

A. General

1. This Site Plan is prepared under the Aggregate Resources Act for a Class A Licence for a quarry below the ground water table.

2. Area to be licenced 103.6 ha. (±256.0 ac.) Area to be extracted 89.1 ha. (±220.2 ac.)

B. References

1. Contour information was obtained from a topographic survey prepared by TEC Engineering (formerly Renishaw (Canada) Limited) using October 2016 and February 2017 aerial photography 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), Google Earth Pro aerial photography captured on July 18, 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. Property boundaries were obtained from a Plan of Survey prepared by Matthews, Cameron, Heywood-Kerry T. Howe Surveying Ltd. dated April 5, 2012. Other property boundaries were established using Municipal Property Assessment Corporation (MPAC) parcel fabric data.

5. Zoning categories on or within 120 metres of the licence boundary are from the City of Niagara Falls Zoning By-law No. 79-200 (Schedules A3 and A4 - Consolidation April

6. Land use information on or within 120 metres of the licence boundary has been compiled from October 2016 orthophotography, site visits and water well survey data.

1. The maximum predicted water table is 184.9 masl and the contact aquifer

"Proposed Upper's Quarry - Maximum Predicted Water Table Report", dated October

D. Drainage

potentiometric contours ranges between 176.0 and 184.9 masl (as per WSP's

are by overland flow in the direction shown by arrows on the plan view. E. Site Access and Fencing

1. Existing surface water drainage on and within 120 metres of the licence boundaries

site accesses on Upper's Lane, and three (3) existing site accesses on Beechwood

1. There are two (2) existing site accesses on Thorold Townline Road, six (6) existing

2. Post and wire fencing (unless otherwise noted) exists in the locations shown on the F. Significant Features

1. All significant natural features on and within 120 metres of the licence boundary are shown on the Key Natural Heritage Features Schematic on this drawing.

2. All significant human-made features on and within 120 metres of the licence boundary are shown on the plan view.

G. Aggregate Related Site Features

4. Archaeological Assessments:

1. There are no existing aggregate operations or features within the licence boundaries such as stationary or portable equipment, stockpiles, recyclable materials, scrap, fuel storage, haul roads, berms or excavation faces.

G. Technical Reports - References

1. Upper's Quarry: Acoustic Assessment Report, RWDI, October 2021.

2. Agricultural Impact Assessment for Upper's Quarry, Colville Consulting Inc., October

3. Upper's Quarry: Air Quality Assessment, RWDI Air Inc., October 2021.

a. Stage 1 Archeological Resource Assessment of Walker Aggregates Proposed South Niagara Quarry, Part of Lots 102, 119, 120, 136 & 137, Archeological Services Inc., December 2008.

b. Stage 1-2 Archeological Assessment of Part 9764 Uppers Lane, Part of Lots 119 & 120, Archeological Assessments Ltd., November 3, 2005.

c. Stage 2-3 Archeological Assessment, Part of Lots 102, 119, 120, 136 & 137, Archeological Assessments Ltd., November 21, 2012.

d. Stage 1-2 Archeological Assessments, Upper's Quarry Additional Lands, Part of Lots 119& 120, Archaeological Research Associates Ltd., April 20, 2020.

e. Stage 3 Mitigation of Development Impacts, Final Excavation Report, Walker XI (AgGT-411), Upper's Quarry, Archaeological Research Associates Ltd., May 26,

f. Stage 4 Mitigation of Development Impacts, Final Excavation Report, Walker XI (AgGT-178), Upper's Quarry, Archeological Research Associates Ltd., July 22,

5. Blast Impact Analysis, Upper's Quarry, Explotech, October 2021.

6. Cultural Heritage Impact Assessment Report, Proposed Upper's Quarry, MHBC,

7. Economic Benefits Analysis, Prism, October 2021.

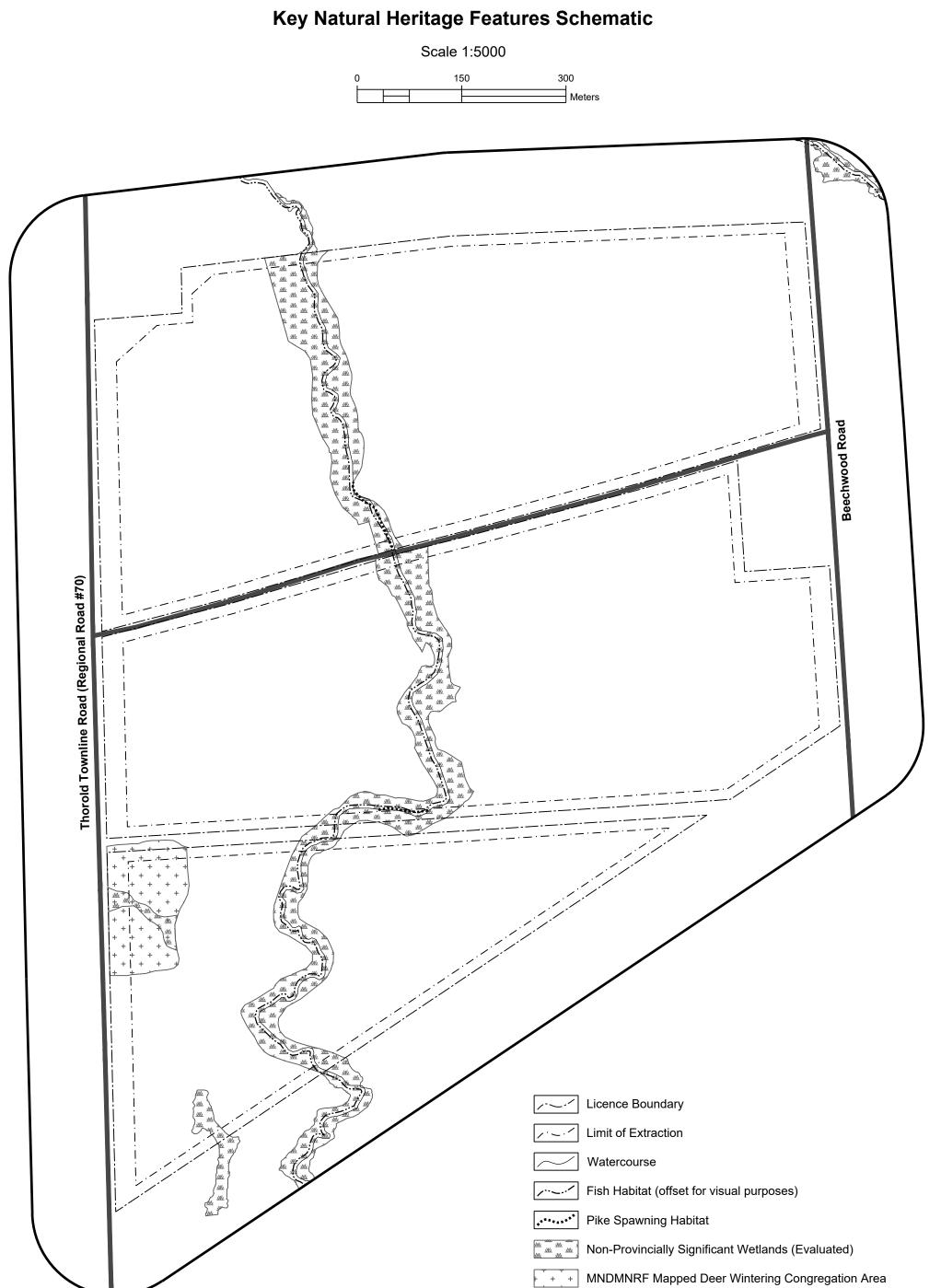
8. Level 2 Water Study Report, WSP, October 2021. 9. Maximum Predicted Water Table Report, WSP, October 2021.

10. Upper's Quarry, Niagara: Level 1 and Level 2 Natural Environment Technical Report and Environmental Impact Study, Stantec, October 2021.

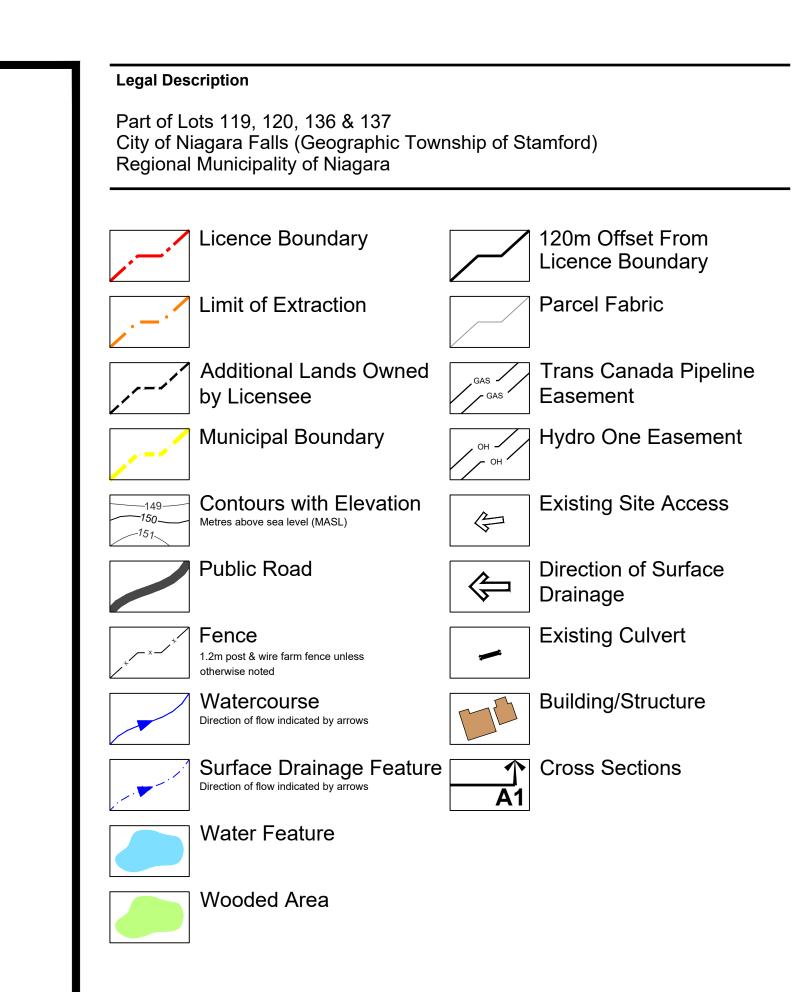
12. Traffic Impact Study, Upper's Quarry, TMIG, October 2021.

13. Visual Impact Assessment, Proposed Upper's Quarry, MHBC, October 2021.

11. Planning Justification Report and Summary Statement, MHBC, October 2021.







Site Plan Acronyms

1. ARA - Aggregate Resources Act

2. MNDMNRF - Ministry of Northern Development, Mines, Natural Resources and Forestry

3. MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries 4. MECP - Ministry of the Environment, Conservation and Parks

5. MGCS - Ministry of Government and Consumer Services

6. DFO - Department of Fisheries and Oceans Canada

7. ECA - Environmental Compliance Approval

8. BMPP - Best Management Practices Plan

9. PTTW - Permit to Take Water

10. MASL - Metres above sea level

11. ROW - Right of way 12. HMA - Hot mix asphalt

Site Plan Amendments

Site Plan Revisions (Pre-Licencing) Added Key Natural Heritage Features Schematic and Section F to the site plan notes

113 COLLIER STREET, BARRIE, ON, L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.C MHBC Stamp MHBC Stamp Is authorized by the Ministry of Is authorized by the Ministry of Northern Development, Mines, Northern Development, Mines, Natural Resources and Forestry Natural Resources and Forestry pursuant to Subsection 0.2(3)(e) pursuant to Subsection 0.2(3)(f) of Ontario Regulation 244/97 to of Ontario Regulation 244/97 to



prepare and certify site plans.

Walker Aggregates Inc. 2800 Thorold Townline Road P.O. Box 100 Thorold, Ontario L2V 3Y8

prepare and certify site plans.

Upper's Quarry

MNDMNRF Licence Reference No. Plan Scale: 1:3000 (Arch E) October 2021 File Name

Existing Features

1 of 6 N:\Brian\9811V - Walker Uppers Quarry\Drawings\Site Plan\CAD\9811V - Site Plan - Proposed Scenario.dwg

A. General

Area to be licenced 103.6 ha. (±256.0 ac.) Area to be extracted 89.1 ha. (±220.2 ac.)

under Section 7 of the Aggregate Resources Act (ARA).

- 2. The maximum amount of aggregate to be removed from this site in any calendar year is 1,800,000 tonnes.
- 3. In the event that Walker obtains permission from the City of Niagara Falls to extract the road allowance(s), the licensee may apply to the MNDMNRF to amend the licence and site plan to expand the licence boundary to include the road allowance directly adjacent to the licence boundary (i.e. Upper's Lane and/or the road allowance between Lots 120 and 136). An expansion to the licence boundary for this purpose will not require a new licence
- 4. All technical reports have taken into consideration the potential removal of the road allowance(s).
- 5. Table 1 on this drawing identifies the number of sensitive receptors within 500 metres of the licence boundary and the distance from the licence boundary to each receptor.

B. Hours of Operation

| Hours of Operation | | | | | | | | |
|--|--------------------|--------------------|------------------|--|--|--|--|--|
| Activity 1. The proposed quarry will have the following h Drilling, extraction (at working face) | Monday to Friday | Saturday | Sunday | | | | | |
| Drilling, extraction (at working face) | 7:00 am to 7:00 pm | 7:00 am to 7:00 pm | N/A | | | | | |
| Blasting | 8:00 am to 6:00 pm | N/A | N/A | | | | | |
| Aggregate processing at mobile crusher plant | 7:00 am to 7:00 pm | 7:00 am to 7:00 pm | N/A | | | | | |
| Asphalt plant operations | 24 hours per day | 24 hours per day | 24 hours per day | | | | | |
| Internal hauling of aggregate and/or recycled material: | | | | | | | | |
| - From working face (shot rock) to mobile crusher plant | 7:00am to 7:00pm | 7:00am to 7:00pm | N/A | | | | | |
| - From mobile crusher plant/stockpiles to asphalt plant | 24 hours per day | 24 hours per day | 24 hours per day | | | | | |
| Aggregate and recycling shipping to and/or from the quarry (including hot mix asphalt shipping from quarry and receiving recycled asphalt to quarry) | 24 hours per day | 24 hours per day | 24 hours per day | | | | | |
| Maintenance | 24 hours per day | 24 hours per day | 24 hours per day | | | | | |

A response to emergencies is not limited by the hours of operations shown on this plan.

C. Proposed Entrances/Exits and Fencing

For the Mid Extraction Area:

- a. All traffic for operations will enter and exit the Mid Extraction Area from Upper's Lane using a main entrance/exit in the location generally shown on the plan view.
- b. If an entrance/exit off of Upper's Lane is not permitted, traffic for operations will enter and exit the Mid Extraction area from Thorold Townline Road. If approved, the site plan will be updated to accurately depict J. Frequency / Timing of Blasts the location of the entrance/exit off of Thorold Townline Road.

2. For the South Extraction Area:

- a. Material will be transported to the Mid Extraction Area for processing via a conveyor over the unopened road allowance between Lots 120 and 136. Limited traffic required for operations will enter and exit the South Extraction Area via a crossing over the unopened road allowance between Lots 120 and 136, subject to approval from the City, in the location generally shown on the plan view.
- b. If permission to cross the unopened road allowance is not granted, traffic for operations will enter and exit K. Fuel Storage the South Extraction area from Thorold Townline Road. If approved, the site plan will be updated to accurately depict the location of the entrance/exit off of Thorold Townline Road.

3. For the North Extraction Area:

a. All traffic for operations will enter and exit the North Extraction Area from Upper's Lane using a main entrance/exit in the locations generally shown on the plan view.

b. If an entrance/exit off of Upper's Lane is not permitted, traffic for operations will enter and exit the North

- Extraction area from Thorold Townline Road. If approved, the site plan will be updated to accurately depict the location of the entrance/exit off of Thorold Townline Road.
- 4. Only one operational entrance/exit will be utilized at any one time. 5. Once established, each operational entrance/exit shall be gated. All gates shall be kept closed during hours of

non-operation and shall be maintained throughout the life of the licence.

6. The licence boundaries shall be fenced in the locations shown on the plan view (prior to the commencement of operations) and shall be maintained for the life of the licence with upkeep during periodic inspections (see Section N Variations from Control and Operation Standards on this drawing).

D. Drainage and Siltation Control

1. Silt fencing/sediment control measures will be installed within the Watercourse Realignment Transition Area prior to extraction in each extraction area and along the easterly and northerly limits of Phase 1B after the watercourse realignment is completed.

E. Site Preparation

- 1. All existing structures within the licence boundary shall be demolished or removed prior to extraction in each extraction area.
- . Timber resources (if any) will be salvaged for use as saw logs, fence posts and fuel wood where appropriate. Stumps and brush cleared will be burned (with applicable permits), used for shoreline habitat enhancement or mulched for use in progressive rehabilitation.
- 3. Areas of the site will be stripped of topsoil/overburden in stages in accordance with the phases. Topsoil and overburden will be stripped and stored in berms and/or stockpiles wherever feasible.
- 4. Topsoil and overburden shall be placed in perimeter acoustic/visual berms, pond construction, watercourse realignment or used immediately for progressive rehabilitation in this licence or existing Licence Numbers 11175
- and 4437 (see Section N Variations from Control and Operation Standards on this drawing). 5. 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 and 90 metres from a property with a residential use. . Temporary topsoil and overburden stockpiles which remain for more than one year shall have their slopes
- vegetated to control erosion. Seeding shall not be required if these stockpiles have vegetated naturally in the first

F. Setbacks, Berms and Screening

- Setbacks are as shown on the plan view. Excavation will occur within the extraction setback area along the west and northwest area of the licensed boundary to accommodate grading required for the realignment of the existing watercourse. Furthermore, areas within the setbacks will be accessed as necessary to perform general site servicing, maintenance (berming, fencing etc.) and progressive rehabilitation. See Section N Variations from Control and Operation Standards on drawing 2 of 6.
- Locations and heights for all acoustic/visual berms are provided on the plan view. All proposed berms shall be constructed in accordance with the "Typical Acoustic Berm Detail" (on this drawing), "Typical Visual Berm Detail" (on drawing 4 of 6) and, more specifically, berms adjacent to Beechwood Road will be constructed in accordance with "Typical Berm - Adjacent to Beechwood Berm Detail" (on this drawing). Where the proposed berm transects the existing watercourse along the north perimeter, a culvert shall be installed in accordance with DFO requirements. Culverts will also be installed under berms, where necessary, to maintain existing drainage to and from off-site and to the existing watercourse. All proposed berms and will be vegetated and maintained to control erosion. Temporary erosion control will be implemented as required.
- . Perimeter acoustic berms may be removed for final rehabilitation in the final Phase when they are no longer

4. Any natural treed buffer areas in the setbacks will be maintained where feasible subject to berm requirements.

G. Site Dewatering

- 1. Surface water will be discharged from the sump areas to the existing watercourse until the watercourse is realigned to the location of Phases 1B and 2B. Once the watercourse realignment has been completed, surface water will be discharged from the sumps to the realigned watercourse in Phase 1B.
- 2. Sump: During quarry development, a portable submersible pumps will be installed in each Initial Sinking Cut Area for the purpose of dewatering to maintain a dry working area and/or aggregate washing. Water will be pumped from the sumps to a pond where it is either used for aggregate washing or discharged to the existing watercourse. The sumps shall be relocated (as required) within each extraction area during the operational life of the quarry.

H. Extraction Details

1. The extraction sequence is outlined on drawing 3 of 6.

the time the licence is issued.

- 2. The proposed maximum depth of extraction is indicated by the spot elevations shown on the plan view. Extraction shall proceed to a maximum depth of approximately 42 m below ground surface (ranging in elevation from 141 masl in the southwest to 149 masl in the northeast portions of the site), corresponding to the geologic base of the Gasport dolostone of the Lockport Group.
- 3. For the "Watercourse Realignment Transition Area", the maximum depth of extraction is approximately 1 metre (down to an elevation of 174 masl) and any extraction in the "Watercourse Realignment Transition Area" shall be completed as part of site preparation (construction of compensatory ponds). No drilling or blasting shall be permitted in the "Watercourse Realignment Transition Area".
- 4. Internal haul road locations shall vary as extraction progresses and will be located on the quarry floor with the exception of at grade crossings.

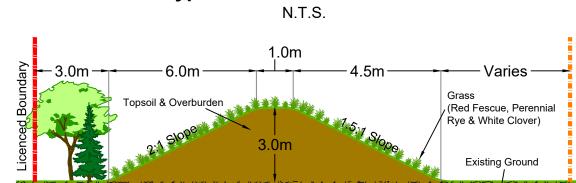
5. Blasted aggregate will be transported back to the mobile crusher plant and processing area on the quarry floor for

- processing and shipping. 6. An office/scale house and weigh scale will be established on site. A maintenance shop and shed(s) may be constructed on site. Portable office/storage trailers and structures associated with fuel storage may be brought onto the site for temporary periods for uses associated with quarry activity. All structures shall remain 30 metres
- Aggregate stockpiles (including recyclable material) shall be located within the limits of extraction and remain a minimum of 30 metres from the licence boundaries (except where the licence boundaries abut Upper's Lane and the unopened road allowance - See Section N Variations from Control and Operation Standards on this drawing) and 90 metres from a property with a residential use.

from the licence boundary / Trans Canada Pipelines easement or 90 metres from the licence boundary if the

boundary abuts land that is used for residential purposes or is restricted to residential use by the Zoning By-law at

Typical Acoustic Berm Detail



Note: The existing vegetation shall be maintained within the three metre setback from the licence boundary (where applicable) if feasible.

I. Equipment and Processing

- 1. A portable processing plant (including primary, secondary and tertiary crushing and screening units) will be permitted within the North and Mid Extraction Areas inclusive.
- 2. Processing shall be located within the limit of extraction and remain a minimum of 30 metres from the licence boundary and 90 metres from a property with a residential use.
- 3. During the sinking cuts and early phases of operation, the primary crusher will be integrated into a single processing plant located near the working face. In later phases, the primary crusher will split from the single integrated plant and start to follow the working face. The processing plant, which contains the secondary and tertiary crushers, will remain close to the quarry entrance. The processing plant will be located at varying elevations, beginning at the top of rock during the sinking cut portion of operations, and moving to the first bench and then the final quarry floor as space becomes available.
- Once processing has progressed to Phase 2A, a hot mix asphalt (HMA) batch plant facility shall be established on the quarry floor (in the location shown on the plan view) in Phase 1A. The HMA batch plant shall remain in the location shown on the plan view for the life of the quarry.
- 5. In Phase 4, the portable processing plant shall require additional shielding in accordance with note A.5 on drawing 4 of 6.
- 6. A wash plant and temporary wash ponds may be established and located to move together with the portable processing plant, subject to permit approval from MECP.

7. Equipment to be used onsite may include, but shall not be limited to: a. Working Face - 1 silenced rock drill; 1 loader;

- b. Processing 1 portable processing plant including crushers, screeners, and stackers; 2 loaders (at c. Asphalt - 1 asphalt plant; 2 loaders, 1 compressor vent, 1 dust controller blower (motor and stack); elevator
- d. Conveyor(s);
- e. Generator(s) (diesel-fueled); and
- f. Rock trucks, haul trucks, shipment trucks and fuel trucks.

motor, conveyor motor, oven motor, pug mill (door and motor);

- 8. If required, an Environmental Compliance Approval will be obtained for processing equipment to be used on-site.
- 9. Wash pond(s) and sump(s) may be permitted in accordance with Environmental Compliance Approval or Permit to Take Water Requirements. The pond(s) and sump(s) will move throughout operations and as extraction progresses horizontally and vertically.
- 10. Equipment used for construction of the perimeter berms/barriers, overburden stripping, rehabilitation, the new watercourse corridor, as well as other quarry related construction projects will be utilized on site.

1. Prior to blasting being permitted within the 100 m setback of the TransCanada Pipeline, identified as 'TransCanada Blasting Buffer Area' on this Plan, the licensee shall address the requirements of notes D.5 on

- All blast monitoring reports shall be retained by the licensee for a period of seven years after each blast and made available upon request for audit purposes. See Section D on drawing 4 of 6 for detailed blasting
- 1. Fuel storage tanks will be located in close proximity to the main processing plant (or in an alternative location subject to approval by the MNDMNRF). Fuel storage tanks shall be installed and maintained in accordance with Technical Standards and Safety Act, 2000. Liquid Fuels Handling Code, 2000 and Liquid Fuels Regulation Reg.
- 2. All fuel tanks shall be doubled sided or placed in containment facilities large enough to hold the tanks maximum
- Fuel trucks shall be used to transfer fuel to on-site equipment in accordance with the Liquid Fuels Handling Code,
- 4. A Spills Contingency Plan shall be prepared and implemented prior to site preparation. The Spills Contingency Plan shall be available on site and all employees and contractors shall be informed and required to comply with

1. In case of an accidental spill of petroleum products, the following contingency plan will be activated:

- a. The Ministry of Environment, Conservation and Parks (MECP) (see address and phone number below) and surrounding landowners will be notified.
- b. For a leakage or spill, immediate action will be taken to stop it. At the same, measures will be taken to
- prevent spreading. These measures may include building a berm or construction of a ditch, for instance. c. The quarry operator shall commence recovery procedures by collecting the spilled substance into
- d. The soil in the area affected by the spill or leak shall be removed and disposed of at a location prescribed

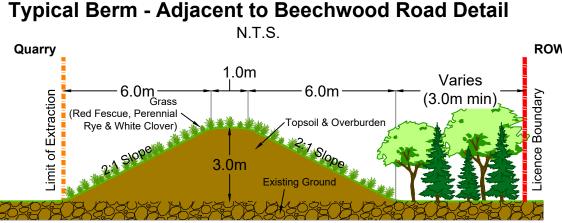
- Ministry of Environment, Conservation and Parks Niagara District Office Garden City Tower 9th Floor Suite 15
- 301 St. Paul Street St. Catharines, Ontario
- Spills Action Centre: 1-800-268-6060

- 1. Scrap may be stored on-site and shall be removed on an on-going basis.
- 2. Scrap shall only include material generated directly as a result of the aggregate operation such as refuse, debris, scrap metal, lumber, discarded machinery, equipment and motor vehicles.
- All fluids shall be drained from any discarded equipment, machinery or motor vehicle prior to storage and disposed of in accordance with the Environmental Protection Act.
- 4. Scrap shall not be stored within 30 metres of any body of water or the licence boundary and shall be kept in close proximity to the main processing plant.
- 5. Recycling of asphalt, concrete, porcelain and glass shall be permitted on-site.
- 6. Recyclable asphalt materials shall not be stockpiled within:
- 6.1. 30 metres of any waterbody or man-made pond; or 6.2. 2 metres of the ground water table.
- 7. Recyclable material shall be kept in close proximity to the main processing plant.
- 8. Rebar or other structural metal shall be separated from recyclable aggregate material during processing and placed in a designated scrap pile on-site which shall be removed on an o-going basis.
- 9. Recycled aggregate shall be removed on an on-going basis.
- 10. Recycling activities shall not interfere with the operational phases of the site or with rehabilitation. 11. Once the site is depleted, no further importation of recyclable material shall be permitted.
- 12. Once final rehabilitation has been completed and approved in accordance with the site plan, all recycling operations shall cease.
- The site shall be kept in an orderly condition.

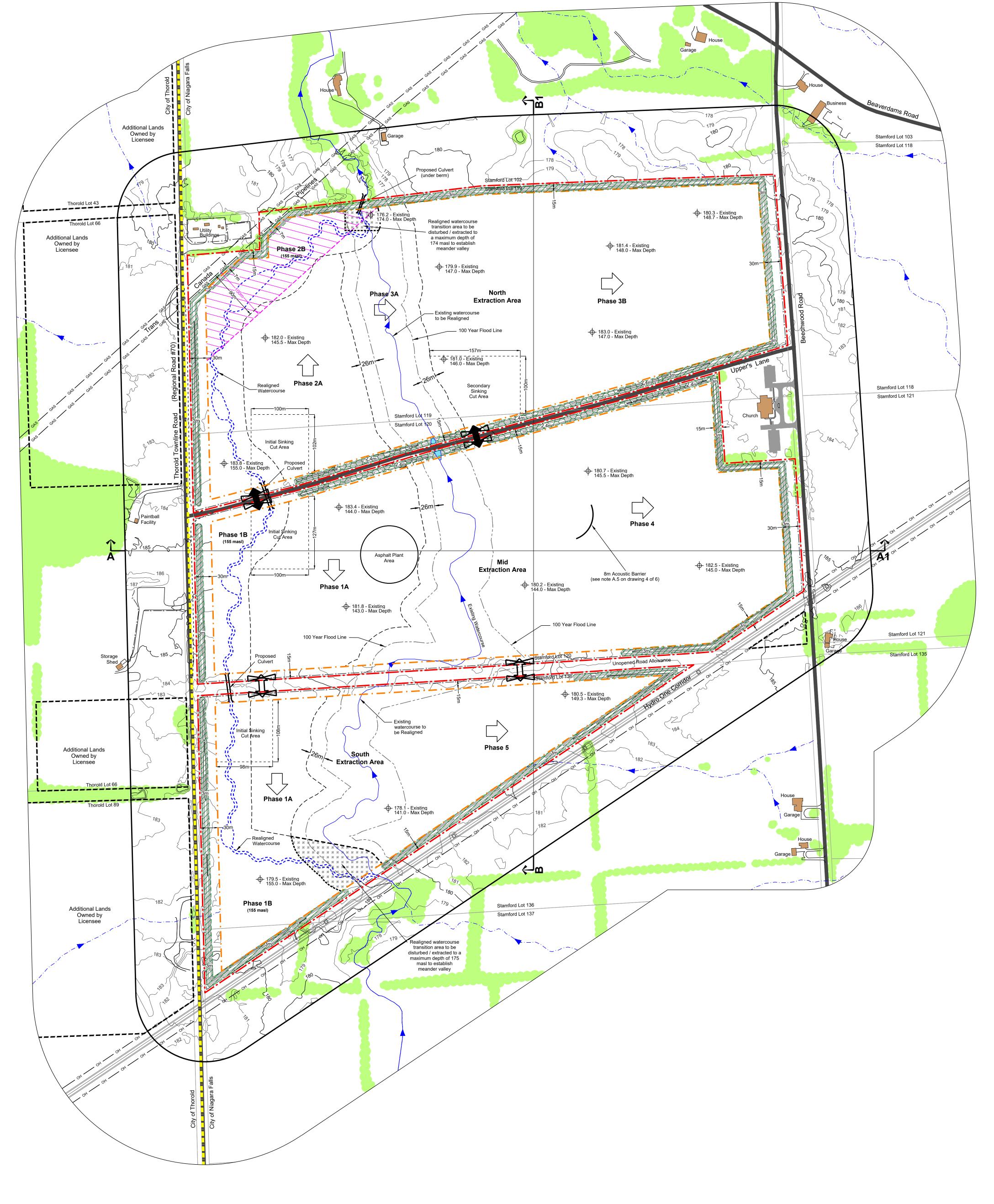
N. Variations from Control and Operation Standards

| | Variations from Control and Operation Standards | |
|-----|---|-------------------|
| No. | Variation | Standar (0.13) |
| | Extraction shall occur within 30 metres but no closer than 15 metres from the Upper's Lane road allowance and the unopened road allowance between Lots 120 and 136. | |
| 1 | In addition, as part of construction of any access shown on the Site Plan and the existing watercourse realignment, extraction may occur: - Within the 15 metre setback from the Upper's Lane road allowance and the unopened road | (1) 9 an |
| | allowance between Lots 120 and 136 for access purposes, - Within the 15 metre setback from the north and south boundaries of the site for riparian corridor construction and - Within the 30 metre setback from Thorold Townline Road for riparian corridor construction. | |
| | Overburden may be removed from the extraction setback area to permit: - Extraction within 30 metres but no closer than 15 metres from Upper's Lane road allowance and the unopened road allowance between Lots 120 and 136 | |
| 2 | Overburden and aggregate may be removed from the excavation setback areas to permit the construction of any access or to implement the existing watercourse realignment as follows: - Within the 15 metre setback from the Upper's Lane road allowance and the unopened road allowance between Lots 120 and 136 for access purposes, - Within the 15 metre setback from the north and south boundaries of the site for riparian corridor construction and | (1) 11 |
| 3 | - Within the 30 metre setback from Thorold Townline Road for riparian corridor construction. Topsoil and overburden may be moved between this Licence and Licence Numbers 11175 & 4437 | (1) 18 |
| 4 | to provide for effective rehabilitation of these licences. A portion of the quarry face shall remain vertical. See Rehabilitation Plan, drawing 5 of 6. | (1) 19 |
| 5 | The licence boundary for the North Extraction Area shall not be fenced on or west of the Trans | (3)(a) |

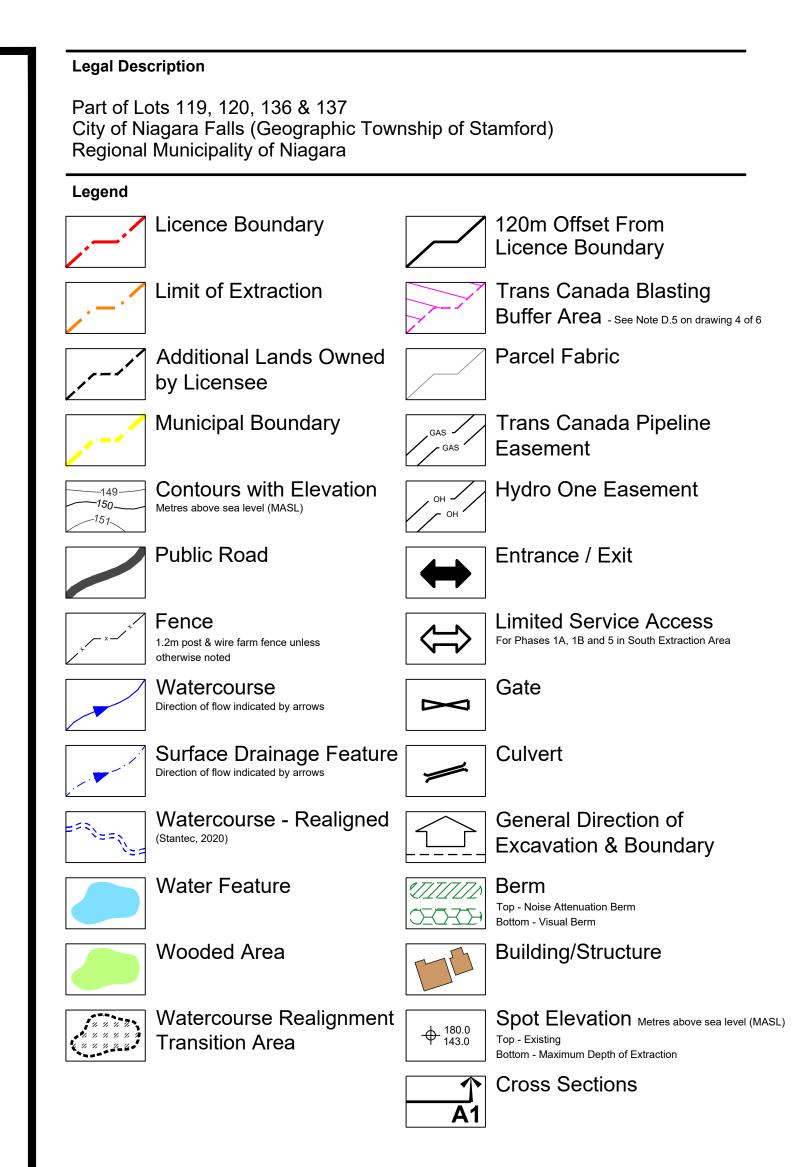
Canada Pipeline easement. Fencing shall be erected on the eastern extent of the easement.



Note: Construct berm in close proximity to limit of extraction to provide additional vegetative screening along Beechwood Road.

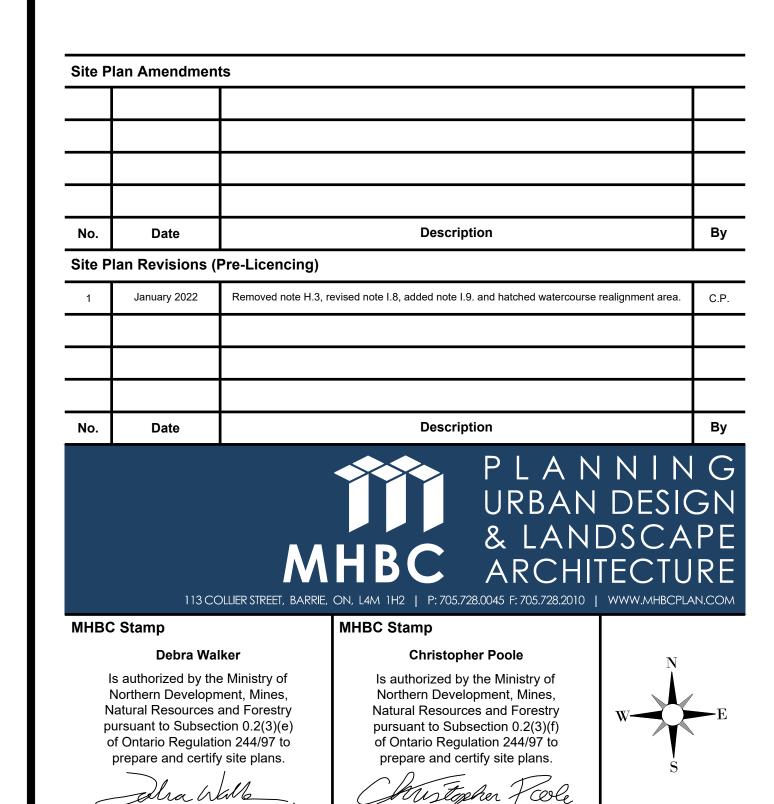


| Table 1: Receptors Within 500m of Licence Boundary | | | | | | | | | | | | | | | | | |
|--|-----------------------|----------|----------|-----------------------|----------|----------|-----------------------|----------|----------|-----------------------|----------|----------|------------------------|----------|----------|------------------------|---------|
| Receptor | Address | Distance | Receptor | Address | Distance | Receptor | Address | Distance | Receptor | Address | Distance | Receptor | Address | Distance | Receptor | Address | Distanc |
| 101 | 10148 Beaverdams Road | 184 m | 121 | 5695 Osprey Avenue | 374 m | 141 | 9349 Madison Crescent | 415 m | 161 | 9245 Shoveller Drive | 489 m | 181 | 9414 Shoveller Drive | 416 m | 201 | 9461 Eagle Ridge Drive | 427 m |
| 102 | 10138 Beaverdams Road | 442 m | 122 | 5687 Osprey Avenue | 362 m | 142 | 9337 Madison Crescent | 423 m | 162 | 9245 Shoveller Drive | 495 m | 182 | 9404 Shoveller Drive | 423 m | 202 | 9500 Eagle Ridge Drive | 474 m |
| 103 | 9722 Beaverdams Road | 234 m | 123 | 5679 Osprey Avenue | 350 m | 143 | 9325 Madison Crescent | 434 m | 163 | 9312 Madison Crescent | 417 m | 183 | 9394 Shoveller Drive | 428 m | 203 | 9494 Eagle Ridge Drive | 477 m |
| 104 | 9582 Beaverdams Road | 151 m | 124 | 5671 Osprey Avenue | 339 m | 144 | 9315 Madison Crescent | 445 m | 164 | 9324 Madison Crescent | 404 m | 184 | 9374 Shoveller Drive | 443 m | 204 | 9490 Eagle Ridge Drive | 478 m |
| 105 | 9417 Beaverdams Road | 447 m | 125 | 5663 Osprey Avenue | 333 m | 145 | 9245 Shoveller Drive | 469 m | 165 | 9336 Madison Crescent | 390 m | 185 | 9364 Shoveller Drive | 450 m | 205 | 9484 Eagle Ridge Drive | 480 m |
| 106 | 9337 Beaverdams Road | 475 m | 126 | 5655 Osprey Avenue | 321 m | 146 | 9245 Shoveller Drive | 461 m | 166 | 9352 Madison Crescent | 370 m | 186 | 9354 Shoveller Drive | 460 m | 206 | 9440 Eagle Ridge Drive | 484 m |
| 107 | 5584 Beaverdams Road | 81 m | 127 | 5647 Osprey Avenue | 311 m | 147 | 9245 Shoveller Drive | 453 m | 167 | 9366 Madison Crescent | 354 m | 187 | 9344 Shoveller Drive | 467 m | 207 | 9440 Eagle Ridge Drive | 495 m |
| 108 | 5769 Beaverdams Road | 287 m | 128 | 5639 Osprey Avenue | 299 m | 148 | 9245 Shoveller Drive | 447 m | 168 | 9380 Madison Crescent | 338 m | 188 | 9334 Shoveller Drive | 478 m | 208 | 5772 Osprey Avenue | 499 m |
| 109 | 5821 Beaverdams Road | 360 m | 129 | 5631 Osprey Avenue | 290 m | 149 | 9245 Shoveller Drive | 440 m | 169 | 5610 Osprey Avenue | 311 m | 189 | 9324 Shoveller Drive | 488 m | 209 | 9440 Eagle Ridge Drive | 494 m |
| 110 | 5783 Osprey Avenue | 490 m | 130 | 5623 Osprey Avenue | 284 m | 150 | 9245 Shoveller Drive | 410 m | 170 | 5622 Osprey Avenue | 323 m | 190 | 9314 Shoveller Drive | 494 m | | | |
| 111 | 5775 Osprey Avenue | 480 m | 131 | 5615 Osprey Avenue | 271 m | 151 | 9245 Shoveller Drive | 425 m | 171 | 5632 Osprey Avenue | 331 m | 191 | 9355 Eagle Ridge Drive | 494 m | | | |
| 112 | 5767 Osprey Avenue | 470 m | 132 | 5607 Osprey Avenue | 259 m | 152 | 9245 Shoveller Drive | 435 m | 172 | 5642 Osprey Avenue | 341 m | 192 | 9365 Eagle Ridge Drive | 481 m | | | |
| 113 | 5759 Osprey Avenue | 459 m | 133 | 9445 Madison Crescent | 280 m | 153 | 9245 Shoveller Drive | 443 m | 173 | 5652 Osprey Avenue | 350 m | 193 | 9375 Eagle Ridge Drive | 469 m | | | |
| 114 | 5751 Osprey Avenue | 448 m | 134 | 9433 Madison Crescent | 299 m | 154 | 9245 Shoveller Drive | 457 m | 174 | 5668 Osprey Avenue | 362 m | 194 | 9385 Eagle Ridge Drive | 471 m | | | |
| 115 | 5743 Osprey Avenue | 438 m | 135 | 9421 Madison Crescent | 316 m | 155 | 9245 Shoveller Drive | 467 m | 175 | 9405 Shoveller Drive | 374 m | 195 | 9395 Eagle Ridge Drive | 464 m | | | |
| 116 | 5735 Osprey Avenue | 424 m | 136 | 9409 Madison Crescent | 334 m | 156 | 9245 Shoveller Drive | 476 m | 176 | 9395 Shoveller Drive | 383 m | 196 | 9045 Eagle Ridge Drive | 457 m | | | |
| 117 | 5727 Osprey Avenue | 415 m | 137 | 9397 Madison Crescent | 351 m | 157 | 9245 Shoveller Drive | 485 m | 177 | 9385 Shoveller Drive | 392 m | 197 | 9415 Eagle Ridge Drive | 448 m | | | |
| 118 | 5719 Osprey Avenue | 404 m | 138 | 9385 Madison Crescent | 371 m | 158 | 9245 Shoveller Drive | 498 m | 178 | 9446 Shoveller Drive | 400 m | 198 | 9425 Eagle Ridge Drive | 445 m | | | |
| 119 | 5711 Osprey Avenue | 393 m | 139 | 9373 Madison Crescent | 391 m | 159 | 9245 Shoveller Drive | 474 m | 179 | 9434 Shoveller Drive | 405 m | 199 | 9435 Eagle Ridge Drive | 443 m | | | |
| 120 | 5703 Osprey Avenue | 383 m | 140 | 9361 Madison Crescent | 407 m | 160 | 9245 Shoveller Drive | 482 m | 180 | 9424 Shoveller Drive | 412 m | 200 | 9445 Eagle Ridge Drive | 436 m | | | |



Site Plan Acronyms

- 1. ARA Aggregate Resources Act 2. MNDMNRF - Ministry of Northern Development, Mines, Natural Resources and Forestry
- 3. MHSTCI Ministry of Heritage, Sport, Tourism and Culture Industries
- 4. MECP Ministry of the Environment, Conservation and Parks
- 5. MGCS Ministry of Government and Consumer Services 6. DFO - Department of Fisheries and Oceans Canada
- 7. ECA Environmental Compliance Approval
- 8. BMPP Best Management Practices Plan 9. PTTW - Permit to Take Water
- 10. MASL Metres above sea level
- 11. ROW Right of way
- 12. HMA Hot mix asphalt

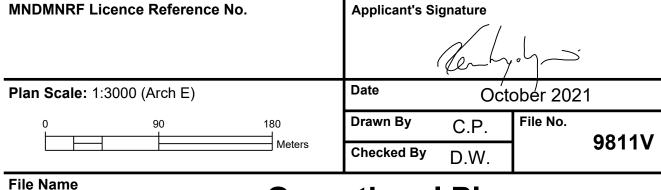




Drawing No.

Walker Aggregates Inc. 2800 Thorold Townline Road P.O. Box 100 Thorold, Ontario L2V 3Y8

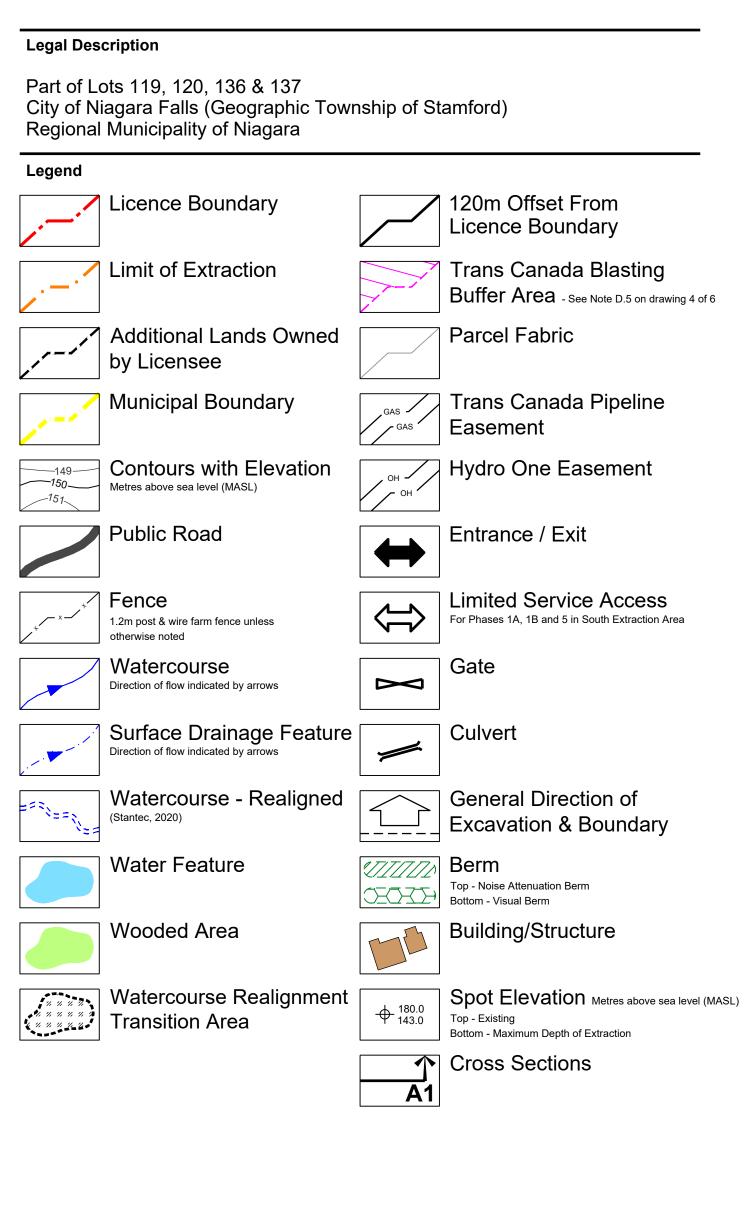
Upper's Quarry



Operational Plan

2 of 6 N:\Brian\9811V - Walker Uppers Quarry\Drawings\Site Plan\CAD\9811V - Site Plan - Proposed Scenario.dwg

A. General 4. A portable pump shall be utilized as necessary to discharge water to a man-made pond for aggregate washing or to a sediment forebay before being discharged to the existing watercourse. During heavy rainfall events (25 mm 1. This plan depicts a schematic operations sequence for the property based on the best information available at the or more), the pump will be deactivated as necessary to prevent flooding along the watercourse downstream of the time of preparation. site. The discharge, pond and forebay locations will move with the quarry face until the final quarry depth is reached. At this point, a permanent sump will be established. 2. Phases do not represent any specific or equal time period. Similar to Phase 1, the new watercourse channel shall be constructed within Phase 2 running along the east side 3. The direction of extraction will generally be in accordance with the General Direction of Excavation (shown on the of Thorold Townline Road (Phase 2B) for the eventual realignment of the existing watercourse. As resource plan view). Notwithstanding the operational and rehabilitation notes, demand for certain products, blending of extraction is completed in Phase 2B, this area will be filled with clay overburden material from on-site to an elevation ranging between 173 to 178 masl. The new watercourse and riparian wetland channel will be materials or Water Study Contingency measures may require minor deviations in the extraction and rehabilitation constructed, designed and vegetated in accordance DFO authorization and Rehabilitation Plan (drawing 5 of 6). As extraction reaches the final quarry floor, and there is sufficient separation from the quarry floor working areas Progressive and final rehabilitation will be completed in direct correlation to the development of the quarry as the extraction limits are reached and enough area is available to ensure that rehabilitation activities will not interfere in Phase 2A, a 2:1 sideslope along the easterly and northerly limit of Phase 2B shall be backfilled with either: (i) with the production, stockpiling and processing of aggregate materials. overburden stockpiled on-site; (ii) overburden in Phase 3B; or (iii) material imported from Licence Numbers 11175 and 4437. B. Initial Site Preparation 7. Commence site preparation of Phase 3. 1. Generally, site preparation in Phases 1 and 2 to include but not limited to: E. Phase 3 (3A & 3B) a. Constructing the main entrance and cross over(s) in accordance with entrance permit approvals 1. Proceed with stripping of overburden/topsoil. b. Establishing fencing around licenced boundary (see Section N Variations from Control and Operation 2. Prior to undertaking any works within Phase 3A that may result in any serious harm to fish, according to 35(1) of Standards on drawing 2 of 6) the Fisheries Act, the Licensee shall obtain a Fisheries Act Authorization from the Department of Fisheries and c. Removal of trees and existing buildings (in accordance with all site plan requirements and applicable Oceans (DFO) and shall fulfill any other conditions required by the DFO as stated on its authorization. Once the watercourse has been realigned to the satisfaction of DFO, stripping of overburden and topsoil can proceed in d. Proceed with stripping of overburden/topsoil from Phase 1 and, if necessary, Phase 2 3. In the event that watercourse relocation has not been approved or completed, extraction in Phase 3B may e. Construction of berms/acoustic barriers within the perimeter setback of the licence boundary (as shown on proceed before extraction in Phase 3A. the plan view). 4. In the event that Phase 3B is extracted before Phase 3A, a portable pump shall be utilized as necessary to Install water management and erosion and sediment control measures (silt fencing) in accordance with note D.1 discharge water to a man-made pond for aggregate washing or to a sediment forebay before being discharged to on this drawing and note E.1.c on drawing 4 of 6. the existing watercourse. During heavy rainfall events (25 mm or more), the pump will be deactivated as necessary to prevent flooding along the watercourse downstream of the site. The discharge, pond and forebay Commence portable crushing/screening plant set up. The plant shall operate in accordance with Section A on locations will move with the quarry face until the final quarry depth is reached. At this point, a permanent sump drawing 4 of 6 for all Phases. will be established. Additional Lands Owned by Stamford Lot 103 Licenseé C. Phase 1 (1A and 1B) 5. Phase 3A and 3B shall be extracted in up to three (3) lifts to a depth ranging between 145 masl to 149 masl. Stamford Lot 118 Extraction will proceed in an easterly direction, moving gradually from north to south. 1. Commence extraction in the 'Initial Sinking Cut Area' identified in the Mid and South Extraction Area (see plan 6. Once the existing watercourse has been realigned, extraction in Phase 3A may proceed. Proposed Culvert 2. Phase 1A shall be extracted in up to three (3) lifts to a depth ranging between 140 masl and 145 masl. 7. Continue progressive rehabilitation of the quarry perimeter where limits of extraction have been reached and there is sufficient separation from the quarry floor working areas. 3. Phase 1B shall be extracted in one (1) to two (2) lifts to a depth of 155 masl. Thorold Lot 43 8. Commence site preparation of Phase 4. 4. A portable pump shall be utilized as necessary in the Mid Extraction Area and the South Extraction Area to Thorold Lot 66 +++ 180.3 - Existing 148.7 - Max Depth discharge water to a man-made pond for aggregate washing or to a sediment forebay before being discharged to F. Phase 4 the existing watercourse. During heavy rainfall events (25 mm or more), the pump will be deactivated as necessary to prevent flooding along the watercourse downstream of the site. The discharge pond and forebay Proceed with stripping of overburden/topsoil. disturbed / extracted to locations will move with the quarry face until the final quarry depth is reached in each extraction area. At this Additional Lands a maximum depth of point, a permanent sump shall be established in each extraction area. 2. Commence Phase 4 extraction in an easterly direction, moving gradually from north to south. 174 masl to establish Owned by meander valley During Phase 1, a new watercourse channel shall be constructed along the east side of Thorold Townline Road 3. Phase 4 shall be extracted in up to three (3) lifts to a depth ranging between 142 masl in and 147 masl. (within Phase 1B) for the eventual realignment of the existing watercourse. As resource extraction is completed in Phase 1B, this area will be filled with clay overburden material from on-site to an elevation ranging between 173 4. Continue progressive rehabilitation of the quarry perimeter where limits of extraction have been reached and to 178 masl. The new watercourse and riparian wetland channel shall be constructed, designed and vegetated in there is sufficient separation from the quarry floor working areas. accordance with DFO's authorization and this Rehabilitation Plan (drawing 5 of 6). As extraction reaches the final quarry floor, and there is sufficient separation from the quarry floor working areas **Extraction Area** Phase 3B in Phase 1A, a 2:1 sideslope along the easterly and northerly limit of Phase 1B shall be backfilled with either: (i) Proceed with stripping of overburden/topsoil. Existing watercourse overburden stockpiled on-site; (ii) overburden in Phase 2; or (iii) material imported from Licence Numbers 11175 to be Realigned 2. Commence Phase 5 extraction in an easterly direction, moving gradually from north to south. 7. Commence site preparation of Phase 2. 3. Phase 5 shall be extracted in up to three (3) lifts to a depth ranging between 140 masl and 143 masl. D. Phase 2 (2A & 2B) 4. Continue progressive rehabilitation of the quarry perimeter where limits of extraction have been reached and there is sufficient separation from the quarry floor working areas. 1. Commence extraction in the 'Initial Sinking Cut Area' identified in the North Extraction Area (see plan view for 2. Phase 2A shall be extracted in up to three (3) lifts to a depth ranging between 141 masl to 145 masl. 1. Complete extraction of any remaining resource in the extraction limit near the entrance in Phase 1A and 1B (e.g. Stamford Lot 118 Stamford Lot 121 3. Phase 2B shall be extracted in one (1) to two (2) lifts to a depth of 155 masl. 2. As part of the final operations of the site, remove office/scale house and scales and any other equipment and Stamford Lot 119 3. Continue with final rehabilitation of the site. Complete quarry face backfilling on the remaining quarry faces as identified on drawing 5 of 6. +++ 180.7 - Existing 145.5 - Max Depth **Extraction Sequence Schematic** ______ ++- 182.5 - Existing 145.0 - Max Depth Extraction Area 8m Acoustic Barrier (see note A.5 on drawing 4 of 6) Phase 1A - 100 Year Flood Line Stamford Lot 121 100 Year Flood Line — L-----Phase 1A Additional Lands Owned by Thorold Lot 66 The state of the s Stage 2 Stage 1 Phase 1B Phase 1B Additional Lands Licensee transition area to be disturbed / extracted to a maximum depth of 175 masl to establish _______ Stage 3 Stage 4 Phase 1B Phase 1B Undisturbed Site Preparation Under Extraction Progressive and Final Rehabilitation



Site Plan Acronyms

1. ARA - Aggregate Resources Act

2. MNDMNRF - Ministry of Northern Development, Mines, Natural Resources and Forestry 3. MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries

4. MECP - Ministry of the Environment, Conservation and Parks

5. MGCS - Ministry of Government and Consumer Services

6. DFO - Department of Fisheries and Oceans Canada 7. ECA - Environmental Compliance Approval

8. BMPP - Best Management Practices Plan 9. PTTW - Permit to Take Water

10. MASL - Metres above sea level

11. ROW - Right of way

12. HMA - Hot mix asphalt

Site Plan Amendments Site Plan Revisions (Pre-Licencing) Revised note C.1 and hatched watercourse realignment area. MHBC Stamp MHBC Stamp Is authorized by the Ministry of Is authorized by the Ministry of Northern Development, Mines, Northern Development, Mines,

Natural Resources and Forestry

pursuant to Subsection 0.2(3)(e)

of Ontario Regulation 244/97 to

prepare and certify site plans.

Walker Aggregates Inc. 2800 Thorold Townline Road P.O. Box 100 Thorold, Ontario

Natural Resources and Forestry

pursuant to Subsection 0.2(3)(f)

of Ontario Regulation 244/97 to

prepare and certify site plans.

Upper's Quarry

MNDMNRF Licence Reference No. Plan Scale: 1:3000 (Arch E) October 2021

Extraction Sequence

3 of 6

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A. Acoustic Assessment Minimum 3 metre tall acoustic berms shall be constructed in the locations shown on the plan view. The acoustic berms shall be constructed during site preparation and prior to extraction. 3. The primary crusher shall stay within 30 metres of the working face to maximize shielding effect of the quarry terrain. 4. Material extracted from the South Extraction Area shall be processed in the Mid Extraction Area. 5. While processing in Phase 4, the licensee shall maintain an 8 metre tall barrier at a radius of 40 metres to the southeast of the processing plant's secondary crushers (see plan view for location). The barrier can be material stockpiles, noise walls, or a combination of both. The barrier shall extend long enough to shield receptors R4 and R5 (see plan view) from the secondary crushers. 6. All construction equipment shall meet the sound emission standards defined in MECP Publication NPC-115. 7. The following best practice measures shall be undertaken to minimize the potential for construction noise impacts related to site preparation, berm creation and rehabilitation but not related to extraction and processing activities: a. Construction will be limited to time periods allowed by the City's applicable by-laws. If construction activities are required outside of these hours, the licensee will seek permits / exemptions directly from the City in advance. b. All internal combustion engines will be fitted with appropriate muffler systems. c. The licensee's operating procedures will contain a provision that any initial complaint will trigger verification that the general noise control measures agreed to on this Plan are in effect. d. In the presence of persistent noise complaints, all construction equipment will be verified to comply with MECP's NPC-115 guidelines. e. In the event of verified noise complaints, alternative noise control measures may be required where reasonably available. In selecting appropriate noise control and mitigation measures, consideration will be given to the technical, administrative and economic feasibility of the various alternatives. B. Air Quality 1. The licensee shall apply water or another provincially approved dust suppressant to internal haul roads and processing areas, as necessary to mitigate dust. Processing equipment shall be equipped with dust suppressing or collection devices, where the equipment creates dust and is operating within 300 metres of an air quality sensitive receptor (as set out in the Air Quality Impact The licensee shall obtain an environmental compliance approval under the Environmental Protection Act where

4. The site will operate in accordance with the Best Management Practices Plan (BMPP) for Fugitive Dust Emissions.

control measures specified in the BMPP can be reduced accordingly, provided dust remains mitigated on site.

b. Aggregate extraction, processing and shipping does not exceed 9,000 tonnes per day.

The BMPP may be amended from time to time, considering actual impacts and operational considerations. The

a. Blasting operations occurring within 300 metres of a residential receptor shall have a smaller blast area, not

1. Areas identified as "Archaeological Site - Protected Areas Requiring Further Archaeological Assessment" on this

drawing reflect areas that require further archaeological assessment and are protected by a 20 to 30 metre protective

No ground alterations including overburden stripping and excavation, or development of any kind shall occur within areas identified as "Archaeological Site - Protected Areas Requiring Further Archaeological Assessment" and their

a. the required investigations are completed in accordance with the Stage 1 and 2 Archaeological Assessment

b. any recommendations that the respective site(s) has no further cultural heritage value or interest are made as a

A temporary barrier shall be established around the perimeter of each 'Archaeological Site - Protected Areas Requiring

ensure the effectiveness of the avoidance strategy. The archaeologist shall ensure that the temporary barrier is in the

appropriate location and shall be empowered to stop construction if there is a concern for impacts to an archaeological site. 'No go' instructions shall be issued to all work crews for the protected areas, and the locations of the protected

areas shall be shown on all appropriate contract drawings. The protected areas shall be inspected by a licensed

archaeologist once the strategy is no longer required, and the effectiveness of the strategy shall be reported to the

6. Should deeply buried archaeology remains be found during the course of site preparation and/or extraction related

1. An attenuation study shall be undertaken by an independent blasting consultant during the first 12 months of operation in order to obtain sufficient quarry data to confirm the initial guideline parameters and assist in refining future blast

. All blasts shall be monitored for both ground vibration and overpressure at the closest privately owned sensitive

Blasts shall be designed to maintain vibrations below 13mm/s at the location of the closest identified active spawning

4. The guideline limits for vibration and water overpressure shall adhere to standards as outlined in the Guidelines For

5. All blasts shall be monitored for ground vibration at the adjacent Trans Canada Energy High Pressure Natural Gas

Pipeline when blasting within 100m of the pipeline or when calculations suggest vibrations in excess of 35mm/s.

6. Blasts shall be designed to maintain vibrations at the transmission towers in the Hydro One Corridor below 50mm/s or

any such document, regulation or corporate policy in effect at the time. When vibration calculations suggest vibrations

Blasts shall be designed to maintain vibrations at the 4832 Thorold Townline Road utility buildings below 50mm/s.

. The guideline limits for ground vibration and air overpressure shall adhere to standards as outlined in the Model

9. Orientation of the aggregate extraction operation shall be designed and maintained so that the direction of the

10. Blast designs shall be continually reviewed with respect to fragmentation, ground vibration and overpressure. Blast

a. Existing vegetation within the setbacks shall be maintained except where berms, haul roads and conveyors are

c. Silt fencing shall be installed at the easterly limit of Phases 1A and 2A where field drainage enters the existing

e. Topsoil and overburden stockpiles shall be maintained in accordance with the Best Management Practices for

a. The existing watercourse will remain open (not culverted) where it enters the south limit of the South Extraction

b. Where the watercourse exits the North Extraction Area, a culvert will be installed to maintain the watercourse

c. As part of site preparation, a compensation pond will be constructed in the Watercourse Realignment Transition

while allowing an acoustic berm to be constructed. As part of final rehabilitation, the berm and culvert shall be

Area within Phase 2B, in accordance with the Natural Channel Design Report (Stantec 2021). The

I. As extraction is completed in Phases 1B and 2B, these areas will be filled with clay overburden material to an elevation ranging between 173 to 178 masl. In accordance with the Natural Channel Design Report (Stantec

2021), a new watercourse channel will be constructed, vegetated and designed in these areas and will include

d.2. Fish habitat ponds, including new pike spawning habitat as well as foraging, spawning and rearing

f. 2:1 side slopes shall be established on the east side of the new watercourse channel down to the quarry floor.

Once the realigned watercourse channel has been constructed in Phases 1B and 2B and adequate vegetation

a. The 2.0 ha woodland situated on the east side of Thorold Townline Road shall be removed during the

b. The lands identified off-site as "Woodland Compensation Area" on this drawing, an area of 4.7 ha, shall be

has been established (as confirmed by an ecologist), water from the existing watercourse will be diverted to the

advancement of operations in Phase 1A/1B. Tree clearing in the woodlot shall be undertaken outside of the

compensation pond will be excavated to a maximum depth of 174 masl in this area and in accordance with DFO

the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario (MNRF 2017). Stripped

overburden and topsoil for rehabilitation shall be utilized in accordance with notes E.4, E.5 and E.6 on drawing 2

designs shall be modified as required to maintain compliance with current applicable guidelines and regulations.

Municipal Noise Control By-law publication NPC 119 (1978) or any such document, regulation or guideline which

When vibration calculations suggest vibrations at the utility buildings may exceed 35mm/s, the buildings shall be

monitor shall be installed on the shoreline closest to the spawning bed to confirm the vibration levels.

at the towers may exceed 35mm/s, the towers shall be monitored for ground vibration.

overpressure propagation will be away from structures as much as possible.

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

b. New vegetation shall be maintained in accordance with note G.5 on this drawing.

f. Dust control will be implemented in accordance with Section B on this drawing.

authorization. No drilling or blasting shall occur in this Transition Area.

d.4. Wood debris toe protection and wood reinforced banks

realigned watercourse in consultation with regulatory authorities.

planted in accordance with the Rehabilitation Plan (drawing 5 of 6).

e. Culverts will be installed under Upper's Lane and the unopened road allowance.

breeding bird period and the active bat season from March 23 and August 26.

removed to allow for the watercourse to be open.

the following design elements:

habitat for other fish species

d.1. Floodplain wetlands

d.3. Creek sections

d.6. Augmented riffle.

Woodland and Terrestrial Habitat Enhancement

d.5. Log sills

g. Fuel storage shall be in accordance with the notes under Section K on drawing 2 of 6.

d. Stockpiling of all excavated material shall be in accordance with note H.7 on drawing 2 of 6.

bed as per DFO guidelines. When blasting during active spawning season, a minimum of one supplemental vibration

the Use of Explosives In or Near Canadian Fisheries Waters (1998) or any such document, regulation or guideline

receptors adjacent the site, or closer, with a minimum of two (2) instruments - one installed in front of the blast and one

Immediately upon issuance of the Licence, and once the construction schedule has been finalized, a licensed F. archaeologist will be retained by the licensee so that monitoring can occur where required. The remaining

7. In the event that human remains are encountered during construction or extraction activities, the licensee shall G. Visual

immediately contact both the MHSTCI and Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the

Further Archeological Assessment" identified on this drawing as part of site preparation and in advance of extraction.

4. All soil disturbing activities within the 50 metres monitoring buffers shall be monitored by a licensed archaeologist to

c. the associated reports are entered into the Ontario Public Register of Archaeological Reports.

archaeological fieldwork will be completed upon issuance of the licence by the MNDMNRF.

recommendations in the BMPP are based on the maximum daily production rates. At lower production rates, the

required to carry out operations at the quarry.

respective protective buffers until:

activities, the MHSTCI shall be notified.

which supersedes this standard.

monitored for ground vibration.

supersedes this standard.

E. Natural Heritage

2. Natural Channel Design

Ministry of Government and Consumer Services (MGCS).

5. The following mitigation measures shall be incorporated into the BMPP:

buffer. A 50 metre monitoring buffer is also identified on this drawing.

result of completing further investigations, and,

prepared by Archaeological Research Associates Ltd. (April 2020),

c. The lands identified on-site as Deciduous Woodland, Treed Deciduous Swamp and Swamp Thicket / Marsh

d. Planting for the off-site woodland compensation will commence in the appropriate planting season following

a. Vegetation clearing where milkweed plants are present will proceed when monarch larvae are absent

b. The setbacks along Thorold Townline Road and Beechwood Road shall be planted with a mix of deciduous and

a. A woodland and wildlife habitat compensation plan shall be prepared in consultation with regulatory authorities

a.2. Improving associated landscape functions such as vegetative linkages and interior forest areas

achieve a net gain in the ecological functions of the local and regional landscape through:

composition to the removed vegetation community (FOD9)

establishment of a healthy forest soil microbiome

milkweed (Asclepias incarnata) and nectar producing plants.

to: (i) allow practices and management to respond to changing forest dynamics in the Woodland Compensation Areas such as pest infestations, climatic conditions (e.g. species selection) and restoration ecology; and (ii)

a.3. Improving forest ecological characteristics such as species diversity, age class distribution and structural

a.3.1. Tree seeds and nuts will be gathered from the woodland for direct planting in the Woodland

a.3.3. Transplanting of native saplings and small shrubs from the woodland to the compensation

a.4. Incorporating specific wildlife habitat features for bats, deer and other wildlife, such as bat roosting

a.5. Incorporating specific planting in setbacks and the watercourse realignment channel. For example, plantings that provide habitat for monarch including common milkweed (Asclepias syriaca), swamp

b. Water shall be discharged from the sump area to the existing watercourse until water flow is diverted to the watercourse realignment channel. Once the watercourse realignment has been completed, water shall be

c. Water collected from the sump area shall be directed to a holding pond for storage to allow for settling of

discharged from the sump locations to the realigned watercourse. Pumping and discharge shall occur as

suspended solids and dissipation of other constituents such as hydrogen sulfide an alkalinity. Following this

pond treatment, water will be discharged to the existing watercourse until water flow is diverted to the

watercourse realignment channel. Once the watercourse realignment has been completed, water shall be

discharged from the holding pond to the realigned watercourse. Pumping and discharge shall occur as required

Wetlands along the existing watercourse will be maintained until the watercourse has been diverted to the

b. Once the watercourse has been diverted, the created wetlands in the watercourse realignment channel shall be

a. A monitoring plan shall be prepared in consultation with regulatory authorities to assess the performance of the

b. A monitoring program of compensation planting shall be prepared in consultation with regulatory authorities to

c. A trigger mechanism and contingency plan, as detailed in WSP's Water Study Report, shall be implemented

1. Prior to commencement of extraction operations, the required entrance improvements, road improvements and road

1. Where possible and to the extent to which it is present, existing vegetation located along the site perimeter within the

2. 3.0 metre high acoustic berms and 2.4 metre high visual berms shall be established in the locations shown on the plan

view. Berms shall be constructed in a smooth, rolling manner with varying highpoints (where space permits while

respecting minimum height requirements), and variations along the berm frontage to create a more natural

appearance. Berms shall be seeded with a naturalizing mix of wildflowers and grasses to stabilize slopes and minimize

Within the "Extended Planting Areas" (as shown on this drawing), trees shall be planted at a spacing of 5 to 10 metres

on centre, depending on species. Where possible, plantings shall be randomly spaced and staggered up on the berm up to one third of its maximum height to appear more natural. Plantings shall also extend a minimum of 3 metres out

from the berm towards the road where available space permits. All vegetation shall be selected for wind and salt

Where "Large Planting Stock" is indicated (see plan view and "Typical Visual Berm Detail" on this drawing), this area

shall be planted with deciduous trees of minimum 40 millimetres caliper, coniferous trees of minimum 1.0 metre in

Where "Small Planting Stock" is indicated (see plan view and "Typical Visual Berm Detail" on this drawing), this area

shall be planted with deciduous tree whips of minimum 1.2 metres in height, coniferous trees of minimum 0.6 metre in

Planting shall occur for 40 metre stretches on either side of Upper's Lane and the unopened road allowance facing Thorold Town Line Road. The large planting stock shall be planted 3 metres beyond the berm and small planting stock

Pin Oak

4. To ensure survival and positive growth rate, the vegetative screening shall be maintained as an effective visual screen

5. During the first year, planted trees shall be watered and monitored until established. After the first year and up to five

6. A mortality rate of up to 15% of all trees planted over the course of the five year maintenance period is expected.

1. A long-term monitoring program will be implemented during the guarry operational and rehabilitation phases, until

. In the event a well interference claim is received, the licensee shall implement the following mitigation plan to protect

a. Prior to extraction, landowners shall be provided with a copy of the water well interference plan as well as the contact information for the licensee and MECP (Wells Help Desk 1-888-396-9355 or email

b.2. The licensee shall contact a well contractor in the event of a well malfunction and residents will be

c. The well contractor shall contact the resident with the supply issue to rectify the problem as expediently as

d. If the issue raised by the landowner is related to loss of water supply, the licensee shall have a qualified

e. If it has been determined that the quarry caused the water supply interference (i.e., lowering of the water level),

measures shall be considered, and the appropriate measure(s) implemented at the expense of the licensee:

e.2. Lowering of the pump to take advantage of existing water storage within the well;

3. A spill action plan shall be carried out in accordance with the notes in Section N Spills Plan on drawing 2 of 3.

4. A trigger mechanism and contingency plan as set out in WSP's Level 2 Water Study Report shall be implemented.

5. WSP's Water Study Report confirms that drawdown impacts do not extend to areas identified in the Niagara

hydrogeologist / well 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),

lack of well maintenance / well cleaning (owner's expense) or lowering of the water level in the well from the

quarry development (licensee expense). This assessment process shall be carried out at the expense of the

the licensee shall continue to supply water at their expense until the problem is rectified. The following mitigation

e.3. Deepening of the well to increase the available drawdown, if the well deepening changes the water

f. If the issue raised by the landowner is related to water quality, the licensee shall have a qualified hydrogeologist / well 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 licensee

shall continue to supply water at their 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. The licensee is

provided a temporary water supply within 24 hours, if the issue cannot be easily determined and

poor condition at the time shall be fertilized, watered and monitored to improve their health and vigor.

Trees that die exceeding this percentage shall be replaced yearly, preferably in the spring or late summer.

b. If a water well interference claim is received by the licensee the following actions shall be taken:

b.1. The licensee shall immediately notify MNDMNRF and MECP of the complaint.

years, trees shall be inspected biannually (end of Year 1, beginning of Year 3 and end of Year 4). Trees which are in

Basswood

White Cedar

Common Ninebark

Highbush Cranberry

tolerance and hardiness. Native species that complement the existing surroundings shall be utilized.

height, and shrub species of minimum 20 centimetres height (or bare root stock when in season).

widenings (to Thorold Townline Road) shall be completed to the satisfaction of the applicable road authorities and in

general accordance with the figures titled "Uppers Lane Conceptual Intersection Design" and "Uppers Lane Vehicle

upon licence approval to proactively ensure natural heritage features and their functions are maintained (i.e. fish

habitat, wetland features downstream and at 5584 Beechwood Road, and woodlands) during operational and

watercourse realignment channel and to confirm that impacts to off-site wetlands are not occurring as a result of

diversity, while retaining native genetics through seed collection and replanting. For example, prior to

Compensation Area to promote the continuity of local genetic stock and a similar community

a.3.2. Leaf litter and sods containing native understory vegetation will be transplanted to promote rapid

structures (bat boxes or condos), coniferous tree clusters for cover, browse-tolerant shrubs and mast

and local landscape shall be used (see Rehabilitation Plan, drawing 5 of 6).

a.1. Increasing the total area of woodland cover in the regional landscape;

the removal of the existing 2 ha woodland:

planting area, where feasible.

a. Implement notes D.3 and D.4 on this drawing.

required to support fish habitat.

to support fish habitat.

maintained.

8. <u>Monitoring Program</u>

watercourse realignment channel.

confirm stable conditions have been established.

Movement Diagram" provided on this drawing.

height, and shrub species of minimum 40 centimetres height.

shall extend from the toe of the berm to 2 metres up the berm.

Plant species for berms may include, but shall not be limited to the following:

Paper Birch

over time. Allowance of natural succession is encouraged.

stable conditions are observed after quarry decommissioning.

possible, provided landowner authorization of the work.

licensee and the results provided to the homeowner.

quality a water treatment shall be provided;

responsible for the expense to restore the water quality.

Peninsula Source Protection Plan as Intake Protection Zones.

e.4. Widening of the well to increase the available storage of water;

e.5. Relocation of the well to another area on the property; or

e.1. Adjust pump pressure;

e.6. Drilling multiple wells.

Common Hackberry

Trembling Aspen

White Spruce

setback area shall be retained.

White Spruce

White Pine

Sugar / Silver Maple

Staghorn Sumac

the local groundwater users.

coniferous trees and shrubs with a range of sizes. Native plant materials that are complementary to the regional

4. Significant Wildlife Habitat and Wildlife

6. Fish and Fish Habitat

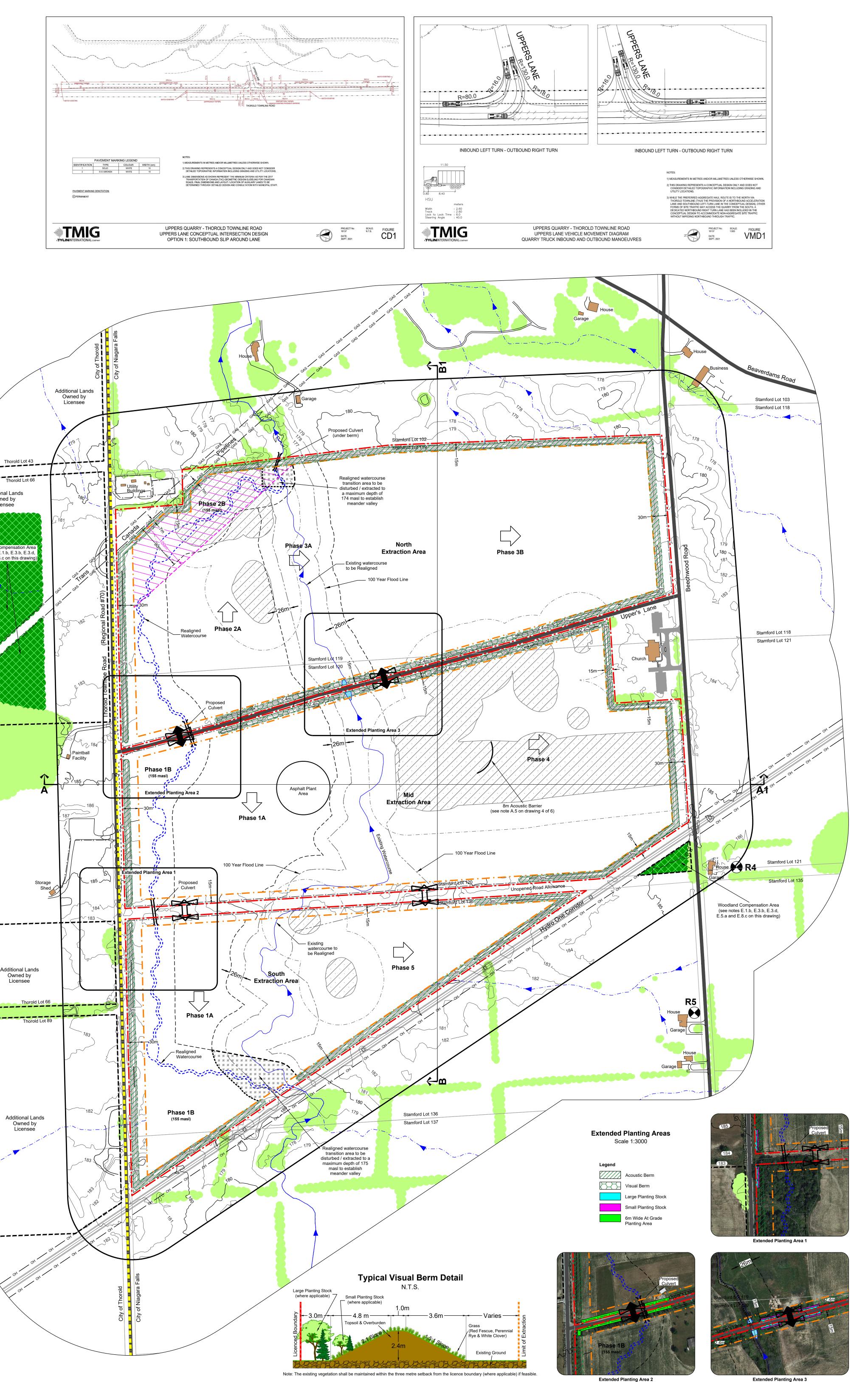
(September 30 to April 1).

5. Woodland and Wildlife Habitat Compensation Plan

Meadow on drawing 5 of 6, an area of 4.0 ha, shall be planted in accordance with the Rehabilitation Plan.

INBOUND LEFT TURN - OUTBOUND RIGHT TURN INBOUND LEFT TURN - OUTBOUND RIGHT TURN PAVEMENT MARKING LEGEND IDENTIFICATION TYPE COLOUR WIDTH (cm) 2) THIS DRAWING REPRESENTS A CONCEPTUAL DESIGN ONLY AND DOES NOT CONSIDER DETAILED TOPOGRAPHIC INFORMATION INCLUDING GRADING AND UTILITY LOCATIONS 1 SOLID WHITE 10
2 3-3-3 BROKEN WHITE 10 1) MEASUREMENTS IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN. 2) THIS DRAWING REPRESENTS A CONCEPTUAL DESIGN ONLY AND DOES NOT CONSIDER DETAILED TOPOGRAPHIC INFORMATION INCLUDING GRADING AND PAVEMENT MARKING DENOTATION: UPPERS QUARRY - THOROLD TOWNLINE ROAD UPPERS QUARRY - THOROLD TOWNLINE ROAD PROJECT No: SCALE: 16137 1:500

DATE: SEPT. 2021 UPPERS LANE CONCEPTUAL INTERSECTION DESIGN UPPERS LANE VEHICLE MOVEMENT DIAGRAM OPTION 1: SOUTHBOUND SLIP AROUND LANE QUARRY TRUCK INBOUND AND OUTBOUND MANOEUVRES Additional Lands Owned by Stamford Lot 103 Licensee Stamford Lot 118 Proposed Culvert (under berm) 11101010 LOL 43 · Realigned watercourse transition area to be disturbed / extracted to Additional Lands a maximum depth of Owned by 174 masl to establish meander valley Licensee Extraction Area (see notes E.1.b, E.3.b, E.3.c 5 a and F 8 c on this dray to be Realigned Stamford Lot 118 Stamford Lot 121 _____+ Paintball Facility Asphalt Plant Extended Planting Area Extraction Area (see note A.5 on drawing 4 of 6) 100 Year Flood Line -(see notes E.1.b, E.3.b, E.3.d, E.5.a and E.8.c on this drawing) --------be Realigned Additional Lands Extraction Area Licensee Thorold Lot 66 Thorold Lot 89 Stamford Lot 136 Additional Lands Stamford Lot 137 Owned by Licensee **Extended Planting Areas** Scale 1:3000 disturbed / extracted to a maximum depth of 175 Acoustic Berm meander valley Visual Berm Large Planting Stock Small Planting Stock 6m Wide At Grade Extended Planting Area 1 **Typical Visual Berm Detail** Large Planting Stock (where applicable) Small Planting Stock (where applicable (Red Fescue, Perennial Rye & White Clover)



Legal Description Part of Lots 119, 120, 136 & 137 City of Niagara Falls (Geographic Township of Stamford) Regional Municipality of Niagara 120m Offset From Licence Boundary **Licence Boundary** Trans Canada Blasting Limit of Extraction Buffer Area - See Note D.5 on this drawing Additional Lands Owned Parcel Fabric by Licensee Trans Canada Pipeline Municipal Boundary | Easement Hydro One Easement Metres above sea level (MASL) Entrance / Exit Limited Service Access For Phases 1A, 1B and 5 in South Extraction Area 1.2m post & wire farm fence unless otherwise noted **Watercourse** Direction of flow indicated by arrows Surface Drainage Feature Direction of flow indicated by arrows Watercourse - Realigned General Direction of (Stantec, 2020) Excavation & Boundary Water Feature Berm Top - Noise Attenuation Berm Top - Noise Attenuation
Bottom - Visual Berm Building/Structure Wooded Area Watercourse Realignment Noise Receptor Transition Area Cross Sections Woodland Compensation Archaeological Site (Includes 20-30m Buffer)

Site Plan Acronyms

1. ARA - Aggregate Resources Act 2. MNDMNRF - Ministry of Northern Development, Mines, Natural Resources and Forestry 3. MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries

4. MECP - Ministry of the Environment, Conservation and Parks

5. MGCS - Ministry of Government and Consumer Services 6. DFO - Department of Fisheries and Oceans Canada

7. ECA - Environmental Compliance Approva

8. BMPP - Best Management Practices Plan

9. PTTW - Permit to Take Water

10. MASL - Metres above sea level

11. ROW - Right of way

12. HMA - Hot mix asphalt

Site Plan Amendments Site Plan Revisions (Pre-Licencing) Added note H.5 and hatched watercourse realignment area. 113 COLLIER STREET, BARRIE, ON, L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.C MHBC Stamp MHBC Stamp

Is authorized by the Ministry of Northern Development, Mines, Northern Development, Mines, Natural Resources and Forestry Natural Resources and Forestry pursuant to Subsection 0.2(3)(e) pursuant to Subsection 0.2(3)(f) of Ontario Regulation 244/97 to of Ontario Regulation 244/97 to prepare and certify site plans. prepare and certify site plans.

Debra Walker

Is authorized by the Ministry of

Drawing No.

2800 Thorold Townline Road P.O. Box 100 Thorold, Ontario L2V 3Y8

Walker Aggregates Inc.

Christopher Poole

Upper's Quarry

MNDMNRF Licence Reference No. **Applicant's Signature** Plan Scale: 1:3000 (Arch E) October 2021

File Name **Report Recommendations**

4 of 6 N:\Brian\9811V - Walker Uppers Quarry\Drawings\Site Plan\CAD\9811V - Site Plan - Proposed Scenario.dwg

PROGRESSIVE REHABILITATION

A. General

Area calculations:

| a. | Licen | nced area | 103.6 ha |
|----|-------|---------------------------------------|----------|
| b. | To be | e extracted | 89.1 ha |
| C. | Final | rehabilitation within licence (total) | 103.6 ha |
| | c.a. | Lake | 68.8 ha |
| | c.b. | Shoreline wetland | 1.3 ha |
| | C.C. | Wetland/pond/stream | 2.9 ha |
| | c.d. | Terrestrial | 22.7 ha |
| | c.e. | Deciduous Woodland | 1.2 ha |
| | c.f. | Treed Deciduous Swamp | 2.0 ha |
| | c.g. | Swamp Thicket & Marsh Meadow | 0.8 ha |
| | c.h. | Undisturbed | 3.9 ha |
| d. | To be | e rehabilitated outside of licence: | 4.7 ha |
| | d.a. | Woodland Compensation Area | 4.7 ha |

 The maximum predicted water table is 184.9 masl and the contact aquifer potentiometric contours ranges between 176.0 and 184.9 masl (as per WSP's "Proposed Upper's Quarry -Maximum Predicted Water Table Report", dated October 2021.

B. Phas

- As excavation reaches the limit of extraction or maximum depth, progressive rehabilitation shall commence.
 Progressive rehabilitation shall follow the general direction and sequence of extraction identified on the plan view and described in the notes on drawing 3 of 6. Minor deviations in operational/rehabilitation sequence will be permitted in order to adjust for any variable
- 3. Prior to extraction commencing in Phases 3A and 3B, side sloping adjacent to Phases 1B and 2B shall be completed to allow for the existing watercourse realignment to be finalized.
- 4. Dewatering of the quarry will ultimately discharge to the watercourse (pre and post realignment). The quarry will continue dewatering operations to maintain a dry quarry floor. When the rock is fully extracted, it is proposed that dewatering operations will cease and the quarry will be permitted to fill naturally with surplus precipitation, surface water and any contribution from groundwater seepage to form a lake. As shown on the plan view, shallow shoreline wetland areas shall be created to provide aquatic habitat.
- 5. Watercourse Realignment Channel Area As portions of the watercourse realignment channel are constructed, the channel shall be planted according to the requirements of each respective planting zone: (i) riparian planting zone; (ii) upland planting zone; (iii) shoreline planting zone and (iv) life staking planting zone. Details relating to construction, planting and monitoring requirements for the watercourse realignment corridor are contained within the "Natural Channel Design Report" prepared by Stantec Consulting Ltd. (dated October 2021).
- 6. Reforestation Areas There are two main reforestation areas:

resource and market conditions.

- 6.1. The Woodland Compensation Area (Off-site) to be no less than 4.3 ha in area. Plantings in this area are set out in Table 1 on this drawing. Planting for this Area (Off-site) will commence in the appropriate planting season following licence approval.
- 6.2. The on-site Woodland Compensation Area includes the areas identified as the Deciduous Woodland, Treed Deciduous Swamp and Swamp Thicket/Marsh Meadow, to be no less than 4.0 ha in total area. Plantings in these areas are set out in Tables 1 to 3 on this drawing respectively. In the Deciduous Woodlands (on-site), additional conifer species will be added to the species mix to provide additional screening.
- 7. A woodland and wildlife habitat compensation plan shall be prepared in consultation with regulatory authorities in accordance with Note E.5.a on drawing 4 of 6.

C. Slopes and Grading

- 1. Progressive rehabilitation will utilize a variety of rehabilitation techniques including:
- a. backfilling extraction faces and quarry floors; orb. Leaving extraction faces vertical
- 2. Excess soil, as defined by Ontario Regulation 406/19 under the Environmental Protection Act, may be imported for the following rehabilitation purposes:
- 2.1. To establish the final elevations, slopes and grades depicted on the plan view
- 2.2. Top dressing to establish vegetation
- 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 maximum total amount of excess soil that may be imported to this site for rehabilitation purposes is 2,400,000 m³.
- 5. The licensee shall ensure that the acceptance and reuse of excess soil imported for rehabilitation purposes is compliant with Part 1: Rules for Soil Management 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.
- 6. The final rehabilitated landforms established using the rehabilitation techniques will consist of a lake, shoreline wetlands, riparian corridor, woodlands, gradually sloping grades, 2:1 and 3:1 side slopes, and vertical faces as shown on the plan view.

D. Seeding and Planting

- Side slopes steeper than 3:1 shall 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.
- The deciduous woodlands, treed deciduous swamp, swamp thicket/marsh meadow, shoreline
 wetland, and realigned watercourse channel (riparian corridor) shall be planted with species
 identified in Tables 1-5 on this drawing respectively.

E. Drainage

- Final surface drainage will follow the rehabilitated contours and directional arrows shown on the plan view.
- Once the quarry is depleted, pumping will cease and portions of the site below the ground water table will fill with water.
- The quarry dewatering discharge will be directed to the watercourse (pre and post alignment) and ultimately flow to Beaverdams Creek to support fish habitat and downstream wetlands.
- 4. The licensee shall operate in accordance with the conditions of the MECP, PTTW and ECA for the ongoing dewatering of the site.

F. Trigger Mechanism and Contingency Plan

 During progressive rehabilitation, until surrendering the licence, the licensee is required to operate in accordance with the Trigger Mechanism and Contingency Plan, included in the Upper's Quarry Level 2 Water Study Report prepared by WSP, dated October 2021, as may be amended from time to time with approval from MNDMNRF.

FINAL REHABILITATION

G. General

- All equipment and buildings/structures shall be removed from the licenced area.
- 2. A field/property access entrance shall remain to access the watercourse (as realigned).
- 3. The long term average surface water and lake level elevation is estimated to be approximately 175.15 masl.
- 4. At final rehabilitation, outflow from the realigned watercourse and the quarry lake will continue to discharge from the licence area at the present location where the existing watercourse channel crosses the northern licence boundary.

Table 1: Deciduous Woodland Planting List

| % | Botanical Name | Common Name | | | | | |
|--------|----------------------------|----------------------------|--|--|--|--|--|
| TREES | | , | | | | | |
| 5 | Acer saccharum | Sugar Maple | | | | | |
| 25 | Carya ovata | Shagbark Hickory | | | | | |
| 15 | Fagus grandifolia | American Beech | | | | | |
| 15 | Ostrya virginiana | Ironwood | | | | | |
| 20 | Prunus serotina | Black Cherry | | | | | |
| 5 | Quercus rubra | Red Oak | | | | | |
| 15 | Tilia Americana | Basswood | | | | | |
| SHRUBS | | | | | | | |
| 15 | Amelanchier arborea | Juneberry | | | | | |
| 20 | Carpinus caroliniana | Blue-beech | | | | | |
| 15 | Hamamelis virginiana | Witch Hazel | | | | | |
| 15 | Prunus virginiana | Chokecherry | | | | | |
| 20 | Rhus typhina | Staghorn Sumac | | | | | |
| 20 | Comus racemosa | Grey Dogwood | | | | | |
| 15 | Rubus odoratus | Purple-flowering Raspberry | | | | | |
| ROUND | COVER | | | | | | |
| 20 | Schizachyrium scoparium | Little Bluestem | | | | | |
| 15 | Elymus histrix | Bottlebrush grass | | | | | |
| 15 | Rudbeckia hirta | Black Eyed Susan | | | | | |
| 15 | Carex granularis | Meadow Sedge | | | | | |
| 8 | Solidago canadensis | Canada Goldenrod | | | | | |
| 8 | Oenothera biennis | Evening Primrose | | | | | |
| 5 | Asclepias syriaca | Common Milkweed | | | | | |
| 5 | Clematis virginiana | Virgin's Bower | | | | | |
| 5 | Monarda fistulosa | Wild Bergamot | | | | | |
| 1 | Anemone canadensis | Canada Anemone | | | | | |
| 1 | Euthamia graminifolia | Grass Leaved Goldenrod | | | | | |
| 1 | Symphyotrichum cordifolium | Heart-leaved Aster | | | | | |
| | 0-4 | N F | | | | | |

Table 2: Treed Deciduous Swamp Planting List

1 Aster novae-angliae

| % | Botanical Name | Common Name |
|----------------|--------------------|-------------------------|
| TREES | | ' |
| 20 | Acer x freemani | Freeman's Maple |
| 20 | Juglans nigra | Black Walnut |
| 20 | Populus deltoides | Eastern Cottonwood |
| 20 | Quercus macrocarpa | Bur Oak |
| 20 | Thuja occidentalis | Eastern White Cedar |
| SHRUBS | | · |
| 14 | Cornus amomum | Silky Dogwood |
| 12 | Cornus foemina | Gray Dogwood |
| 12 | llex verticillata | Winterberry |
| 12 | Rosa palustris | Swamp Rose |
| 12 | Salix bebbiana | Bebb's Willow |
| 14 Spirea alba | | Meadowsweet |
| 12 | Viburnum lentago | Nannyberry |
| 12 | Viburnum trilobum | American Cranberry-bush |

New England Aster

Table 3: Swamp Thicket / Marsh Meadow Planting List

| % | Botanical Name | Common Name |
|---------|-------------------------|------------------------------|
| SHRUBS | ' | · |
| 14 | Cornus amomum | Silky Dogwood |
| 12 | Cornus foemina | Gray Dogwood |
| 12 | llex verticillata | Winterberry |
| 12 | Rosa palustris | Swamp Rose |
| 12 | Salix bebbiana | Bebb's Willow |
| 14 | Spirea alba | Meadowsweet |
| 12 | Vibumum lentago | Nannyberry |
| 12 | Vibumum trilobum | American Cranberry-bush |
| IVE STA | KES | |
| 34 | Cornus sericea | Red Osier Dogwood |
| 33 | Salix discolor | Pussy Willow |
| 33 | Salix eriocephala | Heartleaf Willow |
| MARSH S | EED MIX | |
| 20 | Poa palustris | Fowl Bluegrass |
| 15 | Carex vulpinoidea | Fox Sedge |
| 10 | Verbena hastata | Blue Vervain |
| 10 | Carex granularis | Meadow Sedge |
| 10 | Euthamia graminifolia | Grass Leaved Goldenrod |
| 10 | Asclepias incamata | Swamp Milkweed |
| 5 | Scirpus atrovirens | Dark Green Bulrush |
| 5 | Juncus effusus | Soft Rush |
| 2 | Eupatorium perfoliatus | Boneset |
| 2 | Carex stipata | Stalk Grain Sedge |
| 2 | Glyceria grandis | Tall Manna Grass |
| 2 | Scirpus cyperinus | Woolgrass |
| 2 | Eupatorium maculatum | Spotted Joe Pye Weed |
| 2 | Carex bebbi | Bebb's Sedge |
| 1 | Lobelia silphilitica | Blue Lobelia |
| 1 | Symphyotrichum puniceum | Purple Stemmed Aster |
| 1 | Mimulus ringens | Square Stemmed Monkey Flower |

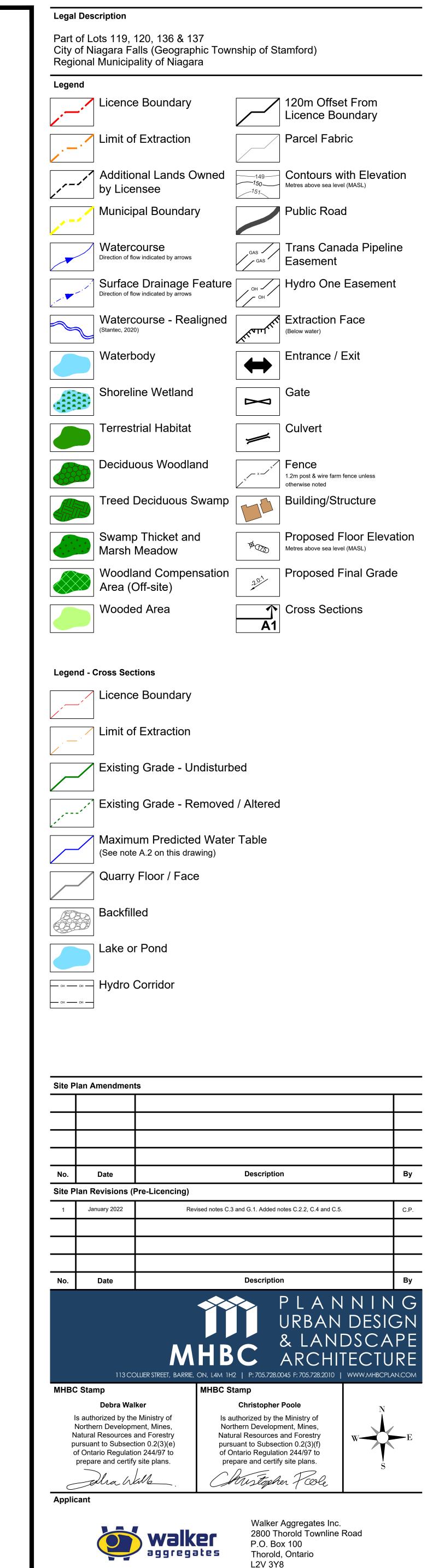
Table 4: Shoreline Wetland

| % | Botanical Name | Common Name |
|------|--------------------------|------------------------|
| LUGS | | |
| 10 | Alisma plantago-aquatica | Water-plantain |
| 15 | Asclepias incarnata | Swamp Milkweed |
| 10 | Calla palustris | Wild Calla |
| 10 | Carex stricta | Tussock Sedge |
| 10 | Carex vulpinoidea | Fox Sedge |
| 5 | Chelone glabra | Turtlehead |
| 5 | Iris versicolor | Blue Flag Iris |
| 10 | Lemna minor | Little Duckweed |
| 10 | Polygonum amphibium | Water Smartweed |
| 10 | Sagittaria latifolia | Broad-leaved Arrowhead |
| 5 | Scirpus cyperinus | Wool-grass |
| | • | • |

Table 5: Riparian Planting List

| % | Common Name | Latin Name |
|----------|------------------------------|-------------------------|
| SHRUBS | | |
| 14 | Cornus amomum | Silky Dogwood |
| 12 | Cornus foemina | Gray Dogwood |
| 12 | llex verticillata | Winterberry |
| 12 | Rosa palustris | Swamp Rose |
| 12 | Salix bebbiana | Bebb's Willow |
| 14 | Spirea alba | Meadowsweet |
| 12 | Viburnum lentago | Nannyberry |
| 12 | Viburnum trilobum | American Cranberry-bush |
| LIKES ST | AKES (Along Creek) | |
| 34 | Cornus sericea | Red Osier Dogwood |
| 33 | Salix discolor | Pussy Willow |
| 33 | Salix eriocephala | Heartleaf Willow |
| RIPARIAI | N SEED MIX | |
| 20 | Poa palustris | Fowl Bluegrass |
| 20 | Carex granularis | Meadow Sedge |
| 10 | Asclepias syriaca | Common Milkweed |
| 10 | Verbena hastata | Blue Vervain |
| 10 | Andropogon gerardii | Big Bluestem |
| 10 | Juncus tenuis | Path Rush |
| 5 | Rudbeckia hirta | Black Eyed Susan |
| 4 | Solidago canadensis | Canada Goldenrod |
| 4 | Clematis virginiana | Virgin's Bower |
| 4 | Monarda fistulosa | Wild Bergamot |
| 1 | Anemone canadensis | Canada Anemone |
| 1 | Symphyotrichum novae-angliae | New England Aster |
| 1 | Symphyotrichum puniceum | Purple Stemmed Aster |





Upper's Quarry

Applicant's Signature

Rehabilitation Plan

5 of 6

File Path

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October 2021

C.P. File No.

MNDMNRF Licence Reference No.

Plan Scale: 1:3000 (Arch E)

File Name

Drawing No.

