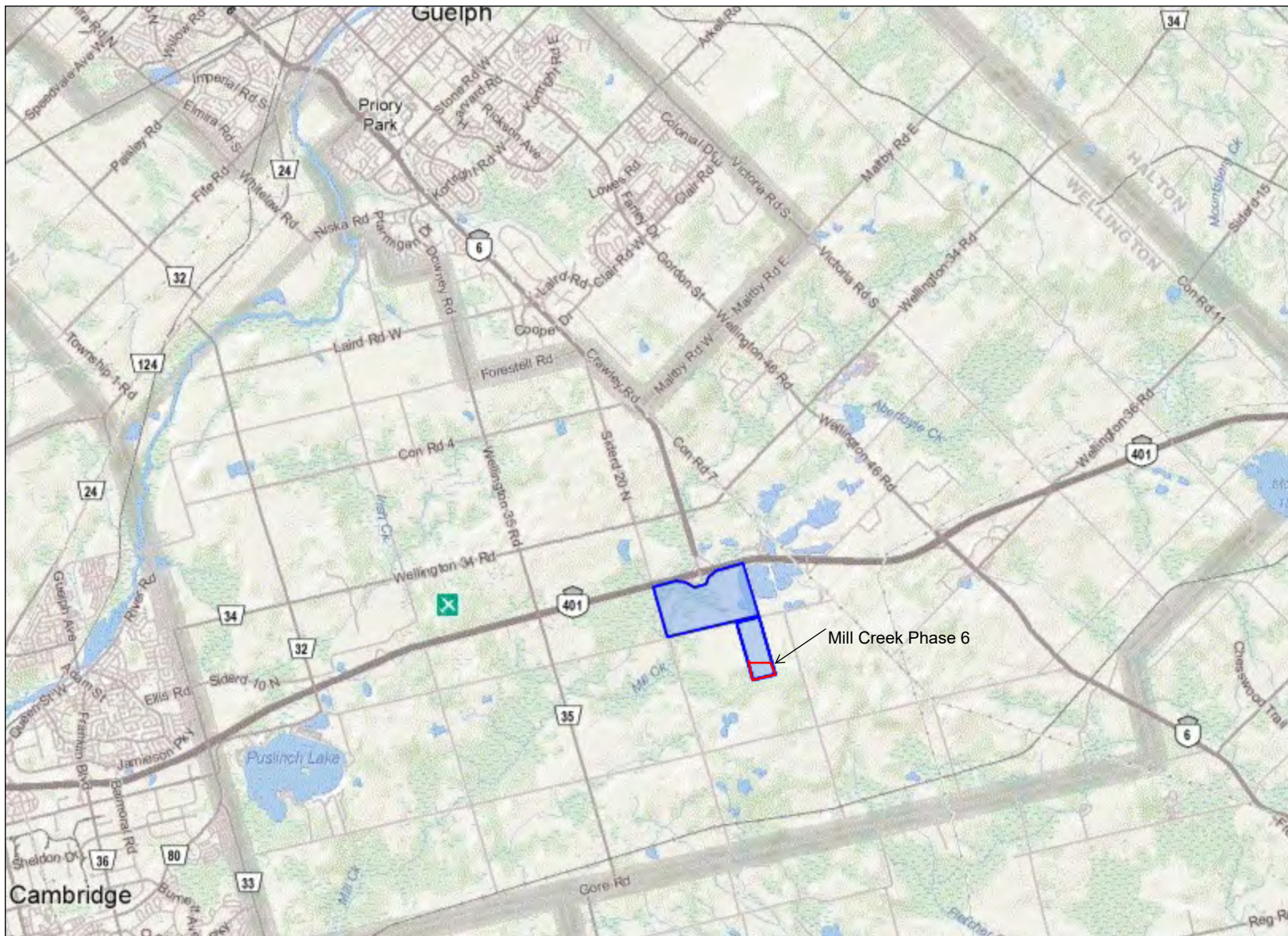
The following are recommendations for 2024:

- The ecological consultant should take fixed-point photographs during the 2024 field season.
- The ecological consultant should continue to monitor the naturalized berms and, as they area created and planted, the progressive and final rehabilitation features. The ecological consultant should recommend remedial actions to Dufferin as necessary.
- Custom native seed mixes should be sown in 2024 on select portions of the rehabilitation side slopes, where unvegetated patches are present.
- Descriptions of any Ecological Management Plan (EMP) and Rehabilitation Plan (RP) activities completed in 2024, including photos, mapping and monitoring observations, should be provided in the 2024 Ecological Monitoring Report, to demonstrate the implementation of the Ecological Management Plan and Rehabilitation Plan within Phase 6 of the Mill Creek Pit.
- The 2024 report should be submitted to the Ministry of Natural Resources and Forestry (MNRF), County of Wellington, Township of Puslinch and the Grand River Conservation Authority (GRCA) by June 30, 2025, or prior to the surrender of the licence covering Phases 2 and 6, whichever comes first.



Figure 1: Site Location, Dufferin Aggregates Mill Creek Pit

The property boundary for the Dufferin Aggregates Mill Creek Pit is outlined in blue



Projection: Web Mercator

The Ontario Ministry of Natural Resources and Forestry shall not be liable in any way for the use of, or reliance upon, this map or any information on this map. This map should not be used for: navigation, a plan of survey, routes, nor locations.

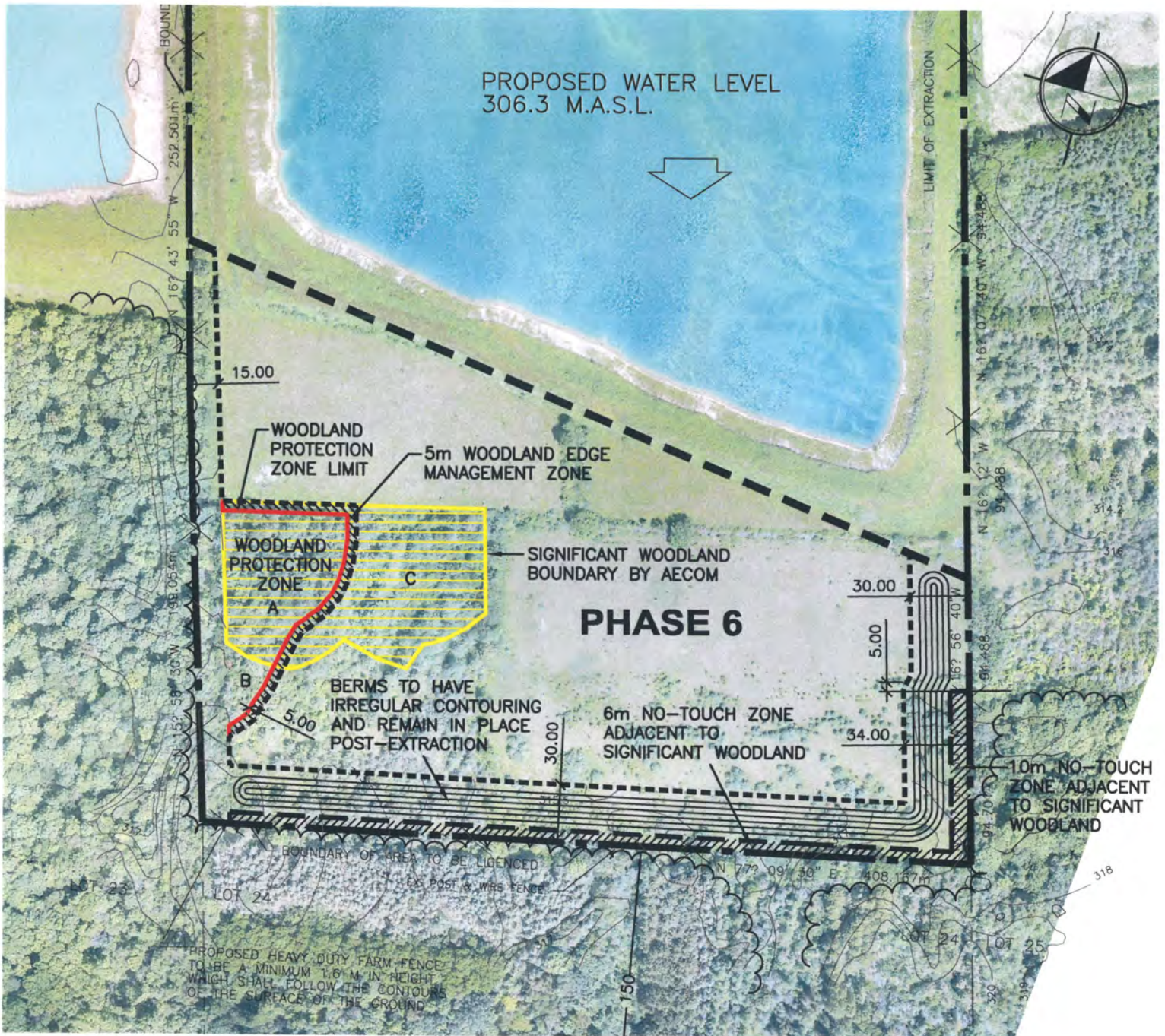
Imagery Copyright Notices: Ontario Ministry of Natural Resources and Forestry; NASA Landsat Program; First Base Solutions Inc.; Aéro-Photo (1961) Inc.; DigitalGlobe Inc.; U.S. Geological Survey.

© Queen's Printer for Ontario, 2015









© Copyright for Ontario Parcel data is held by Queen's Printer for Ontario and its licensors and may not be reproduced without permission.



Note: This figure is an excerpt from the Ecological Management Plan & Rehabilitation Plan (GEC, April, 2017).



**LEGEND**

-  LICENSED BOUNDARY
-  LIMIT OF EXTRACTION
-  WOODLAND PROTECTION ZONE LIMIT
-  WOODLAND PROTECTION ZONE
-  PROPOSED BERM
-  WOODLAND EDGE MANAGEMENT ZONE
-  NO-TOUCH ZONE
-  SIGNIFICANT WOODLAND

- A - WOODLAND TO BE RETAINED
- B - WOODLAND TO BE RETAINED
- C - WOODLAND TO BE REMOVED



Goodban Ecological Consulting Inc.

**FIGURE 2**  
**REVISED EXTRACTION FOOTPRINT**  
**MILL CREEK PIT**

PART OF LOTS 21, 22, 23 AND 24, CONCESSION II  
 PART OF LOT 24, CONCESSION I  
 TOWNSHIP OF PUSLINCH, COUNTY OF WELLINGTON

 **J.H. COHOON ENGINEERING LIMITED**  
 CONSULTING ENGINEERS  
 BRANTFORD

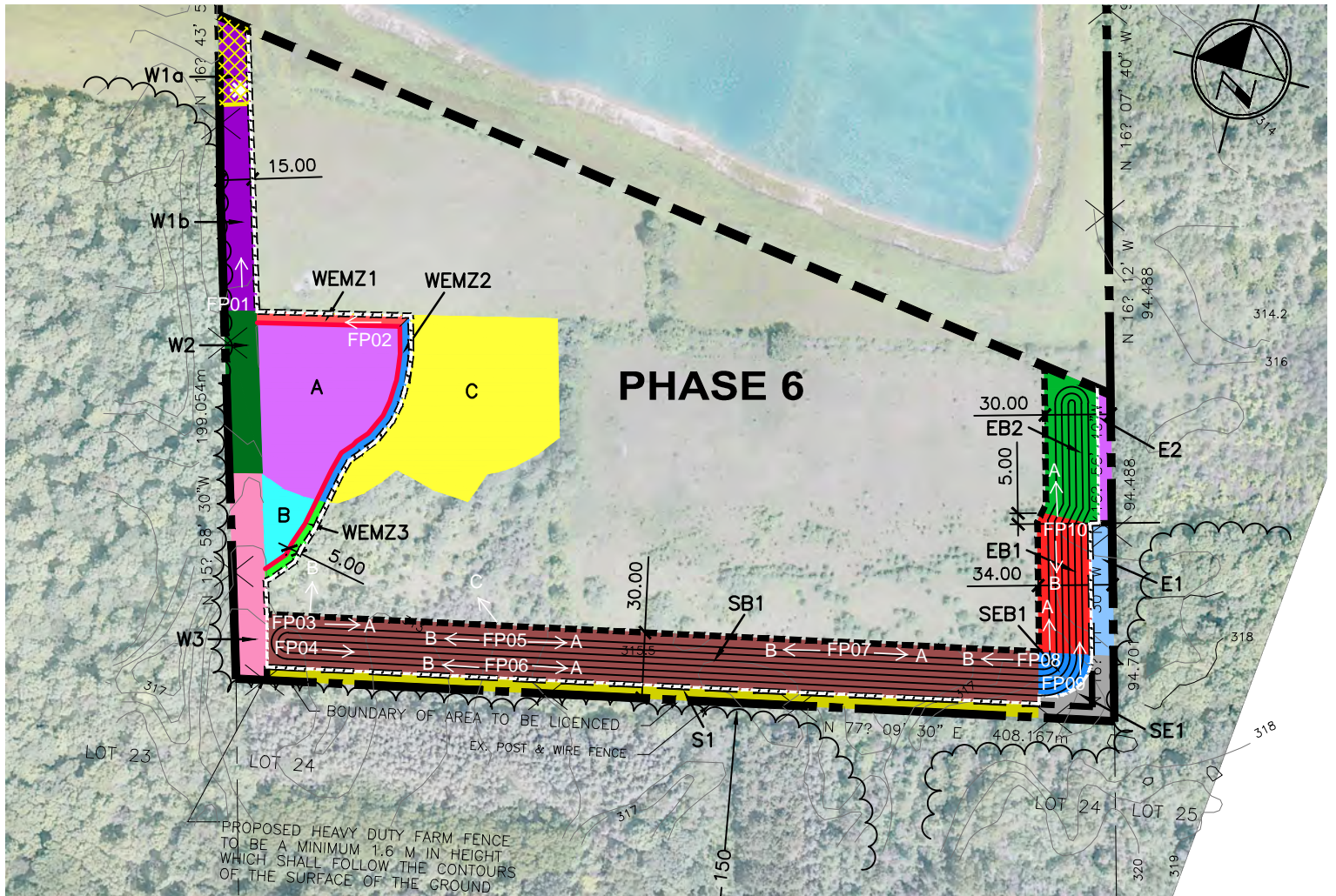
SCALE: 1:3000

DATE: MAR. 15/17



**Dufferin Aggregates**  
 a division of CRH Canada Group Inc.  
 2200 Steeles Ave. W. Suite 400, Concord, Ontario L4K 5Y6

Note: This figure is an excerpt from the Ecological Management Plan & Rehabilitation Plan (GEC, April 2017).



**LEGEND**

- A - WOODLAND PROTECTION ZONE A
- S1 - 6m NO TOUCH ZONE
- B - WOODLAND PROTECTION ZONE B
- SB1 - SOUTH BERM AREA
- C - WOODLAND TO BE REMOVED
- WEMZ1 - WOODLAND EDGE MANAGEMENT ZONE 1
- SE1 - NO TOUCH ZONE
- WEMZ2 - WOODLAND EDGE MANAGEMENT ZONE 2
- E1 - 10m NO TOUCH ZONE
- WEMZ3 - WOODLAND EDGE MANAGEMENT ZONE 3
- EB1 - PORTION OF EAST BERM
- W1a - 15m SETBACK
- E2 - 6m NO TOUCH ZONE
- W1b - 15m SETBACK
- EB2 - PORTION OF EAST BERM
- W2 - 15m SETBACK
- W3 - 15m SETBACK



← # Fixed-point Photo Stations (2020)

- LICENSED BOUNDARY
- LIMIT OF EXTRACTION
- WOODLAND PROTECTION ZONE LIMIT
- WOODLAND PROTECTION ZONE
- SILT FENCE LOCATION
- PROPOSED BERM (WITH IRREGULAR CONTOURING)
- SNAKE HIBERNACULUM LOCATION

**FIGURE 3**

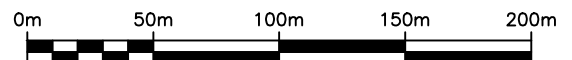
**ECOLOGICAL MANAGEMENT PLAN  
MILL CREEK PIT**

PART OF LOTS 21, 22, 23 AND 24, CONCESSION II  
PART OF LOT 24, CONCESSION I  
TOWNSHIP OF PUSLINCH, COUNTY OF WELLINGTON

**J.H. COHOON ENGINEERING LIMITED**  
CONSULTING ENGINEERS  
BRANTFORD

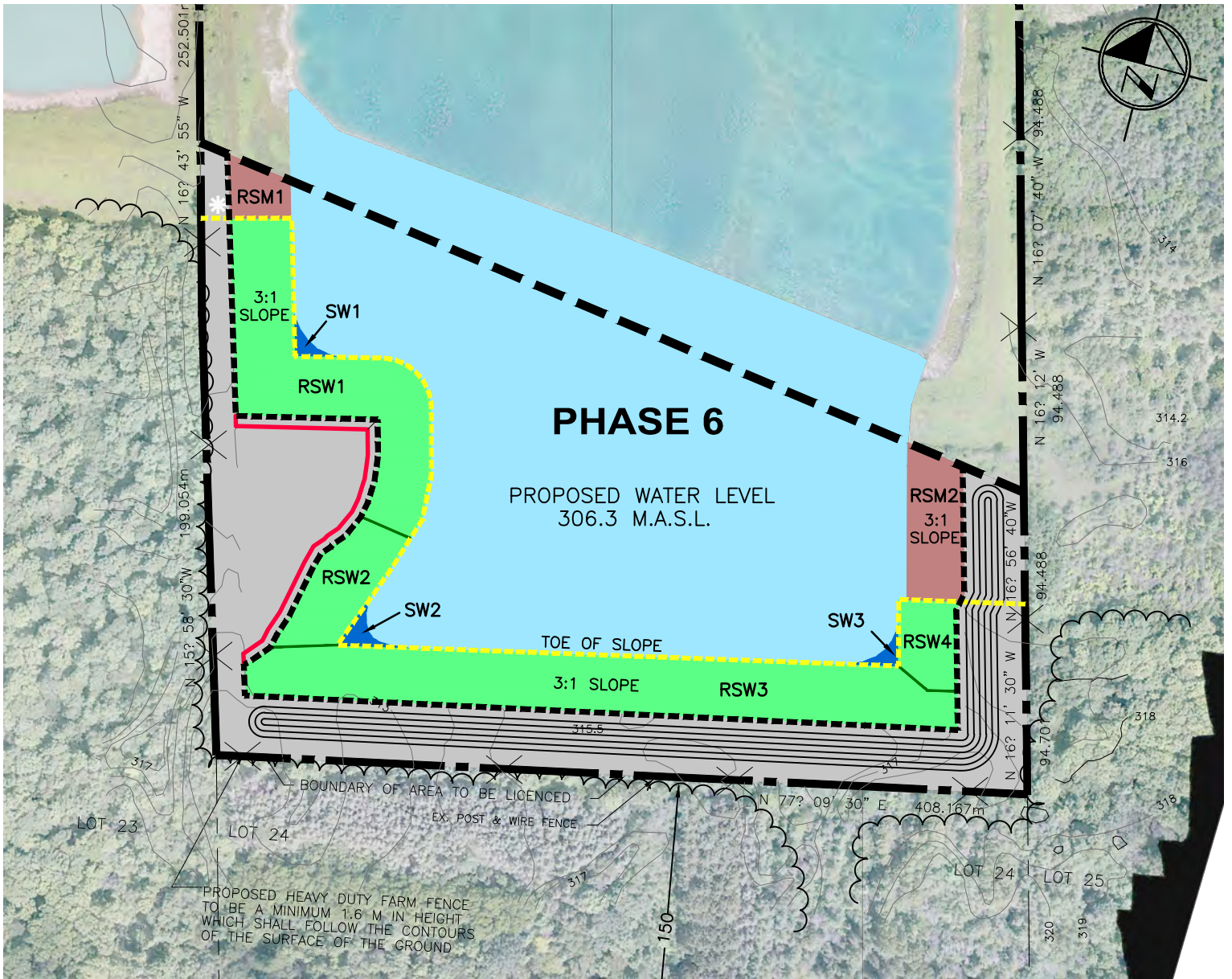
SCALE: 1:3000

DATE: MAR. 15/17





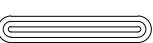







**Dufferin Aggregates**

a division of CRH Canada Group Inc.  
2300 Steeles Ave. W., Suite 400, Concord Ontario, L4K 5X6



**LEGEND**

-  LICENSED BOUNDARY
-  LIMIT OF EXTRACTION
-  WOODLAND PROTECTION ZONE LIMIT
-  FUTURE SIGNIFICANT WOODLAND BOUNDARY
-  PROPOSED BERM (WITH IRREGULAR CONTOURING)
-  REFER TO FIGURE 3 FOR DETAILS
-  RSW - REHAB SIDE SLOPE WOODLAND
-  RSM - REHAB SIDE SLOPE MEADOW
-  SW - SHORELINE WETLAND
-  SNAKE HIBERNACULUM LOCATION



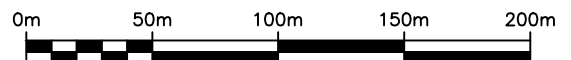
**FIGURE 4**  
**REHABILITATION PLAN**  
**MILL CREEK PIT**

PART OF LOTS 21, 22, 23 AND 24, CONCESSION II  
 PART OF LOT 24, CONCESSION I  
 TOWNSHIP OF PUSLINCH, COUNTY OF WELLINGTON

 **J.H. COHOON ENGINEERING LIMITED**  
 CONSULTING ENGINEERS  
 BRANTFORD

SCALE: 1:3000

DATE: MAR. 15/17



**Dufferin Aggregates**

a division of CRH Canada Group Inc.  
 2300 Steeles Ave. W., Suite 400, Concord Ontario, L4K 5X6

**TABLE 1: MILL CREEK PHASE 6 ECOLOGICAL MANAGEMENT PLAN AND REHABILITATION PLAN  
UNIT SUMMARY**

<b>UNIT</b>	<b>FEATURE</b>	<b>AREA (ha)</b>	<b>EXISTING OR FUTURE SIGNIFICANT WOODLAND?</b>	<b>MAIN SPECIES SELECTIONS</b>	<b>NOTES</b>
<b><i>Ecological Management Plan (for land that will not be extracted)</i></b>					
W1a	15 m "No Touch" Setback - Meadow - Natural Regeneration Area	0.051	n/a	n/a	<p>This area contains a few trees and existing old field meadow vegetation. No additional planting is proposed.</p> <p>A snake hibernaculum will be constructed in this area. Spoil from the hibernaculum excavation will be used to raise the elevation of the entrances, so that they are south-facing. Habitat features such as root wads, logs and rock piles will be added to this general area, especially in association with the snake hibernaculum entrances.</p>
W1b	15 m "No Touch" Setback - Tree-planting Area	0.139	Future Significant Woodland	Eastern White Cedar (50%) - Eastern Red Cedar (20%) - White Birch (10%) - Trembling Aspen (10%) - Bigtooth Aspen (10%)	This unit is a 15 m strip just beyond the east limit of the Significant Woodland that extends offsite to the west. This area is presently an open old field meadow. This strip will be planted with tree seedlings on 2.0 m x 2.0 m spacing (2,500 seedlings/ha).
W2	15 m "No Touch" Setback	0.111	Existing Significant Woodland	n/a	This unit is a section of 15 m setback just beyond the east limit of the Significant Woodland that extends offsite to the west. This area is presently wooded and it is contiguous with the White Pine stand to the east. Saplings with ice storm damage will be flush cut close to the ground to promote regrowth.



**TABLE 1: MILL CREEK PHASE 6 ECOLOGICAL MANAGEMENT PLAN AND REHABILITATION PLAN  
UNIT SUMMARY**

<b>UNIT</b>	<b>FEATURE</b>	<b>AREA (ha)</b>	<b>EXISTING OR FUTURE SIGNIFICANT WOODLAND?</b>	<b>MAIN SPECIES SELECTIONS</b>	<b>NOTES</b>
W3	15 m "No Touch" Setback	0.140	Existing Significant Woodland	Eastern White Cedar (70%) - Eastern Red Cedar (15%) - White Birch (15%)	This unit is a section of 15 m setback that supports deciduous regeneration. Saplings with ice storm damage will be flush cut close to the ground to promote regrowth. Invasive woody species will be cut and stumps treated with herbicide. Any gaps along the 15 m limit will be planted with Eastern White Cedar, Eastern Red Cedar and White Birch (2.0 m x 2.0 m spacing).
A	Significant Woodland	0.392	Existing Significant Woodland (FOC1-2)	n/a	The west portion of the Significant Woodland in Phase 6 is no longer proposed for extraction. This area will be protected. Some of the non-merchantable timber from elsewhere on site will be cut into at least 50 3' to 4' lengths and scattered on the forest floor.
B	Cultural Woodland (CUW1)	0.058	Future Significant Woodland	n/a	This small area contains good Sugar Maple and White Pine regeneration and it will be protected. Saplings with ice storm damage will be flush cut close to the ground to promote regrowth.
WEMZ1 (W2a)	5 m Woodland Buffer	0.034	Future Significant Woodland	Eastern White Cedar (50%) - Eastern Red Cedar (20%) - White Birch (10%) - Trembling Aspen (10%) - Bigtooth Aspen (10%)	This unit is a 5 m strip of old field meadow just beyond the north limit of the Significant Woodland to be retained. The woodland edge is scrubby, being dominated by Common Buckthorn. This unit will be planted with tree seedlings on 2.0 m x 2.0 m spacing (2,500 seedlings/ha). Invasive woody species growing along the north edge of the Significant Woodland will be cut and stumps treated with herbicide.

**TABLE 1: MILL CREEK PHASE 6 ECOLOGICAL MANAGEMENT PLAN AND REHABILITATION PLAN  
UNIT SUMMARY**

<b>UNIT</b>	<b>FEATURE</b>	<b>AREA (ha)</b>	<b>EXISTING OR FUTURE SIGNIFICANT WOODLAND?</b>	<b>MAIN SPECIES SELECTIONS</b>	<b>NOTES</b>
WEMZ2 (W2b)	5 m Woodland Management Zone	0.047	Existing Significant Woodland	Eastern White Cedar (70%) - Eastern Red Cedar (15%) - White Birch (15%)	This unit is a 5 m strip just within the new woodland edge that will be created. Larger trees close to the new woodland edge will be felled. Non-merchantable timber will be cut into 3' to 4' lengths and spread on forest floor. Gaps along the new edge will be planted with Eastern White Cedar, Eastern Red Cedar and White Birch (2.0 m x 2.0 m spacing). Invasive woody species will be cut and stumps treated with herbicide.
WEMZ3	5 m Woodland Management Zone	0.022	Future Significant Woodland	Eastern White Cedar (70%) - Eastern Red Cedar (15%) - White Birch (15%)	This unit is a 5 m strip just within the new woodland edge that will be created. This area contains Sugar Maple regeneration. Saplings with ice storm damage will be flush cut close to the ground to promote regrowth.
S1	6 m "No Touch" Setback	0.212	Future Significant Woodland	Eastern White Cedar (70%), Eastern Red Cedar (15%) and White Birch (15%)	This unit is a 6 m "No Touch" strip along the southern property boundary. Desirable woody species will be retained. Invasive woody species will be cut and stumps treated with herbicide. Gaps will be planted with Eastern White Cedar, Eastern Red Cedar and White Birch (2.0 m x 2.0 m spacing).
SB1	South Berm	0.846	Future Significant Woodland	<p>Pit side of berm: Eastern White Cedar (50%) - Eastern Red Cedar (10%) - Pin Cherry (10%) - White Birch (10%) - Trembling Aspen (10%) - Bigtooth Aspen (10%)</p> <p>Non-pit side and crest of berm: Basswood (20%) - Black Cherry (20%) - Red Oak (40%) - White Pine (20%)</p>	The pit side of berm SB1 is north-facing and will be integrated with the adjacent future rehab slope (RSW3). The non-pit side of the berm is south-facing. Tree planting will be at 2.0 m x 2.0 m spacing. Habitat features such as root wads, logs and rock piles will be added to this berm. Five (5) 10 m x 10 m shrub patches will be established within this unit. Ten (10) 3 m x 10 m pollinator strips will be planted.

**TABLE 1: MILL CREEK PHASE 6 ECOLOGICAL MANAGEMENT PLAN AND REHABILITATION PLAN  
UNIT SUMMARY**

<b>UNIT</b>	<b>FEATURE</b>	<b>AREA (ha)</b>	<b>EXISTING OR FUTURE SIGNIFICANT WOODLAND?</b>	<b>MAIN SPECIES SELECTIONS</b>	<b>NOTES</b>
SEB1	Southeast Corner Berm	0.040	Future Significant Woodland	<p>Pit side of berm: Eastern White Cedar (50%) - Eastern Red Cedar (10%) - Pin Cherry (10%) - White Birch (10%) - Trembling Aspen (10%) - Bigtooth Aspen (10%)</p> <p>Crest of berm: Basswood (20%) - Black Cherry (20%) - Red Oak (40%) - White Pine (20%)</p>	This unit is the southeast corner of the berm that will be constructed around the south and east edges of the Phase 6 extraction area. Tree planting will be at 2.0 m x 2.0 m spacing.
SE1	Southeast Corner "No Touch" Setback	0.062	Future Significant Woodland	Basswood (20%) - Black Cherry (20%) - Red Oak (40%) - White Pine (20%)	This is a small unit in the southeast corner of Phase 6. It will become a sheltered location between the berm (corner of SB1 and EB1) and the adjacent Significant Woodland. Desirable woody species will be retained. Invasive woody species will be cut and stumps treated with herbicide. Gaps will be planted with Basswood, Black Cherry, Red Oak and White Pine (2.0 x 2.0 m spacing).
E1	10 m "No Touch" Setback	0.060	Future Significant Woodland	Eastern White Cedar (70%), Eastern Red Cedar (15%) and White Birch (15%)	This unit is a 10 m "No Touch" strip along the eastern property boundary. Desirable woody species will be retained, including an existing double-row of White Spruce previously planted by Dufferin. Invasive woody species will be cut and stumps treated with herbicide. Gaps will be planted with Eastern White Cedar, Eastern Red Cedar and White Birch (2.0 m x 2.0 m spacing).

**TABLE 1: MILL CREEK PHASE 6 ECOLOGICAL MANAGEMENT PLAN AND REHABILITATION PLAN  
UNIT SUMMARY**

UNIT	FEATURE	AREA (ha)	EXISTING OR FUTURE SIGNIFICANT WOODLAND?	MAIN SPECIES SELECTIONS	NOTES
EB1	East Berm	0.148	Future Significant Woodland	<p>East side of berm: Basswood (20%) - Black Cherry (20%) - Red Oak (40%) - White Pine (20%)</p> <p>West side and crest of berm: Eastern White Cedar (50%) - Eastern Red Cedar (10%) - Pin Cherry (10%) - White Birch (10%) - Trembling Aspen (10%) - Bigtooth Aspen (10%)</p>	The west side of berm EB1 is west-facing and will be integrated with the adjacent future rehab slope (RSW3 and RSW4). The south side of the berm is south-facing. Tree planting will be at 2.0 m x 2.0 m spacing. Habitat features such as root wads, logs and rock piles will be added to this berm. Two (2) 10 m x 10 m shrub patches will be established within this unit. Five (5) 3 m x 10 m pollinator strips will be planted.
E2	6 m "No Touch" Setback - Meadow Section	0.036	n/a	n/a	This unit is a 6 m "No Touch" strip along the eastern property boundary. Desirable woody species will be retained, including an existing double-row of White Spruce previously planted by Dufferin. Invasive woody species will be cut and stumps treated with herbicide.
EB2	East Berm - Meadow Section	0.156	n/a	Seed with non-invasive grass/legume mixture, using native species to the extent feasible	This section of the berm will be planted with a non-invasive grass/legume mixture, using native species to the extent feasible, for the purposes of slope stabilization. Other suitable native plant species may also be seeded or planted as appropriate. In particular, clusters of Common Milkweed ( <i>Asclepias syriaca</i> ) will be established. Habitat features such as root wads, logs and rock piles will be added to this berm. Two (2) 10 m x 10 m shrub patches will be established within this unit. Five (5) 3 m x 10 m pollinator strips will be planted.

**TABLE 1: MILL CREEK PHASE 6 ECOLOGICAL MANAGEMENT PLAN AND REHABILITATION PLAN  
UNIT SUMMARY**

<b>UNIT</b>	<b>FEATURE</b>	<b>AREA (ha)</b>	<b>EXISTING OR FUTURE SIGNIFICANT WOODLAND?</b>	<b>MAIN SPECIES SELECTIONS</b>	<b>NOTES</b>
<b><i>Progressive and Final Rehabilitation Plan (for land that will be extracted)</i></b>					
RSM1	Rehab Side Slope - Meadow Section	0.078	n/a	Seed with non-invasive grass/legume mixture, using native species to the extent feasible	This rehab slope will be planted with a non-invasive grass/legume mixture, using native species to the extent feasible, for the purposes of slope stabilization. Other suitable native plant species may also be seeded or planted as appropriate. In particular, clusters of Common Milkweed ( <i>Asclepias syriaca</i> ) will be established. Habitat features such as root wads, logs and rock piles will be added to this berm. One (1) 10 m x 10 m shrub patches will be established within this unit. Three (3) 3 m x 10 m pollinator strips will be planted.
RSW1	Rehab Side Slope - Woodland Section	0.636	Future Significant Woodland	Eastern White Cedar (50%) - Eastern Red Cedar (10%) - Pin Cherry (10%) - White Birch (10%) - Trembling Aspen (10%) - Bigtooth Aspen (10%)	(2.0 m x 2.0 m spacing, 2,500 seedlings/ha) Habitat features such as root wads, logs and rock piles will be added to this rehab side slope. Five (5) 10 m x 10 m shrub patches will be established within this unit. Ten (10) 3 m x 10 m pollinator strips will be planted.
RSW2	Rehab Side Slope - Woodland Section	0.209	Future Significant Woodland	Black Oak (40%) - Chinquapin Oak (20%) - Red Oak (20%) - White Oak (20%)	(3.0 m x 3.0 m spacing, 1,111 seedlings/ha) Habitat features such as root wads, logs and rock piles will be added to this rehab side slope. Suitable tallgrass prairie plant species will be established (refer to Section 4.3 - Seed Mix Details).
RSW3	Rehab Side Slope - Woodland Section	0.967	Future Significant Woodland	Eastern White Cedar (50%) - Eastern Red Cedar (10%) - Pin Cherry (10%) - White Birch (10%) - Trembling Aspen (10%) - Bigtooth Aspen (10%)	(2.0 m x 2.0 m spacing, 2,500 seedlings/ha) Habitat features such as root wads, logs and rock piles will be added to this rehab side slope. Seven (7) 10 m x 10 m shrub patches will be established within this unit. Fifteen (15) 3 m x 10 m pollinator strips will be planted.

**TABLE 1: MILL CREEK PHASE 6 ECOLOGICAL MANAGEMENT PLAN AND REHABILITATION PLAN  
UNIT SUMMARY**

UNIT	FEATURE	AREA (ha)	EXISTING OR FUTURE SIGNIFICANT WOODLAND?	MAIN SPECIES SELECTIONS	NOTES
RSW4	Rehab Side Slope - Woodland Section	0.120	Future Significant Woodland	Black Oak (40%) - Chinquapin Oak (20%) - Red Oak (20%) - White Oak (20%)	(3.0 m x 3.0 m spacing, 1,111 seedlings/ha) Habitat features such as root wads, logs and rock piles will be added to this rehab side slope. Suitable tallgrass prairie plant species will be established (refer to Section 4.3 - Seed Mix Details).
RSM2	Rehab Side Slope - Meadow Section	0.200	n/a	Seed with non-invasive grass/legume mixture, using native species to the extent feasible	This rehab slope will be planted with a non-invasive grass/legume mixture, using native species to the extent feasible, for the purposes of slope stabilization. Other suitable native plant species may also be seeded or planted as appropriate. In particular, clusters of Common Milkweed ( <i>Asclepias syriaca</i> ) will be established. Habitat features such as root wads, logs and rock piles will be added to this berm. Three (3) 10 m x 10 m shrub patches will be established within this unit. Five (5) 3 m x 10 m pollinator strips will be planted.
SW1	Shoreline Wetland	0.015	n/a	Sandbar Willow ( <i>Salix exigua</i> ) Common Cattail ( <i>Typha latifolia</i> ) Sedges ( <i>Carex</i> spp. and <i>Scirpus</i> spp.)  OSC Mix 8180 or equivalent	Unit SW1 is a small patch of shallow wetland that will be created along the lake shoreline. Logs, root wads, rock piles and gravel bars will be installed just above and below the water line. Small clusters of Sandbar Willow and other wetland shrubs will be planted along the shoreline. One (1) 8-10 m x 4-5 m gravel bar will be established above the high water line.

**TABLE 1: MILL CREEK PHASE 6 ECOLOGICAL MANAGEMENT PLAN AND REHABILITATION PLAN  
UNIT SUMMARY**

<b>UNIT</b>	<b>FEATURE</b>	<b>AREA (ha)</b>	<b>EXISTING OR FUTURE SIGNIFICANT WOODLAND?</b>	<b>MAIN SPECIES SELECTIONS</b>	<b>NOTES</b>
SW2	Shoreline Wetland	0.021	n/a	Sandbar Willow ( <i>Salix exigua</i> ) Common Cattail ( <i>Typha latifolia</i> ) Sedges ( <i>Carex</i> spp. and <i>Scirpus</i> spp.)  OSC Mix 8180 or equivalent	Unit SW2 is a small patch of shallow wetland that will be created along the lake shoreline. Logs, root wads, rock piles and gravel bars will be installed just above and below the water line. Small clusters of Sandbar Willow and other wetland shrubs will be planted along the shoreline. One (1) 8-10 m x 4-5 m gravel bar will be established above the high water line.
SW3	Shoreline Wetland	0.015	n/a	Sandbar Willow ( <i>Salix exigua</i> ) Common Cattail ( <i>Typha latifolia</i> ) Sedges ( <i>Carex</i> spp. and <i>Scirpus</i> spp.)  OSC Mix 8180 or equivalent	Unit SW3 is a small patch of shallow wetland that will be created along the lake shoreline. Logs, root wads, rock piles and gravel bars will be installed just above and below the water line. Small clusters of Sandbar Willow and other wetland shrubs will be planted along the shoreline. One (1) 8-10 m x 4-5 m gravel bar will be established above the high water line.
	Phase 6 Lake	4.271	n/a	n/a	The Phase 6 pit lake will be an extension of the existing Phase 2 pit lake.



Goodban  
Ecological  
Consulting Inc.

## **Ecological Management Plan & Rehabilitation Plan**

### **Dufferin Aggregates Mill Creek Pit - Proposed Phase 6**

**April 2017**

Submitted to:

**Dufferin Aggregates**

A Division of CRH Canada Group Inc.  
2300 Steeles Avenue West, 4<sup>th</sup> Floor  
Concord Ontario L4K 5X6

Prepared by:

**Goodban Ecological Consulting Inc.**

879 Cabot Trail  
Milton, Ontario L9T 3W4



habitat structures. The various management zones and rehabilitation areas are shown on **Figures 3** and **4**, summarized below and described in **Table 1**.

### **3.0 General Management and Rehabilitation Activities and Timelines**

Following approval of the Major Site Plan Amendment required to allow for the extraction of Phase 6, it is anticipated that Ecological Management Plan activities will be completed within 3 of approval. Rehabilitation Plan activities will be completed progressively as extraction is finished in an area. Phase 6 will represent one of the final phases of extraction for the Mill Creek Pit.

It is intended that the components of the Ecological Management Plan and Rehabilitation Plan described herein shall be referenced on the updated Site Plans for Phase 6.

#### **3.1 Pre-Extraction and Site Preparation - Ecological Management Activities**

Activities relating to the Ecological Management Plan will primarily occur as part of or at the same time as the initial pre-extraction site preparation stage which will start as soon as possible after the Major Site Amendment is approved and will be completed within 3 years of approval. Some Ecological Management Plan activities may take place progressively, as Phase 6 is developed for aggregate extraction.

The following Ecological Management Activities will be completed for lands that will not be extracted (refer also to **Figure 3** and **Table 1**):

- Stake the extraction limit along west side of Phase 6. Stake 6 m limit from property line along the south side and 10m and 6 m along the east side of Phase 6. Refer to **Figure 3** for locations of the various management areas.
- Mark trees for removal along the extraction limit and within management areas. Orange/yellow marking paint will be used to identify trees for removal. Blue marking paint will be used to mark blue dots on trees to be retained in proximity to extraction limits and berm footprint.
- Cut any trees and shrubs marked for removal along the extraction limit and within the management areas. Tree cutting should occur outside of the breeding bird season and bat activity period, i.e. cutting should take place between November 1 and April 1. Clearing of the balance of the Phase 6 extraction area should also occur outside of the breeding bird season and bat activity period.
- Install any habitat features (e.g. rock piles, brush piles) in areas to be retained along the west side of the property.
- Plant trees and shrubs within management areas during spring and/or fall planting periods. Spacing/density will be 2.0 m x 2.0 m (2,500 seedlings per hectare). Note that some tree-planting activities may extend into extraction stage of the operation.

- Prior to site stripping and berm construction, install light duty silt fence along the west limit of extraction. Along the south property limit, install light duty silt fence 6 m from property line. Along the east property limit, install light duty silt fence 10 m from property line adjacent to the Significant Woodland and 6 m from the property line for the remainder of the east limit. Refer to **Figure 3** for silt fence location.
- Strip and salvage topsoil from the south and east setbacks, between the silt fence and extraction limit.
- During stripping operations, salvage and stockpile field stones for use in management areas and on future rehabilitation slopes.
- Construct south and east berms with irregular, naturalistic contouring. Top dress berms with a minimum of 30 cm of topsoil. Install habitat features (e.g. rock piles, brush piles, root wads, logs, etc). The south and east berm footprint covers approximately 1.2 ha. As a general guideline at least 12 rock piles should be installed, with a 2 m x 2 m footprint and a minimum height of 1 m, if feasible. As a general guideline, at least 24 root wads and/or large logs should be installed, if feasible. Seed berms with suitable species mix, using native species to the extent feasible.
- Install one (1) snake hibernaculum at the location shown on Figure 3.
- Plant trees and shrubs on south and east berms during spring and/or fall planting periods.

### **3.2 Progressive and Final Rehabilitation**

As extraction proceeds in Phase 6, rehabilitation will occur progressively.

Progressive and final rehabilitation activities that will contribute to site restoration and better integration of the site with the surrounding Greenlands System include the following:

- Backfill side slopes to a minimum 3:1 slope. Grading will produce an irregular slope surface. The slopes will be top-dressed with a depth of topsoil similar to that which was removed from the field, if available. Habitat features such as root wads, logs and rock piles will be incorporated into the side slopes, to the extent feasible. The side slopes will cover approximately 2.24 ha. As a general guideline, at least 22 rock piles should be installed, with a 2 m x 2 m footprint and a minimum height of 1 m, if feasible. As a general guideline, at least 45 root wads and/or large logs should be installed, if feasible. Side slopes should be seeded with a suitable species mix, using native species to the extent feasible.
- Side slopes will be seeded with suitable species mixes, using native species to the extent feasible.

- Trees and shrubs will be planted on side slopes during the spring and/or fall planting periods as part of progressive and/or final rehabilitation. Spacing/density will be 2.0 m x 2.0 m (2,500 seedlings per hectare).
- Shoreline wetlands will be created by forming shallow water margins to the pit lake. Locations of shoreline wetlands are shown on **Figure 3**. Habitat features such as root wads, logs, rock piles and gravel bars will be installed as part of these shoreline wetlands.
- Remove silt fence once berms and rehab side slopes are vegetated and relatively stable.

#### **4.0 Management and Rehabilitation Details**

The various management and rehabilitation areas are shown on **Figures 3** and **4** and described in **Table 1**. Details for tree planting, shrub planting, seed mixes and habitat features are provided below.

##### **4.1 Tree Planting Details**

Tree planting will take place during suitable weather conditions in the spring (prior to May 16) and late fall (mid-October onwards) planting periods. Spring planting events are preferred. Tree planting will occur at a spacing/density of 2.0 m x 2.0 m (2,500 seedlings/ha) unless otherwise specified. Nursery stock will be plugs and/or container-grown stock. A tree seed collection program will be established to the extent feasible and this will involve collecting tree seeds from healthy specimens and providing the collected seed to local nurseries for propagation. Planting areas may need to be mown prior to planting if the herbaceous vegetation is thick and matted. Any mowing should ideally occur in the late fall during dry conditions.

The planting density (2,500 seedlings/ha) is high because, after planting, access to planting areas will be difficult for watering and maintenance of plantings. Therefore a relatively high level of mortality is anticipated. If survivorship to a free-to-grow condition is 40%, it will result in 1,000 trees/ha. This does not take into account natural regeneration which is likely to be considerable.

COCODISC weed control mats/disks and/or wood chip mulch will be installed to control herbaceous competition around planted seedlings and to improve moisture retention.

Site-specific species selections are provided in **Table 1**. A summary of the species groups for planting are provided below:

- Eastern White Cedar (70%) - Eastern Red Cedar (15%) - White Birch (15%)
- Eastern White Cedar (50%) - Eastern Red Cedar (20%) - White Birch (10%) - Trembling Aspen (10%) - Bigtooth Aspen (10%)

Attachment B:

Dufferin Aggregates – Mill Creek Pit – Phase 6

2023 Ecological Monitoring Photographs

Goodban Ecological Consulting Inc. (GEC)

June 2024



Photo 1: Plugs of native trees and shrubs were planted on the Phase 6 rehabilitation side slopes on April 25-27, 2023.  
GEC 2023-04-25.



Photo 2: Plugs were selected due to the limited access and difficult terrain in Phase 6. Planting large numbers of container-grown stock was not practical. GEC 2023-04-25



Photo 3: A large proportion of the species selected are early successional pioneering species such as White Cedar, White Birch and Red Cedar. Longer-lived tree species such as White Oak, Bur Oak and Red Maple were also planted in some areas.

GEC 2023-04-25



Photo 4 2023-04-25 - Copy



Photo 5: Tamarack Reforestation planted a total of 3844 trees and 1221 shrubs.  
GEC 2023-04-25



Photo 6: The cardboard boxes contain Cocodisc weed control mats. Each planting had a mat installed, to help control weedy competition and improve soil moisture retention.  
GEC 2023-04-25



Photo 7: View looking south at side slope Unit RSW1 and Shoreline Wetland SW1.  
GEC 2023-04-27



Photo 8: Second view of Units RSW1 and SW1. The White Pine stand in the distance was excluded from the Phase 6 extraction area by Dufferin Aggregates. GEC 2023-04-27





Photo 9: View of Shoreline Wetland SW1. The wetland has a surface water connection to the Phase 2/6 Lake and a number of habitat features including rock piles, gravel bars, stumps and logs. Note the Cocodisc weed control mats being installed on the plantings in the foreground. GEC 2023-04-27



Photo 10: View looking northwest towards Shoreline Wetland SW2 and side slope Unit RSW1. Note the tree-planters from Tamarack Reforestation on the slopes. GEC 2023-04-27



Photo 11: Similar view to that shown as Photo 10, taken late in the year, showing Shoreline Wetland SW1 and rehabilitation side slope Unit RSW1. GEC 2023-12-30



Photo 12: View looking east towards rehabilitation side slope Units RSM2 (left), RSW4 (middle) and RSW3 (right). GEC 2023-04-26



Photo 13: View looking southeast towards rehabilitation side slopes RSW4 (left) and RSW3. GEC 2023-04-26



Photo 14: View looking south southeast towards rehabilitation side slope Unit RSW3. GEC 2023-04-26



Photo 15: View showing White Cedar planted in April 2023. Despite the challenging conditions, survivorship was fair to good for most of the 2023 plantings.  
GEC 2023-12-30



Photo 16: Close-up view of White Cedar planting. The Cocodisc mats control weedy competition and promote soil moisture retention. GEC 2023-12-30