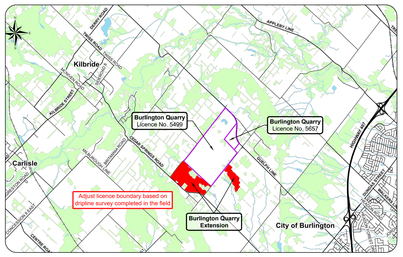
Key Map
(N.T.S.)



A. General

1. This site plan is prepared under the Aggregate Resources Act (ARA) for a Class 'A' Licence, Category 2.
2. Area Calculations:
   i. Licence Area (total) **~~70.4~~ 76.9 ha**
      - South Extension ~~10.9~~ 18.1 ha
      - West Extension ~~60.1~~ 58.8 ha

B. References

1. Contours were obtained from the City of Burlington's Open Data Catalogue based on 2017 data and are displayed in one metre intervals. Elevations shown are in metres above sea level (masl).
2. Topographic information was obtained from numerous sources including Ontario GeoHub (Land Information Ontario), City of Burlington's Open Data Catalogue, Google Earth Pro aerial photography captured on May 7, 2018 and field investigations for technical reports.
3. All topographic features and structures are shown to scale in Universal Transverse Mercator (UTM) with North American Datum 1983 (NAD83), Zone 17 (metre), Central Meridian 81 degrees west coordinate system.
4. The licence boundaries were established using Municipal Property Assessment Corporation (MPAC) parcel fabric data. Distances are approximate and for reference purposes only.
5. Land use designations on and within 120 metres of the licences are from the Niagara Escarpment Plan, Map 3 - Regional Municipality of Halton, approved June 1, 2017. The Burlington Quarry Extension lands are designated Escarpment Rural Area.
6. Land use information and structures identified on or within 120 metres of the licence boundaries were determined using Google Earth Pro aerial photography captured on May 7, 2018.

C. Drainage

1. Surface drainage on and within 120 metres of the licence boundaries are by overland flow in the directions shown by arrows on the plan view, or by infiltration.

D. Groundwater

1. The established groundwater table varies between 264 masl to 273 masl in the South Extension and 263 masl to 265 masl in the West Extension (EarthFX 2020).

E. Site Access and Fencing

1. There are four existing site accesses on Side Road No. 2 and a single existing site access on Cedar Springs Road.
2. Post and wire fencing (unless noted otherwise) exists in the locations shown on the plan view.

F. Aggregate Related Site Features

1. There are no existing aggregate operations or features on either Extension such as internal haul roads, processing, stockpiles, scrap, fuel storage, berms or excavation faces.

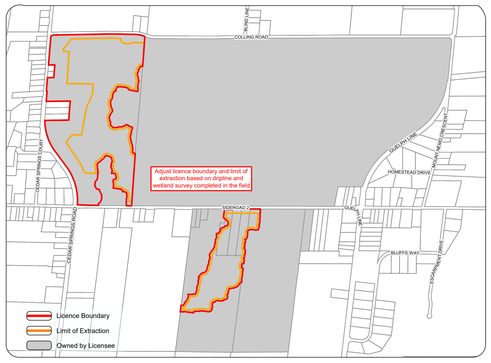
G. Cross Sections

1. See drawing 4 of 4.

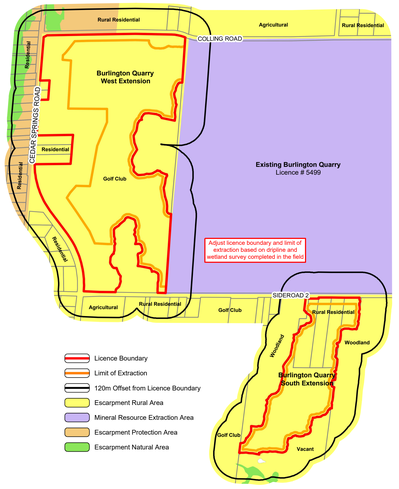
H. Technical Reports - References

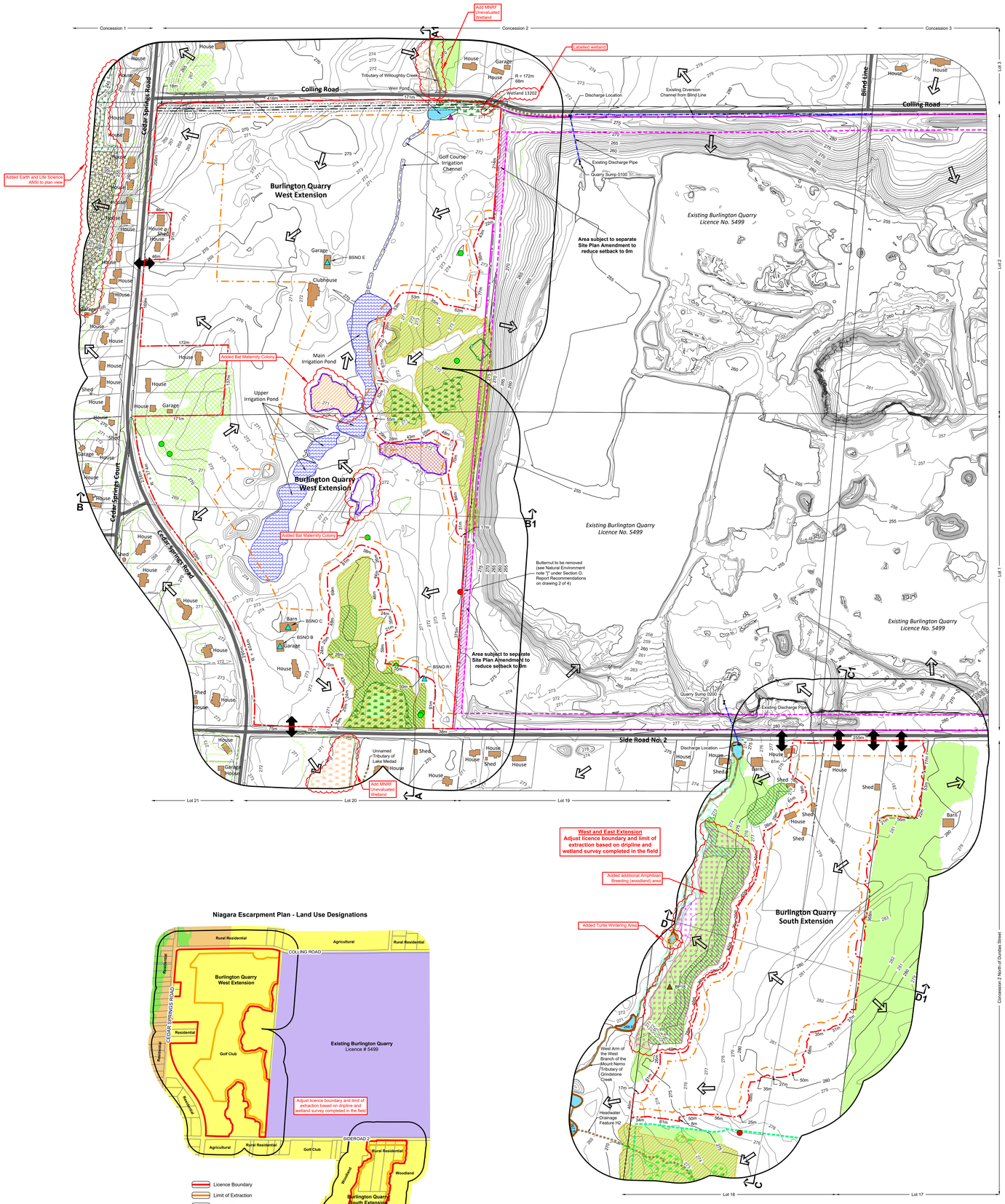
1. Adaptive Management Plan, Proposed Burlington Quarry Extension, EarthFX Inc., Savanta, and Tatham Engineering, April 2020.
2. Agricultural Impact Assessment, Nelson Aggregate Co. Burlington Quarry Expansion, April 2020.
3. Air Quality Study for Nelson Aggregate Co., Burlington Quarry Extension, BCX Environmental Consulting, March 2020.
4. Archaeological Assessment (Stages 1, 2 & 3), Nelson Aggregates Quarry Expansion, Archaeologix Inc., August 2003.
5. Archaeological Assessment (Stage 4), Nelson Aggregates Quarry Expansion, Archaeologix Inc., August 2004.
6. Stage 1-2 Archaeological Assessment, Proposed West Extension of the Burlington Quarry, Golder Associates, September 2020.
7. Blast Impact Analysis, Burlington Quarry Extension, Explotech Engineering Ltd, ~~April 23, 2020~~ June 16, 2021.
8. Cultural Heritage Impact Assessment Report, Burlington Quarry Extension, MacNaughton Hermsen Britton Clarkson Planning Limited (MHBC), ~~April 2020~~ June 2021.
9. Financial Impact Study, Proposed Burlington Quarry Extension, Nelson Aggregates Co., ~~April, 2020~~ September 30, 2021.
10. Level 1 and 2 Hydrogeological and Hydrological Impact Assessment Report, Proposed Burlington Quarry Extension, EarthFX Incorporated, April 2020.
11. Level 1 and 2 Natural Environment Technical Report, Proposed Burlington Quarry Extension, Savanta, April 2020.
12. Noise Impact Assessment, Nelson Aggregate Quarry Extension, Howe Gastmeier Chapnik Limited, ~~April 22, 2020~~ November 15, 2021.
13. Nelson Aggregate Company, Burlington Quarry Extension Traffic Report, Paradigm Transportation Solutions Limited, February 2020.
14. Surface Water Assessment, Burlington Quarry Extension, Tatham Engineering, April 2020.
15. Visual Impact Assessment Report, Proposed Extension of the Burlington Quarry, MacNaughton Hermsen Britton Clarkson Planning Limited (MHBC), ~~April 2020~~ June 2021.
16. Safety Review of the Proposed Access Plan for a Proposed Quarry Extension, True North Safety Group, June 2021.

Other Lands Owned by Licensee



Niagara Escarpment Plan - Land Use Designations





Legal Description

Part Lot 1 & 2, Concession 2 and Part Lot 17 & 18, Concession 2 NDS
(former geographic Township of Nelson)
City of Burlington
Region of Halton

Legend

- Licence Boundary
- Limit of Extraction
- Contours with Elevation — Metres above sea level (MASL)
- Public Road
- Fence — 1.2m post & wire fence unless otherwise noted
- Water Feature
- Irrigation Pond
- Significant Woodlands
- Woodlands
- Wooded Feature
- Wetland — Surveyed by Savanta/MNRF in Accordance with OWES - Assumed Significant for Planning Purposes
- Wetland — MNRF Evaluated - Provincially Significant
- Wetland — MNRF Evaluated - Other ~~Unevaluated~~ (Non Provincially Significant)
- Wetland — MNRF - Unevaluated (Assumed Significant for Planning Purposes)
- 120m Offset From Licence Boundary
- Existing Licence — Existing Licenced Boundary (solid line), Existing Limit of Extraction (dashed line)
- Parcel Fabric
- Diversion or Discharge Pipe — Existing - Single Dash
- Discharge Location
- Jefferson Salamander Regulatory Boundary
- Fish Habitat — Direct - solid, Indirect - dash
- Sun-Canadian Pipe Line — Pipe line location and easement
- Entrance / Exit — Existing
- Direction of Surface Drainage
- Building/Structure
- Cross Sections
- ANSI - Earth Science — (Area of Natural and Scientific Interest) Lake Medad Meltwater Channel
- ANSI - Life Science — (Area of Natural and Scientific Interest) Medad Valley

Changed symbol

Significant Wildlife Habitat

- Amphibian Breeding (Woodland)
- Bat Maternity Colony
- Turtle Wintering Area
- Rare Vegetation Community

Species of Conservation Concern

- Unicorn Clubtail
- Eastern Wood-pewee
- Large Toothwort Community

Species at Risk

- Butternut Category 1
- Butternut Category 2
- Bobolink — BP18
- Barn Swallow Nest Observation — BSNO C
- Bat Habitat — (Little Brown Myotis and Tri-coloured Bat)

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1.	September 2020	Update date of Archaeological Assessment Report in Section H.	CAP
2.	April 2021	Included MNRF wetlands for South Extension. Added Significant Wildlife Habitat, Species of Conservation Concern and Species at Risk. Update legend.	CAP
3.	January 2022	Updated to address agency comments.	CAP

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET, BARRIE, ON, L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

MNRF Approval Stamp

MHBC Stamp

DRAFT

Applicant

NELSON AGGREGATE CO.
2433 No. 2 Sideroad
P.O.Box 1070 Burlington Ont. L7R 4L8
phone: (905) 335-5250

Project

Burlington Quarry Extension

MNRF Licence Reference No. 626477	**Pre-approval review:**
Plan Scale: 1:3000 (Arch E) 0 100 200 Meters	**Date** January 2022
	Drawn By C.P. / **Checked By** B.Z. / **File No.** 9135D
File Name	**Existing Features**
Drawing No.	**1 of 4**
File Path	N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Extension Site Plan\CAD\9135D - Site Plan.dwg

A. General

1. Area Calculations:

   i. Licence Area (total) ~~78.4~~ 76.9 ha
      - South Extension ~~18.3~~ 18.1 ha
      - West Extension ~~60.1~~ 58.8 ha

   ii. Limit of Extraction (total) ~~50.2~~ 48.5 ha
      - South Extension ~~14.5~~ 14.2 ha
      - West Extension ~~35.7~~ 34.3 ha

2. The maximum annual tonnage is 2,000,000.

3. The existing golf course use in the West Extension may continue to operate until site preparation for that Extension commences.

B. Hours of Operation

1. Hours of operation are Monday to Friday from 7:00am to 7:00pm excluding statutory holidays.

2. Blasting is permitted Monday to Friday between 8:00am to 6:00pm excluding statutory holidays. Blasting will typically occur once per week but may occur more often based on operational needs.

C. Site Access and Fencing

1. Prior to extraction within the South or West Extension, post and wire fencing (at least 1.2 metres in height) shall be erected and maintained (for the life of that extension) along the licence or property boundary. Portions of the West Extension licence boundary shall be exempt from this requirement (see Section O. Variations from Provincial Standards). Where the licence boundary is not fenced, it will be delineated with marker posts every 30 metres.

2. Where the licence boundary abuts significant woodlands, fencing shall be in accordance with the Tree Protection Zone detail on this drawing.

3. Prior to extraction in the South Extension, exclusion fencing (as per *MNRF 2013 Species at Risk Branch Best Practices Technical Note Reptile and Amphibian Exclusion Fencing Version 1.1*) shall be installed along the perimeter of the licence boundary (see plan view for approximate location).

4. Prior to extraction in the West Extension, exclusion fencing (as per *MNRF 2013 Species at Risk Branch Best Practices Technical Note Reptile and Amphibian Exclusion Fencing Version 1.1*) shall be installed along the west limit of extraction and extended a minimum 50 metres beyond the northern extent of the infiltration pond. The exclusion fencing shall also be installed along the southern limit of extraction until it reaches No. 2 Side Road in the southeast corner (see plan view for approximate location).

5. A new operational entrance/exit for the South Extension shall be established in the location shown on the plan view (see Section N. Report Recommendations for additional details under Traffic). Material being transferred from the South Extension to existing Licence # 5499 (see Section O. Variations from Provincial Standards) shall occur through an at grade roadway crossing on Side Road No. 2 in this location.

6. A gate shall be installed at the operational entrance/exit of the South Extension on Side Road No. 2, kept closed during hours of non-operation, and maintained throughout the life of that Extension.

7. A gate shall not be required for the field/property access located at 2280 and 2015 Side Road No. 2 (see Section O. Variations from Provincial Standards).

8. The West Extension shall be accessed through the common licence boundary with existing Licence #5499 in Phases 3 and 5. The locations shown on the plan view are approximate only.

D. Drainage and Siltation Control

1. Drainage of undisturbed areas will continue in the directions shown on drawing 1 of 4.

2. Prior to site preparation, an Erosion and Sedimentation Control (ESC) Plan shall be prepared and implemented to ~~minimize the potential for~~ prevent erosion ~~and~~ or sedimentation impacts to the natural environment from ~~the~~ operation and rehabilitation of the quarry (see Section N. Report Recommendations - Natural Environment note "a").

3. Prior to extraction in the West Extension, the infiltration pond located in the west setback (including the diversion/discharge pipe and bottom draw outlet) shall be constructed. The pond shall be excavated to an elevation of ±267 masl into bedrock. Non-aggregate material excavated from the infiltration pond will be utilized for the creation of acoustic and visual berms in the West Extension. For the portions of the pond located above bedrock, 3:1 slopes shall be established. The purpose of the diversion pipe is to convey water from the weir pond to the infiltration pond in the west setback and to provide the diffuse discharge in the northwest corner of the site.

4. Within the West Extension, the diversion and discharge pipes shall be placed in the locations shown on the plan view (see Section N. Report Recommendations - Natural Environment note "~~j~~h" for timing to install the diversion pipe within the weir pond). The centreline of the diversion pipe along the north boundary of Phase 5 shall remain a minimum of 7.0 metres from the Sun-Canadian Pipe Line easement and be installed prior to constructing the berm in this vicinity.

5. Prior to removal of the irrigation ponds and irrigation channel in the West Extension, the downstream end of the golf course channel shall be blocked to isolate surface water. If water is to be pumped from the feature to facilitate site preparation, it shall be directed to the existing sump for discharge in accordance with MECP, ECA and PTTW requirements.

E. Site Preparation

1. All existing structures within the South Extension (excluding the house and barn located at 2280 Side Road No. 2) and West Extension (excluding the house and barn located at 2015 Side Road No. 2) shall be demolished prior to extraction in each Extension, in accordance with all applicable regulations (see Section N. Report Recommendations - Natural Environment note "c" as well as note "~~p~~e" regarding removal of three structures within the West Extension that contain Barn Swallow habitat).

2. No new buildings are proposed for either Extension.

3. Tree removal shall not occur in the West Extension during the active season for Eastern Small-footed Myotis between March 15th and November 30th (see Section N. Report Recommendations - Natural Environment note "o").

4. Timber resources (if any) will be salvaged for use as saw logs, fence posts and fuel wood where appropriate. Stumps, trees, shrubs and brush cleared will be used for rehabilitation of this site and License #5499 to provide coarse and fine wood debris to enhance soils and create habitats during site rehabilitation.

5. Prior to the commencement of stripping in the South Extension, agricultural baseline conditions shall be established by a qualified professional using an accredited lab for the entire extraction area. The parameters for the baseline conditions shall be determined by a qualified professional and the testing at the accredited lab shall include items such as soil nutrients, micronutrients, soil chemistry (i.e. organic matter, pH, etc.) and soil texture/structure.

6. In the South Extension, topsoil and subsoil for agricultural rehabilitation shall be stripped separately and used for agricultural rehabilitation in Licence #5499 in accordance with the agricultural rehabilitation notes on this page (see Section N.9 Agricultural and Section O. Variations from Provincial Standards). The remaining overburden in the South Extension not required for agricultural rehabilitation will be stripped separately and used for the construction of acoustic/visual berms and rehabilitation in the south extension. In the west extension, ~~T~~topsoil and overburden shall be stripped and stored separately wherever feasible (see Section O. Variations from Provincial Standards).

7. With the exception of topsoil and subsoil from the South Extension that will be used for agricultural rehabilitation in Licence #5499, the remaining ~~T~~topsoil and overburden shall be placed in perimeter acoustic/visual berms, pond construction or used immediately for progressive rehabilitation in either Extension or existing Licence #5499 (see Section O. Variations from Provincial Standards).

8. With the exception of topsoil and subsoil from the South Extension that will be used for agricultural rehabilitation in Licence #5499, ~~E~~excess topsoil and overburden not required for immediate use in berms or rehabilitation may be temporarily stockpiled on the quarry floor. Topsoil and overburden stockpiles shall be located within the limit of extraction and remain a minimum of 30 metres from the licence boundary (except where the West Extension licence boundary abuts existing Licence #5499) and 90 metres from a property with a residential use (see Section O. Variations from Provincial Standards).

9. With the exception of topsoil and subsoil from the South Extension that will be used for agricultural rehabilitation in Licence #5499, ~~T~~temporary topsoil and overburden stockpiles which remain for more than one year shall have their slopes vegetated to control erosion.

F. Berms and Screening

1. Acoustic and visual berms shall be constructed to the heights or elevations specified in the locations shown on the plan view. See Section N. Report Recommendations - Visual Impact Assessment notes and the Typical Acoustic & Visual Berm detail on this drawing for additional information.

2. Berms adjacent to key natural heritage features shall be constructed in accordance with Section N. Report Recommendations - Natural Environment note "d".

3. Berm side slopes shall not exceed the following maximums:

   i. South Extension
      - Northwest, north and northeast setback = 1.5:1
      - Southwest setback = 2:1

   ii. West Extension
      - North and west setback = 2:1
      - Southeast setback = 1.5:1

3. Berms in the South Extension shall be constructed prior to extraction in that extension.

4. Berms in the West Extension shall be constructed prior to extraction in that extension.

5. The north toe of the perimeter berm in the West Extension shall not be located within 1 metre of the Sun-Canadian Pipe Line easement.

6. Berms shall be vegetated with a native mix of wildflowers and grasses to stabilize slopes and minimize mowing and maintenance. The vegetation on the berms shall be maintained until the berms are removed for rehabilitation.

7. Existing vegetation within the setbacks shall be maintained except where acoustic berms, visual berms, ponds or diversion/discharge pipes are required (see Section O. Variations from Provincial Standards). Setbacks disturbed will be vegetated with a native mix of wildflowers and grasses to restore areas and minimize mowing and maintenance. A portion of the setback areas, as shown on the operations schematic, will also be forested in accordance with Section N. Report Recommendations - Natural Environment note "~~t~~s".

8. Setbacks identified as forested setbacks on the plan view shall be forested (see Section N. Report Recommendations - Natural Environment notes "~~e~~d" and "~~h~~f" for additional information).

G. Site Dewatering

1. During the initial stages of extraction within the South Extension, a temporary settling pond will be constructed within the extraction area (eg. Phase 2). Once sufficient extraction has occurred in Phase 2, the sump and settling pond will be constructed on the quarry floor. See Adaptive Management Plan for additional details.

2. The discharge location for the South Quarry Extension shall be constructed in accordance with Section N. Report Recommendations - Natural Environment note "~~g~~e".

3. For the West Extension, the water will be diverted to existing Licence #5499 and discharged from the existing sumps and discharge locations.

4. The licensee shall operate in accordance with Environmental Compliance Approval (ECA) and Permit to Take Water (PTTW) requirements.

H. Extraction Sequence

1. General
   a. Prior to set preparation in each phase, ensure all requirements contained in Sections C through G are met.

2. Phase 1
   a. Prepare Phase 1 (South Extension) for extraction and ensure all requirements pertaining to this Extension in Sections C through G of this drawing are met.
   b. Strip Phase 1 in accordance with Site Preparation notes (see Section E) and Agricultural Rehabilitation notes (see Section N.9). Any overburden not used for agricultural rehabilitation shall be used to ~~and~~ construct perimeter berms. Should there be insufficient ~~topsoil and~~ overburden in Phase 1 to construct berms, import excess soils to complete the perimeter berms. ~~only the amount of material required to complete the perimeter berms and the temporary settling pond may be stripped from Phase 2.~~
   c. Create sinking cut.
   d. Commence extraction in a southerly direction and complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   e. Phase 1A may be extracted to a maximum depth of 271 masl.
   f. Phase 1B may be extracted to a maximum depth of 270 masl.
   g. Prepare Phase 2 for extraction.

3. Phase 2
   a. Strip Phase 2 in accordance with Site Preparation notes (see Section E) and Agricultural Rehabilitation notes (see Section N.9) in sequence as extraction progresses in a southerly direction. Stripping shall be limited to what is required for the season of operation to maximize areas remaining in agricultural production.
   b. Extract Phase 2 in a southerly direction from Phase 1 and complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   c. Phase 2 may be extracted to a maximum depth of 252.5 masl.
   d. As extraction advances, complete progressive rehabilitation of Phase 2.
   e. Prepare Phase 3 (West Extension) for extraction and ensure all requirements pertaining to this Extension in Sections C through G and Archaeology note "a", under Section N. Report Recommendations, of this drawing are met.
   f. Remove wooded features in Phase 3 (see Section N. Report Recommendations - Natural Environment note "~~o~~m").

4. Phase 3
   a. Strip Phase 3 and a portion of Phase 4 (if required) to construct perimeter berms in West Extension.
   b. Extract Phase 3 by commencing at the common boundary with existing Licence #5499 and proceeding westerly before heading in a northwesterly direction. At the commencement of extraction, complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   c. Phase 3 may be extracted to a maximum depth of 252.5 masl.
   d. Complete progressive and final rehabilitation in Phases 1 and 2.
   e. Prepare Phase 4 for extraction.

5. Phase 4
   a. Strip Phase 4 and use the material for progressive rehabilitation in Phase 3 and existing Licence #5499.
   b. Extract Phase 4 in a westerly and southwesterly direction from Phase 3. At the commencement of extraction, complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   c. Phase 4 may be extracted to a maximum depth of 252.5 masl.
   d. Prepare Phase 5 for extraction.

6. Phase 5
   a. Strip Phase 5 and use the material for progressive rehabilitation in Phase 5 and existing Licence #5499.
   b. Continue progressive rehabilitation in Phases 3 and 4.
   c. Extract Phase 5 by commencing at the common boundary with existing Licence #5499 and proceeding in a westerly direction. At the commencement of extraction, complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   d. Refer to Section N. Report Recommendations - Blasting for additional requirements regarding the Sun-Canadian Pipe Line easement.
   e. Phase 5 may be extracted to a maximum depth of 252.5 masl.
   f. Prepare Phase 6 for extraction.
   g. Remove wooded feature in Phase 6 (see Section N. Report Recommendations - Natural Environment note "~~o~~i").

7. Phase 6
   a. Strip Phase 6 and use the material for progressive rehabilitation in Phases 4, 5 and existing Licence #5499.
   b. Prior to extraction commencing in Phase 6, side sloping within Phase 3 shall be completed.
   c. Extract Phase 6 in a southerly direction from Phase 5. At the commencement of extraction, complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   d. Phase 6 may be extracted to a maximum depth of 252.5 masl.
   e. Complete progressive and final rehabilitation of the West Extension.

I. Extraction Details

1. The maximum height of a lift shall be 25 metres.
2. The maximum depth of extraction for the South Extension is 29.5 metres. Phase 1 shall be extracted in one lift and Phase 2 shall be extracted in a maximum of two lifts.
3. The maximum depth of extraction for the West Extension is 23.5 metres and the maximum number of lifts is two.
4. Extraction shall be permitted in two Phases simultaneously to allow for transition between Phases.
5. Internal haul road locations will vary as extraction progresses and will be located on the quarry floor with the exception of the at grade roadway crossing between the South Extension and existing Licence #5499.
6. Blasted aggregate will be transported back to existing Licence #5499 for processing and shipping.
7. Berms that encroach within the limit of extraction shall be removed, and the underlying aggregate may be extracted, as part of final extraction for each Extension.

J. Equipment and Processing

1. Equipment used for site preparation, extraction, pond construction, and site rehabilitation includes drills, front-end loaders, graders, bulldozers, backhoes, conveyors, water trucks, fuel trucks and haul trucks. See Section N. Report Recommendations for additional details from the Noise report regarding equipment.
2. No processing shall occur in the South or West Extension. Aggregate extracted in the South and West Extension shall be hauled to existing Licence #5499 for processing.

K. Fuel Storage

1. No fuel shall be stored in the South or West Extension.
2. Fuel trucks will be used to transfer fuel to on-site equipment in accordance with the Liquid Fuels Handling Code.
3. A Spills Contingency Program will be developed prior to site preparation.

L. Dust

1. Dust shall be mitigated on-site.
2. Water or another provincially approved dust suppressant shall be applied to internal haul roads as often as required to mitigate dust.
3. The licensee shall implement all air quality recommendations outlined in Section N. Report Recommendations.

M. Scrap and Recycling

1. No scrap shall be stored in the South and West Extension.
2. No recycling shall occur in the South and West Extension.

N. Report Recommendations

1. **Air Quality**

   a. The Licensee shall implement their Best Management Practices Plan (BMPP) for the Control of Fugitive Dust dated March 2020, as may be amended from time to time to reflect current best management practices.

   b. The Licensee shall construct the acoustic berms as shown on the operational plan. See Section F for additional detail.

2. **Blasting**

   a. All blasts shall be monitored for both ground vibration and overpressure at the closest privately owned sensitive receptors adjacent the site, or closer, with a minimum of two (2) instruments - one installed in front of the blast and one installed behind the blast.

   b. Vibration and overpressure data collected during the first 12 months of extraction in the proposed quarry extension lands will be used to calibrate and update the 2004 Golder Associates attenuation equation. The proponent shall ensure information collected includes all relevant blast and monitoring details to permit and facilitate inclusion of the data in the attenuation data and resultant equation.

   c. In order to safeguard the structural integrity of the structures located at 2280 No 2 Side Road, ground vibrations shall be maintained below 50mm/s (>40Hz) in accordance with research performed by the United States Bureau of Mines (USBM RI8507). The closest structure located at 2280 No 2 Side Road shall be monitored for ground vibration and overpressure when vibration calculations suggest vibrations in excess of 35mm/s.

   d. All blasts within 60m of the adjacent Sun-Canadian High Pressure Oil Pipeline will be designed and monitored by a registered engineer, licensed in the province of Ontario, or any distance specified in later revisions of the Sun-Canadian guidelines or when vibration calculations suggest vibrations in excess of 35mm/s at the pipeline.

   e. To protect adjacent fish habitat, the Department of Fisheries and Oceans (DFO) has established limits for water overpressure and ground vibrations. Water overpressures are to be limited to 100kPa (year round), and in the presence of active spawning beds (March 15th to July 15th), ground vibrations at the bed are to be limited to 13mm/s. Fish habitat and assumed spawning beds are present in the Unnamed Tributary of Willoughby Creek, the Unnamed Tributary of Lake Medad and the East and West Arms of the West Branch of the Mount Nemo Tributary of Grindstone Creek. The utilization of shallower blast holes, decks, smaller hole diameters and/or changes in blasting patterns~~, along with hydrophone sensor monitoring, are~~ may be necessary when blasting adjacent to fish habitat at any time of year. These mitigation measures would also apply, ~~in addition to vibration monitoring, would also apply,~~ when adjacent to spawning beds from March 15th to July 15th.

   f. From March 15th to July 15th of any year, blasts shall be designed to maintain vibrations below 13mm/s at the closest point of any spawning habitat to the blast. One (1) additional seismograph shall be installed on the shoreline adjacent the closest spawning habitat to any blast performed between March 15th and July 15th when calculations suggest vibrations in excess of 75% of the DFO vibration limit may be reached at the location of a potential active spawning habitat.

   g. All blasting operations encroaching the Sun Canadian High Pressure Oil Pipeline will follow all requirements in the Sun Canadian Guidelines outlined in Section 8.3 to 8.5 under the heading "Vibration and Blasting Control" and any requirements specified in later revisions of the Sun Canadian Guidelines.

   h. The guideline limits for vibration and overpressure shall adhere to standards as outlined in the MECP Model Municipal Noise Control By-law publication NPC 119 (1978) or any such document, regulation or guideline which supersedes this standard.

   i. In the event of an exceedance of NPC 119 limits or any such document, regulation or guideline which supersedes this standard, blast designs and protocol shall be reviewed prior to any subsequent blasts and revised accordingly in order to return the operations to compliant levels.

   j. Orientation of the aggregate extraction operation will be designed and maintained so that the direction of the overpressure propagation will be away from structures as much as possible.

   k. Blast designs shall be continually reviewed with respect to fragmentation, ground vibration and overpressure. Blast designs shall be modified as required to ensure compliance with current applicable guidelines and regulations.

   l. Blasting procedures such as drilling and loading shall be reviewed on a yearly basis and modified as required to ensure compliance with industry standards.

   m. Detailed blast records shall be maintained in accordance with current industry best practices.

3. **Noise**

   a. Site preparation, pond construction, rehabilitation, drilling, extraction activities, and transporting material to the existing quarry for processing and shipping may only occur Monday to Friday during daytime hours (7:00 - 19:00).

   b. Prior to extraction in the South Extension, all berms in this Extension shall be constructed to the heights specified in the locations shown on the plan view. Berms shall not be required in the West Extension until prior to extraction in that Extension.

   c. Prior to extraction in the West Extension, all berms in this Extension shall be constructed to the heights specified in the locations shown on the plan view.

   d. Equipment used on-site shall operate within the sound power levels specified below:
      - drills - 110 dBA
      - front-end loaders - 101 dBA
      - haul trucks - 114 dBA

   e. Up to three haul trucks will be used to transport material from this site to the processing area in License #5499, with a posted speed limit of 35 km/hr along this route.

   f. Equipment used for site preparation, pond construction and rehabilitation shall satisfy the noise emission levels of MOE - 115, "Noise Construction Equipment".

   g. If a noise complaint is received, the noise complaint will be responded to and investigated in a timely manner by the licensee in a manner commensurate to the specific context of the complaint.

4. **Visual Impact Assessment**

   a. For both Extension areas, existing vegetation located along the site perimeter and within the setback area will be retained where possible. Berms will be laid out in a way that favours the retention of existing vegetation where possible. Any and all areas marked for tree protection shall utilize appropriate tree protection hoarding and ensure that no construction activities, grading or compaction occurs within the tree protection zone (see Tree Protection Zone detail on this drawing for additional information). This includes using these areas for the storage or staging of any materials or aggregate.

   b. Visual and acoustic berms are to be installed in the location shown on the plan view and berm elevation details (on drawing 4 of 4) and to the requirements outlined below.

   c. Where berms are deemed to be required, they are to only be constructed where shown on the plan view. Berms are to be constructed in a smooth, rolling manner with varying highpoints (respecting minimum height requirements), and variations along the berm frontage to create a more natural appearance. Berms should be seeded with a native mix of wildflowers and grasses to stabilize slopes and minimize mowing and maintenance.

   d. The existing deciduous trees and shrubs located within 15 metres of No. 2 Side road and in front of the proposed southern noise berm in the West Extension are to be retained.

   e. Visual berms proposed for the South Extension are to be planted with trees (see plan view for berm locations). Larger species will be planted along the visual berm on No. 2 Side Road while smaller species will be planted on the berm adjacent to the Camisle Golf Course. Trees will be planted at a spacing of 5 to 10 m on centre, depending on species. Plantings are to be randomly spaced and staggered up on the berm up to one third of its maximum height to appear more natural, where possible. All vegetation is to be selected for wind and salt tolerance hardiness. Native species that complement the existing surroundings are to be utilized wherever possible.

   f. For the visual berm adjacent to Side Road No. 2, deciduous trees of minimum 40mm caliper, coniferous trees of minimum 1.2m height, and shrub species of minimum 40cm height shall be planted.

   g. For the visual berm in the southwest corner of the South Extension, deciduous tree whips of minimum 1.2m height, coniferous trees of minimum 0.6m height, and shrub species of minimum 20cm height (or bare root stock when in season) shall be planted.

   h. Plant species for the visual berm planting referenced in note 4e, f, and g may include, but are not limited to the following trees (White Pine, Common Hackberry, Chokecherry, White Spruce, Paper Birch, Pin Oak Sugar / Silver Maple, Trembling Aspen, Basswood, White Pine, White Spruce or White Cedar) and shrubs (Nannyberry, Common Ninebark, American Elder, Dogwood, or Highbush Cranberry).

   i. To ensure survival and positive growth rate, the vegetative screening is to be maintained and managed appropriately so that it remains an effective visual screen over time. Allowance of natural succession to occur is encouraged, in keeping with restoration objectives.

   j. During the first year of quarry operations, the planted trees will be watered and monitored until established. After the first year, the trees will be inspected twice each year. Once in spring after leaf break, and once in fall prior to leaf drop, to ensure any trees which are in poor condition at the time, are fertilized, watered and monitored, as needed, to improve their health and vigor.

   k. If any of the planted trees die, they will be replaced yearly, and will be planted in spring or late summer. With annual maintenance and monitoring, the trees will have the best chance of survival, and overall, it is anticipated that the need for tree replacements during the life of the operation will be reduced.

5. **Traffic**

   a. The northbound and southbound approaches to Side Road No. 2 shall be controlled by stop sign control.

   b. The new roadway crossing will be located on the crest on Side Road No. 2 (in the location shown on the plan view) with a clear sight distance of at least 215 metres in each direction along Side Road No. 2 for both the northbound and southbound approaches.

   c. The roadway geometry and road bed structure will be designed to accommodate the rock trucks that the licensee plans to operate.

   d. Prior to extraction commencing in the South Extension, the licensee will be responsible to upgrade the crossing on Side Road No. 2 to municipal standards. During operations in the South Extension, the licensee will be responsible for maintaining this crossing. The licensee is responsible for all costs associated with the crossing, including any signage at the crossing (Financial Report).

   e. The following notes apply for the crossing at No. 2 Side Road:

      e.a. The proposed crossing location shall be constructed and maintained to provide the appropriate approach sight triangles and departure sight distances for a 70 km/hr design speed. Vegetation shall be trimmed or removed as necessary during construction to provide the recommended approach sight triangles and departure sight distances in all four quadrants.

      e.b. "Truck Entrance" warning signs shall be installed on the approaches to the crossing to warn drivers along No. 2 Side Road of the possible presence of slow-moving trucks crossing the intersection.

      e.c. Regulatory or information signs shall be installed prohibiting the general public from using the crossing.

      e.d. Vegetation shall be maintained to ensure the approach sight distances at all accesses are provided.

      e.e. Based on the existing conditions, the municipality may wish to revisit the frequency of maintenance for pavement markings, shoulder grading and pavement condition along No. 2 Side Road.

6. **Water Resources and Natural Environment**

   a. The licensee is required to operate in accordance with the Adaptive Management Plan, prepared by EarthFX Inc., Tatham Engineering and Savanta dated April 2020, as may be amended from time to time with approval from MNRF, in consultation with NEC, Region of Halton, City of Burlington and Conservation Halton.

7. **Water Resources**

   a. Based on current approvals for the existing quarry, the water discharge pumping at both locations will cease once extraction is complete, which would have a negative impact on flow and associated fish habitat in both watercourses (Savanta, 2020). The proposed revised rehabilitation plan would stipulate that dewatering and pumping will continue at the same locations and in the same manner to ensure there are no negative impacts to any of the hydrological features that rely on this water input. This will result in long-term enhancements to downstream fish habitat compared to the existing approved post-extraction water management plan.

   b. Post rehabilitation, the West Extension is to be maintained in a dewatered state using the main discharge points to the north and south from Quarry Sump 0100 and 0200 in licence #5499 in accordance with the conditions of the PTTW and ECA to provide public water management benefits.

   c. Prior to extraction commencing in each of the South and West Extensions, the licensee shall complete a residential well survey for properties within one kilometre of the extraction area.

   d. If a water well complaint is received by the licensee the following actions will be taken:

      d.a. The licensee will notify MNRF and MECP of the complaint.

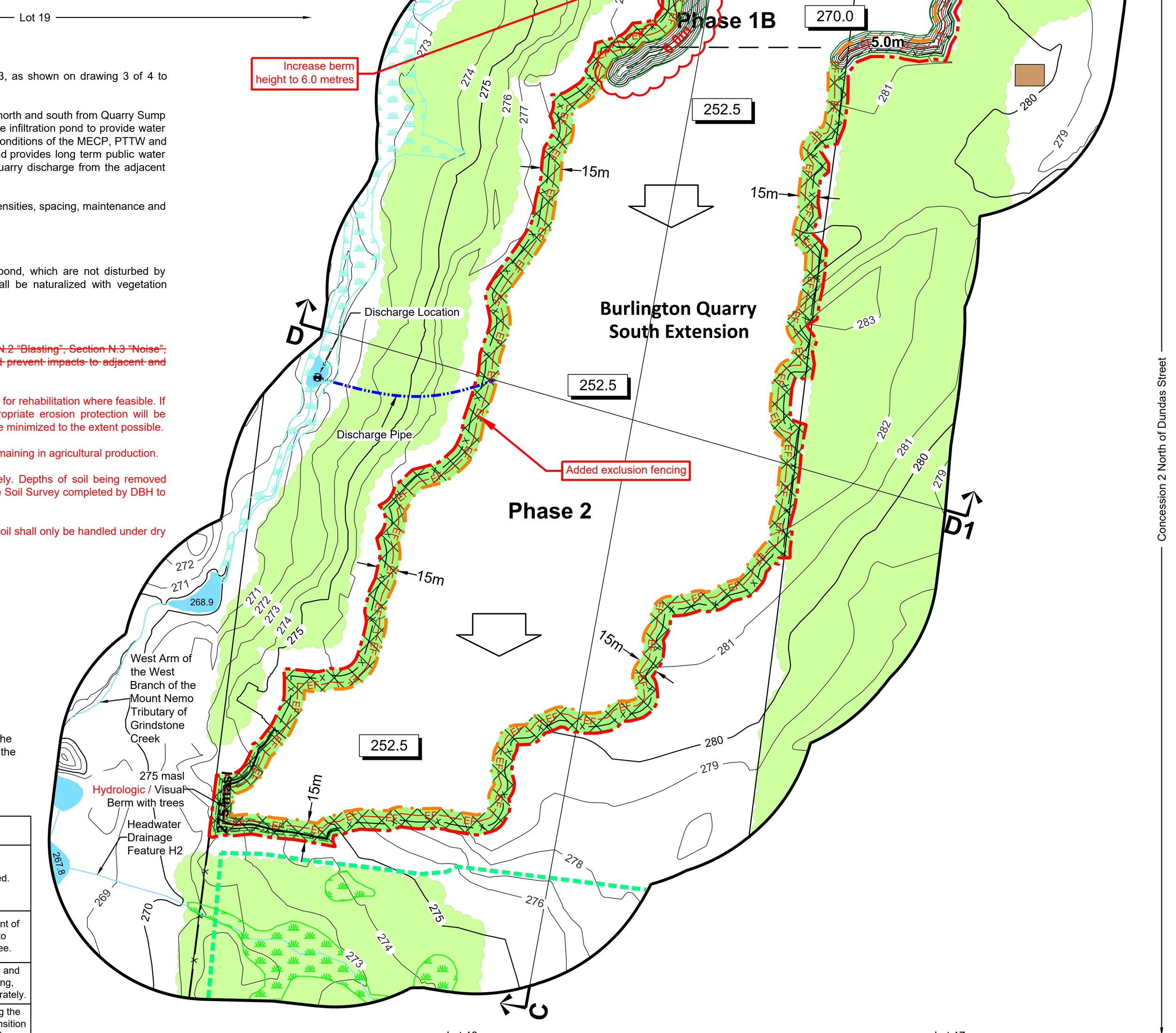
      d.b. The licensee will contact a well contractor in the event of a well malfunction and residents will be provided a temporary water supply within 24 hours, if the issue cannot be easily determined and rectified.

      d.c. The well contractor will contact the resident with the supply issue and rectify the problem as expediently as possible, provided the landowner gives authorization for the work. If the issue raised by the landowner is related to loss of water supply, the licensee will have a consultant/contractor determine the likely causes of the loss of water supply, which can result from a number of factors, including pump failure (owner's expense), extended overuse of the well (owner's expense) or lowering of the water level in the well from potential quarry interference (licensee expense). This assessment process would be carried out at the expense of the licensee and the results provided to the homeowner.

      d.d. If it has been determined that the quarry caused the water supply interference, the quarry shall continue to supply water at the licensee's expense until the problem is rectified. The following mitigation measures shall be considered and the appropriate measure(s) implemented at the expense of the licensee:
         - adjust pump pressure;
         - lowering of the pump to take advantage of existing water storage within the well;
         - deepening of the well to increase the available water column;
         - widening of the well to increase the available storage of water;
         - relocation of the well to another area on the property;
         - drilling multiple wells; and
         - only at the request of a landowner would a cistern be installed.

   e. If the issue raised by the land owner is related to water quality, the licensee will have a consultant/contractor determine the likely causes of the change in water quality, and review monitoring results at the quarry and background monitoring results from the baseline well survey to determine if there is any potential correlation with the quarry. If it has been determined that the quarry caused a water quality issue, the quarry shall continue to supply water at the licensee's expense until the problem is rectified. The licensee shall be responsible for restoring the water supply by replacing the well or providing a water treatment system. Only at the request of a landowner would a cistern be supplied. The licensee is responsible for the expense to restore the water quality.

West and East Extension
Adjust licence boundary and limit of extraction based on dripline and wetland survey completed in the field. Berms have been adjusted based on the new licence boundary and (with the exception of the berms in the northeast and southwest corner of the South Extension) to remain 30m from wetlands and/or significant woodlands.



8. **Natural Environment**

   a. Prior to site preparation, an Erosion and Sedimentation Control (ESC) Plan will be prepared and implemented to ~~minimize the potential for~~ prevent erosion ~~and~~ or sedimentation impacts to the natural environment from ~~the~~ operation and rehabilitation of the quarry. Basic elements of the plan should include consideration of: Construction and operation phasing to minimize the amount of time soils are barren and therefore, more susceptible to erosion; Requirements and timing for rehabilitation of disturbed areas; Stormwater management strategies during construction; Grading and removal of golf course surface water features during periods when the features are not flowing, to minimize potential for adverse effects on downstream water quality; Erosion prevention measures (e.g., hydroseeding, sodding, erosion control matting, tarping of stockpiles); Sedimentation control measures (e.g., silt fences); and Inspection and performance monitoring requirements and adaptive management.

   b. Prior to site preparation, the Burlington Quarry Spills Prevention and Response Plan (2020) shall be updated to include the West and South Quarry Extension. The spill prevention and response plan shall outline the material handling and storage protocols, mitigation measures (e.g., spill kits on-site), monitoring measures and spill response plans (i.e., emergency contact procedures, including the Spills Action Centre, and response measures including containment and clean-up).

   c. Prior to the removal of structures within the South or West Extension, the licensee shall conduct species at risk bat exit survey as per provincial protocols. If species at risk bats are confirmed roosting in the structures, removal of the structures shall only occur between December 1st and March 14th. The licensee shall complete the tree planting requirements as outlined on this drawing and drawing 3 of 4 and installation of bat boxes and artificial bark stations adjacent to the pond and woodland in the West Extension. If the bat exit surveys determine that the structures are not habitat, the restricted timing window for the structure's removal shall not be required.

   d. The limit of extraction shall be setback from key natural heritage features within the South and West Extension (as shown on the plan view) and no operational activities shall occur within the 30 metres of wetlands and significant woodlands except as noted below~~., and b~~Berms will be located adjacent to certain key natural heritage features as shown on the plan view. In the South Extension, a berm shall be permitted within the 15 metre setback adjacent to the significant woodlands in the northeast corner of the site. In the southwest corner of the South Extension, a berm shall be permitted within the extraction setback, however, a minimum 15 setback from the significant woodlands shall be maintained. Prior to berm construction adjacent to key natural heritage features, limit of workspace indicators (flagging ~~or~~ and silt fencing) will be installed to ensure there is no encroachment into adjacent features. During berm construction an Erosion and Sedimentation Control Plan will be implemented and the berms shall be vegetated to control erosion. Flagging and silt fencing shall be maintained until the berm vegetation has been established and there is no evidence of erosion or risk of erosion. Any area of the setback disturbed during construction of the berm will be vegetated and restored to a natural condition.

   e. Prior to extraction commencing in Phase 2, the forested setback areas shown on the plan view in Phase 2 will be planted with trees and shrubs in accordance with Section D. Seeding and Planting on drawing 3 of 4.

   f. Authorization under the Fisheries Act shall be obtained where required to conduct operations at the quarry.

   g. The South Extension discharge location in the West Arm of the West Branch shall be installed between July 16 and March 14 to prevent disturbance to fish and fish habitat during the critical reproductive period. Erosion and sedimentation control measures shall be installed prior to commencement of any ground disturbance associated with installation of the outlet or any associated components. Standard spill prevention measures shall be implemented during all installation activities within 30 m of the watercourse. If work-site isolation and dewatering is required, fish shall be removed from the isolated area prior to complete dewatering, in accordance with the conditions of a License to Collect Fish for Scientific Purposes. To prevent negative impacts on fish habitat, any structural measures associated with the outlet shall be constructed outside the average annual high-water mark of the watercourse. If a conveyance channel is required from the outlet, disturbance to the existing watercourse shall be limited to the channel bank at the tie-in location. The outlet shall be oriented to direct flows into the watercourse at an appropriate angle to prevent channel bed and bank erosion. Erosion protection required at the outlet shall be minimized to the extent possible. Any riparian vegetation disturbed during the installation of the outfall should be rehabilitated with appropriate native vegetation species. Following completion of detailed design of the outlet, the licensee shall consult with DFO to ensure compliance with the provisions of the Fisheries Act.

   h. Prior to extraction commencing in Phase 3, the forested setback areas as shown on the plan view in Phases 3, 4, 5 and 6 will be planted with trees and shrubs in accordance with Section D. Seeding and Planting on drawing 3 of 4.

   i. Prior to extraction commencing in Phase 3, the infiltration pond shall be constructed in the location shown on the plan view.

   j. Alterations required to the weir plate and installation of the diversion pipe in the weir pond in the West Extension shall take place between July 16th and August 30th to minimize potential for impacts to downstream fish habitat.

   k. Prior to removal of the irrigation ponds and irrigation channel in the West Extension, the downstream end of the golf course channel shall be blocked to isolate surface water. If water is to be pumped from the feature to facilitate site preparation, it shall be directed to the existing sump for discharge in accordance with MECP ECA and PTTW requirements.

   l. Golf course irrigations ponds and channel in the West Extension shall be removed between July 16th and March 14th to prevent disruption to sensitive life stages of the Largemouth Bass population within this water feature.

   m. Prior to removal of the irrigation ponds and channel in the West Extension, a fish rescue shall be completed to remove fish in accordance with the conditions of a License to Collect Fish for Scientific Purposes.

   n. Prior to removal of one Category 2 Butternut tree in Phase 3, as shown on drawing 1 of 4, the area surrounding the Category 2 tree will be re-surveyed to confirm that Butternut saplings have not generated. If Butternut saplings are identified, they will be assessed by an approved Butternut Health Assessor. The licensee shall register the activity under the appropriate Regulation of the Endangered Species Act and implement the requirements. In addition to the Butternut sapling survey, the health of the Category 2 Butternut tree will be reassessed by an approved Butternut Health Assessor to confirm that the tree is still Category 2 and has not regressed to a Category 1. If the Category 2 designation persists, the licensee shall register the activity under ~~section 23.7, O.Reg. 242/08~~ of the Endangered Species Act and implement the requirements of the registration. If the Butternut health reevaluation determines that the tree has regressed to Category 1, registration of the activity would no longer be required.

   o. Removal of the wooded features in the West Extension ~~Phase 3~~ shall only occur between December 1st and March 14th ~~November 1 and March 31~~ to avoid impacts to species at risk bat habitat, significant bat maternity roost habitat, species at risk significant wildlife bat species and Eastern Wood-pewee. To mitigate for the removal of ~~bat habitat and Eastern Wood-pewee~~ these habitat designations, the licensee shall complete the tree planting requirements as outlined on this drawing and drawing 3 of 4; install bat boxes and artificial bark stations adjacent to the pond and woodland in the West Extension.

   ~~Removal of the wooded feature in Phase 6 shall only occur between August 1 and April 30 to avoid impact to Eastern Wood-pewee. To mitigate for the removal of Eastern Wood-pewee habitat, the licensee shall complete the tree planting requirements as outlined on this drawing and drawing 3 of 4.~~

   p. Prior to the removal of the three structures in the West Extension (Phase 3 - BSNO R1, Phase 5 - BSNO E and in the setback where the pond is to be constructed - BSNO B) as shown on drawing 1 of 4, the licensee shall register the activity under section 23.5, O.Reg. 242/08 of the Endangered Species Act and implement the requirements of the registration. BSNO C shall not be removed.

   q. Complete rehabilitation of the site in accordance with the requirements outlined on drawing 3 of 4 to create key natural heritage and key hydrologic features, including wetlands, lakes and forested areas.

   r. As part of rehabilitation of the site, regrade the area along the north boundary of Phase 3, as shown on drawing 3 of 4 to provide surface water flow to the adjacent wetland to reinstate its catchment area.

   s. Post rehabilitation, maintain the West Extension in a dewatered state; maintain discharge to north and south from Quarry Sump 0100 and 0200 within License # 5499 and passive discharge from a bottom draw outlet in the infiltration pond to provide water to the wetland north of No. 2 Side Road adjacent to West Extension in accordance with the conditions of the MECP, PTTW and ECA. This pumping regime is consistent with current management from License # 5499 and provides long term public water management benefits and mitigates impacts to natural heritage features that depend on quarry discharge from the adjacent License # 5499.

   t. Tree planting shall be in accordance with the species listed, planting design and approach, densities, spacing, maintenance and monitoring requirements as listed on drawing 3 of 4.

   u. Complete rehabilitated side sloping in Phase 3 prior to extraction commencing in Phase 6.

   v. Areas within the 30m setback from the watercourse, wetland, weir pond and infiltration pond, which are not disturbed by construction of the berm and that currently consist of manicured golf course lawns, shall be naturalized with vegetation plantings.

9. **Agricultural**

   ~~The site shall operate in accordance with the conditions in Section N.1 "Air Quality", Section N.2 "Blasting", Section N.3 "Noise", Section N.5 "Traffic" and Section N.7 "Water Resources" notes "f" and "g" to minimize and prevent impacts to adjacent and surrounding agricultural uses and operations.~~

   a. The soils being transferred to Licence #5499 for agricultural rehabilitation will be used directly for rehabilitation where feasible. If storage is required, the agricultural soils will be stored in low profile stockpiles and appropriate erosion protection will be implemented. The intent is to avoid storage of material and where storage is required, it will be minimized to the extent possible.

   b. Stripping shall be limited to what is required for the season of operation to maximize areas remaining in agricultural production.

   c. Topsoil and subsoil used for agricultural rehabilitation will be stripped and stored separately. Depths of soil being removed during stripping shall be monitored and compared to the pre-extraction depths as found in the Soil Survey completed by DBH to facilitate agricultural rehabilitation on Licence #5499.

   d. Soil material for agricultural rehabilitation shall not be handled during frozen conditions. The soil shall only be handled under dry conditions and a wet weather shut down procedure shall be put in place.

10. **Cultural Heritage**

    a. The house and barn located at 2280 Side Road No. 2 shall be conserved.

11. **Archaeology**

    a. No site alteration shall occur in the West Extension until the area is cleared of archaeological concerns and the report is accepted in the registry for the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI).

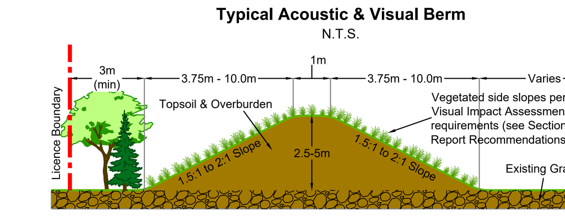
    b. Should deeply buried archeology remains be found during the course of site preparation and/or extraction related activities, the MHSTCI shall be notified.

    c. In the event that human remains are encountered during construction or extraction activities, the licensee shall immediately contact both the MHSTCI and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services (MGCS).

O. Variations from Provincial Standards

Provincial Standard	Variation	Rationale
5.1	The West Extension licence boundary will not be fenced along the perimeter of the significant woods or common boundary with Licence #5499. The South Extension may either be fenced along the licence boundary or property line.	The entire extraction area will still be fenced.
5.2	Gates will not be required where the West Extension haul roads cross the common boundary with Licence #5499 or at the field/property entrances to 2280 and 2015 Side Road No. 2	This will eliminate constraints to the movement of equipment between licences and access to additional lands owned by the same licensee.
5.6	Depending on site conditions, topsoil and overburden may not be stored separately.	Wherever there are no distinguishable layers and sufficient thickness to allow separate handling, topsoil and overburden will not be stored separately.
5.10	A 0 metre setback will be provided where the West Extension licence boundary abuts existing Licence #5499. A 25 metre setback will be provided along a short portion of the north boundary for the South Extension where the ROW width is different than the remainder of Side Road No. 2.	This will enable material to be extracted along the common boundary and for rehabilitation to transition between licences. A site plan amendment for existing Licence #5499 is required. This will allow a consistent extraction boundary and within this area extraction will be of short duration and helps facilitate the final land form proposed.
5.11	Excavation within the setback will occur to construct hydrological features during site preparation for each extension.	Setbacks within the South and West Extensions shall be temporarily excavated and disturbed to install diversion and discharge pipes. A portion of the West Extension shall be permanently excavated to establish a pond.
5.13	Topsoil and overburden within the West Extension may be temporarily located within 30m of existing Licence #5499.	The adjacent Licence #5499 is owned by the same licensee.
5.16	Topsoil and/or overburden may be transferred between the West and East Extensions and existing Licence #5499.	This will allow stripped material from site preparation to be used immediately for progressive rehabilitation in other parts of the extension and existing licence.
5.19	Portions of the quarry face shall remain vertical.	Vertical faces above and below the final lake level for the South and West Extension will create a more diverse habitat and visually appealing rehabilitated landform.

Typical Acoustic & Visual Berm
N.T.S.



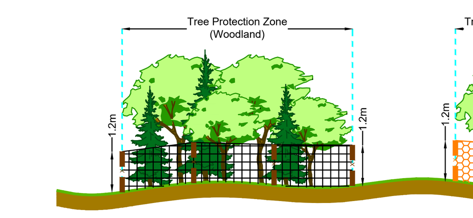
Legal Description

Part Lot 1 & 2, Concession 2 and Part Lot 17 & 18, Concession 2 NDS
(former geographic Township of Nelson)
City of Burlington
Region of Halton

Legend

- Licence Boundary
- Limit of Extraction
- Contours with Elevation — Metres above sea level (MASL)
- Public Road
- Fence — 1.2m post & wire fence unless otherwise noted
- Exclusion Fence — Reptile & Amphibian (Location offset for visibility purposes)
- Jefferson Salamander Regulatory Boundary
- Water Feature
- Significant Woodlands
- Woodlands
- Wooded Feature
- Wetland — Surveyed by Savanta/MNRF in Accordance with OWES - Assumed Significant for Planning Purposes
- Wetland — MNRF Evaluated - Provincially Significant
- Wetland — MNRF Evaluated - Other ~~Unevaluated~~ (Non Provincially Significant)
- Wetland — MNRF - Unevaluated (Assumed Significant for Planning Purposes)
- Forested Setbacks
- 120m Offset From Licence Boundary
- Existing Licence — Existing Licenced Boundary (solid line), Existing Limit of Extraction (dashed line)
- Parcel Fabric
- Diversion or Discharge Pipe — Existing - Single Dash, Proposed - Double Dash
- Discharge Location
- Sun-Canadian Pipe Line — Pipe line location and easement
- Entrance / Exit — Operational - hollow, Field / Property - hatch
- Gate
- General Direction of Excavation & Boundary
- Berm - Acoustic
- Berm - Hydrologic
- Berm - Visual
- Building/Structure
- Quarry Floor — Metres above sea level (MASL)
- Cross Sections

Tree Protection Zone ~~Plan~~ Detail
Not to Scale



1. The Tree Protection Zone (TPZ) for woodlands extends the length of the woodland dripline of significant woodlands.
2. Prior to site preparation in the South and West Extension ~~each Phase~~, liner fencing shall be erected along the licence boundary. The area between the licence boundary and the drip line of the significant woodland is the TPZ. The TPZ is to prevent damage and soil compaction within the TPZ.
3. Fencing material shall consist of orange plastic web snow fencing and/or page wire fencing with reflective tape.
4. Fencing material shall be installed a minimum 1.2 metres in height above grade.
5. Signage shall be posted in visible locations along the perimeter of each TPZ fence and be a minimum 25 cm x 36 cm. Each sign shall clearly state the text provided to the right.
6. The TPZ must remain fully intact and existing grade shall not be altered or disturbed. The TPZ shall not be used for ~~temporary~~ storage of fill, topsoil, building materials, or equipment. There shall be no disposal of deleterious materials. Movement of vehicles and/or equipment, ~~storage,~~ washing of equipment, ~~or~~ and dumping of any ~~construction materials~~ kind shall be prohibited.
7. Where encroachment into the TPZ is necessary to facilitate construction of the discharge pipe, tree removal shall be kept to a minimum and the disturbed soil shall be restored with wood chips. In this location a trail will be maintained to provide access to the discharge location.

Legend
- Woodland / Tree Dripline
- Orange Plastic Web Snow Fencing
- Page Wire Fencing with Reflective Tape

Tree Protection Zone
No grade change, storage of any materials or equipment, washing of equipment, or dumping of any debris is permitted within this area.
(25cm x 36cm)

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1.	September 2020	Adjust pond adjacent to dwelling in the southwest corner of the West Extension.	CAP
2.	April 2021	Updated notes per MNRF feedback. Added discharge locations/pipe to plan view. Updated legend and added Tree Preservation Plan detail. Included MNRF wetlands for South Extension.	CAP
3.	January 2022	Updated to address agency comments.	CAP

PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
MHBC
113 COLLIER STREET, BARRIE, ON, L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

MNRF Approval Stamp

MHBC Stamp

DRAFT

Applicant

NELSON AGGREGATE CO.
2433 No. 2 Sideroad
P.O.Box 1070 Burlington Ont. L7R 4L8
phone: (905) 335-5250

Project
Burlington Quarry Extension

MNRF Licence Reference No. 626477

Pre-approval review:

Plan Scale: 1:3000 (Arch E)
0 100 200 Meters

Date January 2022
Drawn By C.P.
Checked By B.Z.
File No. 9135D

File Name Operational Plan

Drawing No. 2 of 4

File Path N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Extension Site Plan\CAD\9135D - Site Plan.dwg

Progressive Rehabilitation

A. General

1. Area Calculations:

   ii. To be extracted (total) **~~50.2~~ 48.5 ha**
   - South Extension ~~14.5~~ 14.2 ha
   - West Extension ~~35.7~~ 34.3 ha

   ii. To be rehabilitated (total) **~~50.2~~ 48.5 ha**
   - South Extension ~~14.5~~ 14.2 ha
   - West Extension ~~35.7~~ 34.3 ha

2. The final rehabilitated land form will include the creation of 5.9 hectares of woodland located in the setback area not proposed to be extracted and 23.5 hectares of woodland located within the rehabilitated extraction area.

B. Phasing

1. As excavation reaches the limit of extraction or maximum depth, progressive rehabilitation shall commence.
2. Progressive rehabilitation shall follow the direction and sequence of extraction identified on the plan view and described in the notes on drawing 2 of 4.
3. Prior to extraction commencing in Phase 6, side sloping within Phase 3 shall be completed.

C. Slopes and Grading

1. Progressive rehabilitation will utilize a variety of rehabilitation techniques including:
   - Backfilling extraction faces and quarry floors;
   - Partially backfilling extraction faces to create a cliff with talus slope; or
   - Leaving extraction faces vertical
2. Excess soil, as defined in Ontario Regulation 406/19 under the Environmental Protection Act, may be imported to this site for the following rehabilitation purposes:
   - Creation of 3:1 and 2:1 slopes
   - Top dressing to establish vegetation
   - To establish the final elevations and grades depicted on the plan view
3. Excess soil imported for the rehabilitation purposes described above shall meet the soil quality standards set out in Table 1: "Full Depth Background Site Condition Standards", of the Rules for Soil Management and Excess Soil Quality Standards published by the Ministry of Environment, Conservation and Parks, as amended from time to time.
4. The South and West Extension contains approximately 1,190,000 m^3 of topsoil and overburden that can be used for rehabilitation. It is assumed that 350,000 m^3 will be transferred to the existing quarry for agricultural rehabilitation and some rehabilitation directly adjacent to the West Extension. As a result, 840,000 m^3 of on-site materials will be utilized and the maximum total amount of excess soil that may be imported to this site for rehabilitation purposes is 2,160,000 m^3.
5. The licensee shall ensure that the acceptance and reuse of excess soil imported for rehabilitation purposes is compliant with Part I: Rules for Soil Management of the "Rules for Soil Management and Excess Soil Quality Standards published by the Ministry of Environment, Conservation and Park and as amended from time to time.

   ~~Excess soil: in accordance with MECP "Excess Soil Regulation (O. Reg 406/19); as may be amended from time to time, may be imported to facilitate the establishment of 3:1 and 2:1 (horizontal: vertical) slopes on the quarry faces and/or applied to the quarry floors to achieve the final contour elevations shown on the plan view. The licensee must ensure that the material is tested at the source, before it is deposited on-site, to ensure that the material meets the MECP's criteria under Table 1 of MECP's Soils, Ground Water and Sediment Standards for use under Part XV.1 of the Environmental Protection Act. Sampling results will be provided to the MNRF upon request.~~

   ~~Notwithstanding Condition 1, where the imported material is not being placed within 1.5 metres of the surface, the criteria under Table 1 for sodium absorption ratio and electrical conductivity do not have to be met.~~
6. The final rehabilitated landforms established in the South and/or West Extension using the rehabilitation techniques will consist of lakes, islands, shoreline wetlands, vernal pools, beach, pond, woodlands, gradually sloping grades, 2:1 and 3:1 side slopes, cliff with talus slopes, and vertical faces as shown on the plan view.
7. Beach sand may be imported to establish the beach area in the South Extension.
8. As part of rehabilitation of the site, regrade the area along the north boundary of Phase 3, as shown on this drawing to provide surface water flow to the adjacent wetland to reinstate its catchment area.

D. Seeding and Planting

1. The side slopes and backfilled portions of the quarry floor will be seeded with the Ministry of Transportation's (MTO) Ontario Roadside Seed Mix (Creeping Red Fescue, Kentucky Bluegrass, Perennial Ryegrass and White Clover) or equivalent.
2. Ponds, wetlands, and tree planting areas identified in the plan view shall be planted in accordance with Table 1: Rehabilitation Plant List Recommendations on this drawing.
3. The planting design and approach will be guided by the Conservation Halton Landscaping and Tree Preservation Guidelines (2010).
4. Planting densities shall be determined based on the restoration objectives and presence/absence of existing natural features. For example, planting densities will be highest where the objective is to restore/establish a woodland, and meet the definition of woodland under the Forestry Act, but may be reduced if/when objective is to establish a buffer adjacent to a naturalized area. The type of species planted will also be dependent on adjacent habitat (e.g., greater reliance on shrub plantings when restoration occurs adjacent to a meadow, and tree plantings when planting next to woodland).
5. Where the restoration objective is the establishment of a woodland, trees will be planted at a minimum density of 10 trees per 100 m^2, in order to account for competition, stress or wildlife damage and to meet the definition of woodland under the Forestry Act. Within this area, the shrub to tree ratio will be 5:1, with trees planted no closer than 2.5 m on centre and shrubs planted between 0.75 m and 1.5 m apart.
6. Where the restoration objective is the establishment of a setback adjacent to a natural feature, planting densities will be dependent on the features they abut (e.g., densities will be higher when planting next to an existing forest relative to the densities when planting next to an anthropogenic or cultural feature). The planting design of a proposed setback adjacent to a natural feature will follow a 3-band approach, where woody planting densities will be highest within Band 1 (closest to the existing adjacent feature) and reduced in Band 2. No woody species will be planted in Band 3, which will be seeded with a soil and moisture-appropriate native seed mix. Where trees will be planted, the following planting densities will be applied: Band 1 - five trees per 100 m^2. Where shrubs are also being proposed, these will be planted at a shrub to tree ratio of 5:1; Band 2 - three trees per 100 m^2. Where shrubs are also being proposed, these will be planted at a shrub to tree ratio of 5:1.
7. Competing herbaceous vegetation will be controlled by placing mulch around each planted tree or shrub (50 cm radius of mulch around each planting). Rodent protection will be installed as necessary. Where access permits, planting will be watered during periods of drought (defined as a 30 day period between May and September with less than 25mm of precipitation) until establishment has occurred.
8. For planting in areas not extracted, plantings shall be monitored and evaluated by a qualified professional ~~at least~~ annually until "free-to-grow" conditions have been achieved. "Free-to-grow" is ~~a condition in which the plantings are~~ considered established based on a minimum stocking standard, a minimum height and freedom from competition that could impede growth. Monitoring, tending and additional planting shall occur until 1000 trees per hectare have reached "free-to-grow" condition. ~~At the "free-to-grow condition": the survival (stocking standard) of planted trees shall be a minimum of 1000 trees per hectare. If survival is less than 1000 "free-to-grow" condition trees per hectare, additional planting will take place.~~
9. For plantings in areas extracted, plantings shall be monitored and evaluated by a qualified professional ~~at least~~ annually until "free-to-grow" conditions have been achieved. "Free-to-grow" is considered established based on a minimum stocking standard, a minimum height and freedom from competition that could impede growth. Monitoring, tending and additional planting shall occur until 1000 trees per hectare have reached "free-to-grow" condition. ~~At the "free-to-grow" condition: the survival (stocking standard) of planted trees shall be a minimum of 1000 trees per hectare. If survival is less than 1000 "free-to-grow" condition trees per hectare, additional planting will take place.~~

E. Drainage

1. Final surface drainage will follow the rehabilitated contours and directional arrows shown on the plan view.
2. Once the South Extension is depleted, pumping will cease and portions of the site below the ground water table will fill with water.
3. Runoff within the South Extension will drain into the lake.
4. Construct overflow outlet in the southwest corner of the South Extension.
5. Once the West Extension is depleted, the West Extension will remain in a dewatered state. Runoff within the West Extension will either drain north towards the lake or southeast into existing Licence #5499.
6. During rehabilitation the licensee shall maintain discharge to fish habitat to the north and south from Quarry Sump 0100 and 0200 within License #5499 and passive discharge from a bottom draw outlet in the infiltration pond to provide water to the wetland north of No. 2 Side Road adjacent to West Extension.
7. During rehabilitation the licensee shall operate in accordance with the conditions of the MECP, PTTW and ECA for the ongoing dewatering of the site. This pumping regime is consistent with current management from License #5499 and provides long term public water management benefits and mitigates impacts to natural heritage features that depend on quarry discharge from the adjacent License #5499.
8. The licensee has committed to: conveying the site into public ownership and to maintain the West Extension in a dewatered state by maintaining the pumping regime from License #5499 to provide long-term public water management benefits and mitigate impacts on natural heritage features which depend on quarry discharge from the adjacent License #5499.

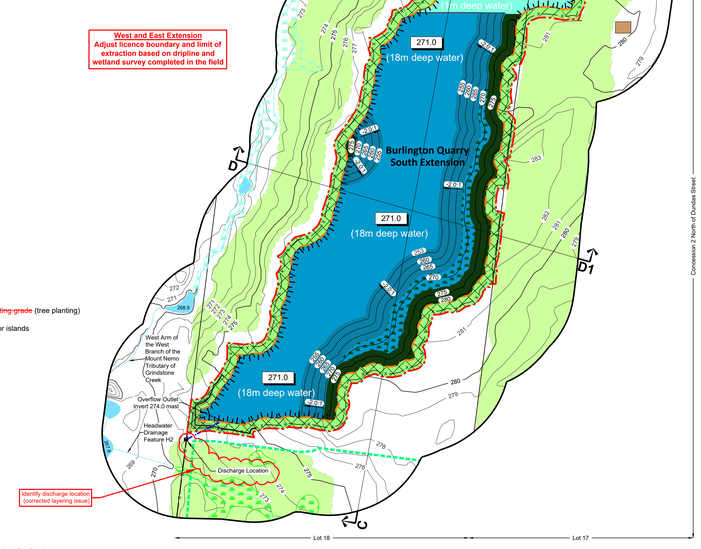
F. Adaptive Management Plan

1. During progressive rehabilitation, until surrendering the licence, the licensee is required to operate in accordance with the Adaptive Management Plan, prepared by EarthFX Inc., Savanta and Tatham Engineering, dated April 2020, as may be amended from the time to time with approval from MNRF, in consultation with NEC, Region of Halton, City of Burlington and Conservation Halton.

Final Rehabilitation

A. General

1. All equipment shall be removed from the South and West Extension.
2. No internal haul roads shall remain in either Extension.
3. The residence and barn at 2280 Side Road No. 2 in the South Extension shall remain.
4. The residence and barn located at 2015 Side Road No. 2 in the southwest corner of the West Extension shall remain.
5. A field/property access entrance shall remain to access the residence and barn located at 2280 and 2015 Side Road No. 2.
6. The groundwater table post rehabilitation varies between 263.5 masl to 271 masl in the South Extension and 255.5 masl to 265 masl in the West Extension (EarthFX 2020) or ±269 masl if the West Extension is not maintained in a dewatered state.
7. The licensee, prior to the surrender of the licence, shall complete a Record of Site Condition for the Extensions in accordance with the Environmental Protection Act.
8. In the event that a third-party agreement is not arranged prior to site surrender, the licensee will be responsible to maintain the site in the condition consistent with this approved rehabilitation plan. ~~Prior to the surrender of the Aggregate Resource Act Licence, the licensee shall define the transition of the site to another party and the pre-requisite for license surrender to the satisfaction of the MNRF.~~



Legend

- Beach
- Pond
- Swim Area
- Lake
- Wetland / Shoreline Wetland
- Vertical Face
- 3:1 slope (tree planting)
- 2:1 slope (tree planting)
- Setback - grassland & existing trees
- Setback - forested - planted during operations
- Setback - forested - planted when berms removed
- Restored catchment area and ecological linkage ~~to existing grade~~ (tree planting)
- Gradual grade (tree planting ~~with trees~~ & vernal pools) or islands

Table 1: Rehabilitation Plant List Recommendations

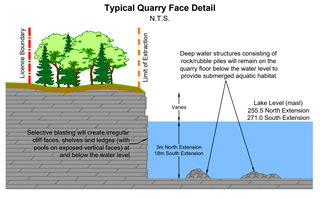
Pond/Wetland (PW)
Grassland and Existing Trees (GL)
Gradual Grade/Side Slope with Trees (GG)
Forested Setback During Operation (FSO)
Forested Setback Post Berm (FSB)
Restored to Existing Grade and Forested (REG)

Location	LATIN NAME	COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	OWES WETLAND SPECIES	PROVINCIAL STATUS (S-RANK)	LOCAL STATUS HALTON (Varga 2005)
FSB, REG	*Sambucus racemosa ssp. pubens*	Red Elderberry	5	3		S5	X
FSB, REG	*Cornus alternifolia*	Alternate-Leaved Dogwood	6	3		S5	X
FSB, REG	*Cornus racemosa*	Grey Dogwood	2	3	T	S5	X
PW, FSB, REG	*Cornus sericea*	Red-Osier Dogwood	2	-3	I*	S5	X
FSB, REG	*Ribes cynosbati*	Eastern Prickly Gooseberry	4	3		S5	X
FSB, REG	*Prunus virginiana var. virginiana*	Chokecherry	2	3		S5	X
FSB, REG	*Rubus allegheniensis*	Alleghany Blackberry	2	3		S5	X
FSB, REG	*Rubus occidentalis*	Black Raspberry	2	5		S5	X
PW	*Salix discolor*	Pussy Willow	3	-3	I	S5	X
PW, FSB, REG	*Salix eriocephala*	Cottony Willow	4	-3	T	S5	X
PW, FSB, REG	*Salix interior*	Sandbar Willow	1	-3	T	S5	U
PW	*Salix petiolaris*	Meadow Willow	3	-3	I	S5	X
GG, FSB, REG	*Betula alleghaniensis*	Yellow Birch	6	0	T	S5	X
GG, FSO, FSB, REG	*Betula papyrifera*	Paper Birch	2	3	T	S5	X
GG, FSB, REG	*Carpinus caroliniana ssp. virginiana*	Blue-Beech	6	0	T	S5	X
GL, GG, FSO, FSB, REG	*Ostrya virginiana*	Eastern Hop-Hornbeam	4	3		S5	X
GL, GG, FSO, FSB, REG	*Fagus grandifolia*	American Beech	6	3		S4	X
GL, GG, FSO, FSB, REG	*Quercus macrocarpa*	Burr Oak	5	3	T	S5	X
GL, GG, FSO, FSB, REG	*Quercus rubra*	Northern Red Oak	6	3		S5	X
GL, GG, FSB, REG	*Carya cordiformis*	Bitternut Hickory	6	0		S5	X
GL, GG, FSO, FSB, REG	*Tilia americana*	Basswood	4	3		S5	X
GL, GG, FSO, FSB, REG	*Prunus serotina var. serotina*	Black Cherry	3	3		S5	X
GG, FSB, REG	*Populus balsamifera*	Balsam Poplar	4	-3	T	S5	X
GL, GG, FSO, FSB, REG	*Populus deltoides ssp. deltoides*	Eastern Cottonwood	4	0	T	S5	U
GL, GG, FSO, FSB, REG	*Populus tremuloides*	Trembling Aspen	2	0	T	S5	X
PW, GG, FSB, REG	*Salix amygdaloides*	Peach-Leaved Willow	6	-3	T	S5	U
GL, GG, FSO, FSB, REG	*Acer nigrum*	Black Maple	7	3		S4?	X
GGL, FSB, REG	*Acer saccharinum*	Silver Maple	5	-3	I	S5	X
GL, GG, FSO, FSB, REG	*Acer saccharum*	Sugar Maple	4	3		S5	X
GGL, FSB, REG	*Thuja occidentalis*	Eastern White Cedar	4	-3	T	S5	X
GG, FSB, REG	*Abies balsamea*	Balsam Fir	5	-3	T	S5	U
GL, GG, FSO, FSB, REG	*Picea glauca*	White Spruce	6	3	T	S5	U
GL, GG, FSO, FSB, REG	*Pinus strobus*	Eastern White Pine	4	3	T	S5	X
GL, GG, FSO, FSB, REG	*Tsuga canadensis*	Eastern Hemlock	7	3	T	S5	X

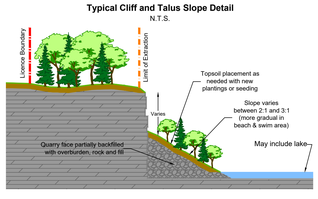
Herbaceous seed mixes will be applied where appropriate (e.g. if soil seedbank is deemed unsuitable). Potential mixes could include Upland Dry Meadow Mix, Early Succession/Riparian Mix, and Meadow March Mix, following Conservation Halton guidelines.

A nurse crop will be applied to exposed soil, the species of which will depend on season of application but will follow Conservation Halton guidelines.

Typical Quarry Face Detail
N.T.S.



Typical Cliff and Talus Slope Detail
N.T.S.



Typical Backfilled Side Slope Detail
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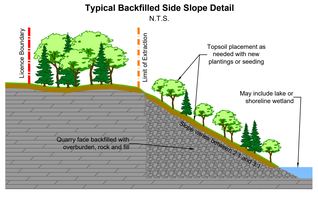

Typical Shoreline Wetland Detail
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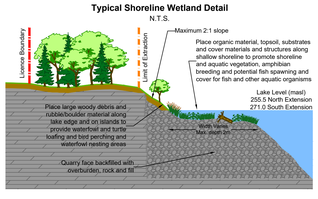

Legal Description

Part Lot 1 & 2, Concession 2 and Part Lot 17 & 18, Concession 2 NDS
(former geographic Township of Nelson)
City of Burlington
Region of Halton

Legend

- Licence Boundary
- Limit of Extraction
- Contours with Elevation — Metres above sea level (MASL)
- Public Road
- Fence — 1.2m post & wire fence unless otherwise noted
- Water Feature
- Lake / Pond Licence # 5499
- Significant Woodlands
- Woodlands
- Wooded Feature
- Wetland — Surveyed by Savanta/MNRF in Accordance with OWES - Assumed Significant for Planning Purposes
- Wetland — MNRF Evaluated - Provincially Significant
- Wetland — MNRF Evaluated - Other ~~Unevaluated~~ (Non Provincially Significant)
- Wetland — MNRF - Unevaluated (Assumed Significant for Planning Purposes)
- 120m Offset From Licence Boundary
- Existing Licence — Existing Licenced Boundary (solid line), Existing Limit of Extraction (dashed line)
- Parcel Fabric
- Diversion or Discharge Pipe — Existing - Single Dash, Proposed - Double Dash
- Discharge Location
- Sun-Canadian Pipe Line — Pipe line location and easement
- Jefferson Salamander Regulatory Boundary
- Entrance / Exit — Field / Property
- Gate
- Building/Structure
- Proposed Final Grade and Slope
- Final Elevation of Land and Lake (MASL)
- Cross Sections

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1.	September 2020	Adjust pond adjacent to dwelling in the southwest corner of the West Extension.	CAP
2.	April 2021	Included MNRF wetlands for South Extension. Updated notes per MNRF feedback. Updated legend.	CAP
3.	January 2022	Updated to address agency comments.	CAP

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MNRF Approval Stamp

MHBC Stamp

DRAFT

Applicant

NELSON AGGREGATE CO.
2433 No. 2 Sideroad
P.O.Box 1070 Burlington Ont. L7R 4L8
phone: (905) 335-5250

Project

Burlington Quarry Extension

MNRF Licence Reference No. 626477

Pre-approval review:

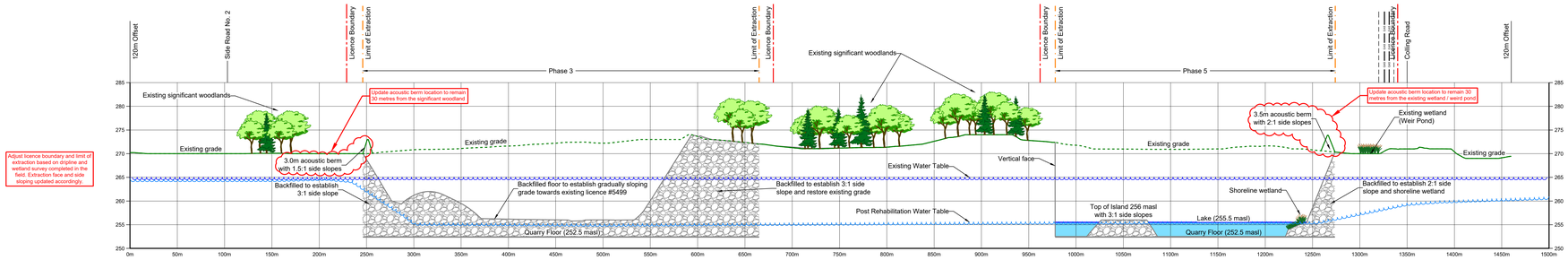
Plan Scale: 1:3000 (Arch E) — 0 100 200 Meters

Date	January 2022		
Drawn By	C.P.	File No.	9135D
Checked By	B.Z.		

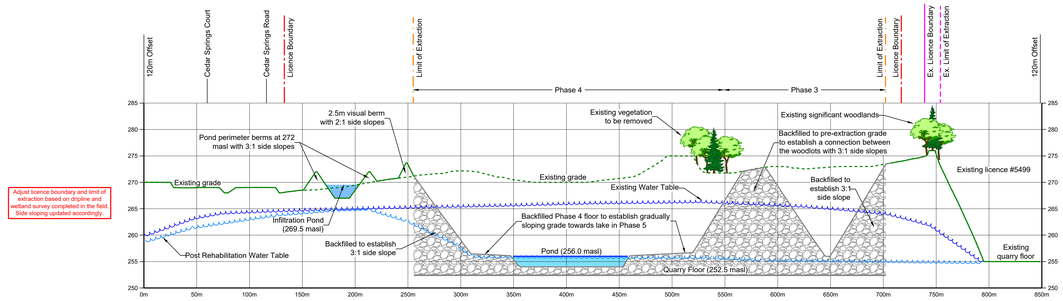
File Name Rehabilitation Plan

Drawing No. 3 of 4

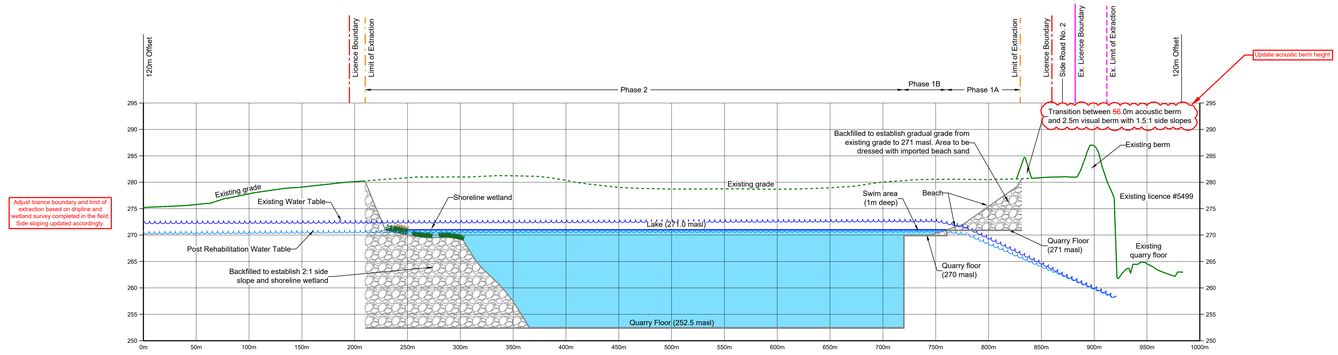
File Path N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Extension Site Plan\CAD\9135D - Site Plan.dwg



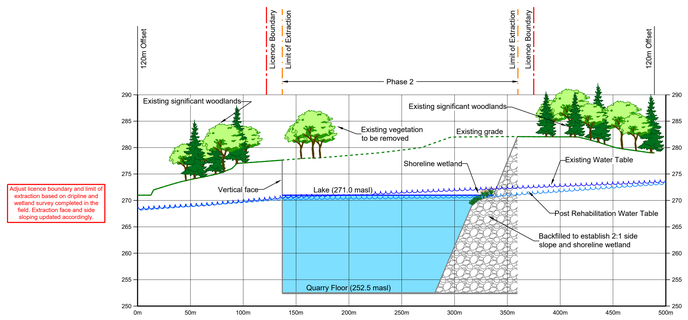
Cross Section A-A1



Cross Section B-B1



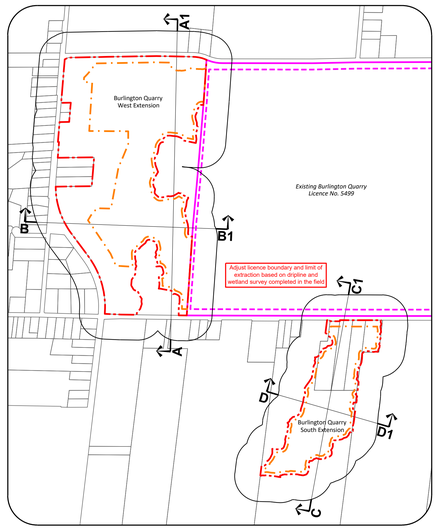
Cross Section C-C1



Cross Section D-D1

Key Map

Cross Sections



Legal Description

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(former geographic Township of Nelson)
City of Burlington
Region of Halton

Legend

- Licence Boundary
- Limit of Extraction
- Existing Licence
- Existing Limit of Extraction
- 120m Offset From Licence Boundary
- Existing Grade - Removed / Altered
- Existing Grade - Undisturbed
- Quarry Floor / Face
- Berm
- Existing Water Table
- Post Rehabilitation Water Table
- Backfilled
- Lake or Pond

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1.	April 2021	Added additional cross section labels for clarity.	CAP
2.	January 2022	Updated to address agency comments.	CAP

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
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Project

Burlington Quarry Extension

MNRF Licence Reference No.
626477

Pre-approval review:

Plan Scale:
Horizontal 1:2000
Vertical 1:400

Date January 2022
Drawn By C.P.
Checked By B.Z.
File No. 9135D

File Name

Cross Sections

Drawing No.

4 of 4

File Path N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Extension Site Plan\CAD\9135D - Site Plan.dwg