

# HIDDEN QUARRY

PART OF LOT 1, CONCESSION 6  
TOWNSHIP OF GUELPH-ERAMOSA  
FORMER TOWNSHIP OF ERAMOSA  
COUNTY OF WELLINGTON

## Page 1 of 5 EXISTING FEATURES

TABLE 1: DESCRIPTION OF WELLS

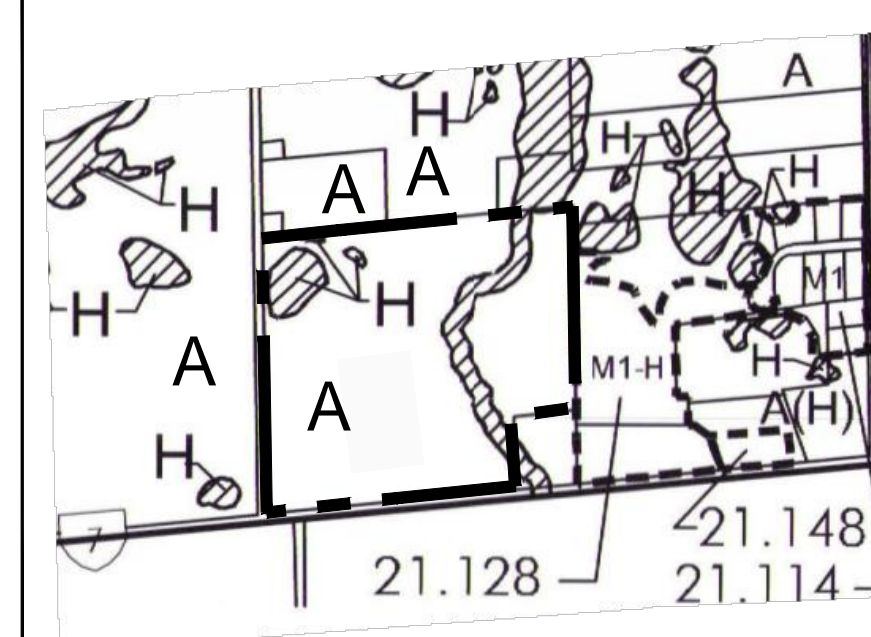
Well Location	MOE Well No.	Ground Elevation (mAMSL)	Depth of Well (mbsg)	Static Level (mbsg)	Pumped Level (mbsg)	Pumping Test Discharge (lpm)
1	6705627	358.46	30.48	12.41	13.72	8
2	*	357.20	3.33	1.77	n/a	n/a
3	*	360.01	approx 61	6.23	n/a	n/a
5	*	360.25	n/a	n/a	n/a	n/a
10	6705424	355.97	approx 27	n/a	18.29	10
19	2802048	355.90	20.12	10.35	n/a	n/a

\* No MOE Water Well Record

Monitoring Station	Type	Date Installed	Inside Diameter (mm)	Stick-up (m)	Ground Elevation (mAMSL)	Reference Point Elevation (mAMSL)	Depth (mbsg)
M1D	Drilled Groundwater Monitor	May-1990	51	0.87	358.83	359.70	12.80
M1S	Drilled Groundwater Monitor	Dec-2010	51	1.00	358.84	359.84	9.35
M2	Drilled Groundwater Monitor	May-1990	51	0.84	362.45	363.30	55.47
M3	Drilled Groundwater Monitor	May-1990	51	0.93	359.27	360.20	11.13
M4	Drilled Groundwater Monitor	May-1990	51	0.74	355.89	356.63	18.59
M5	Drilled Groundwater Monitor	Nov-1996	32	1.07	358.84	359.71	5.84
M6	Drilled Groundwater Monitor	Nov-1996	32	1.13	354.97	356.10	1.98
M7	Drilled Groundwater Monitor	Apr-1996	32	1.14	352.43	353.57	2.82
M7R	Drilled Groundwater Monitor	Nov-2010	32	0.82	362.45	353.27	3.14
M8	Drilled Groundwater Monitor	Apr-1996	32	1.16	356.30	357.65	1.55
M9	Drilled Groundwater Monitor	Apr-1996	32	1.35	355.57	357.02	2.61
M9R	Drilled Groundwater Monitor	Nov-2010	32	1.03	355.67	356.70	2.92
M10	Drilled Groundwater Monitor	Apr-1996	32	1.14	355.33	356.27	0.93
M11	Drilled Groundwater Monitor	Dec-2010	51	0.88	358.57	359.43	9.30
M12	Drilled Groundwater Monitor	Dec-2010	51	0.89	362.00	362.89	8.84
M13S	Drilled Groundwater Monitor	Dec-2010	51	0.89	356.78	357.77	4.37
M13D	Drilled Groundwater Monitor	Dec-2010	51	0.88	359.75	357.65	10.90
M14S	Drilled Groundwater Monitor	Dec-2010	51	0.98	354.64	355.62	4.27
M14D	Drilled Groundwater Monitor	Dec-2010	51	0.76	354.50	355.28	7.62
M15	Drilled Groundwater Monitor	May-2013	152	0.51	360.03	360.54	54.33
M15-1	Multi-Installation Drilled Groundwater Monitor	May-2014	25	0.51	360.03	360.54	44.01
M15-2	Multi-Installation Drilled Groundwater Monitor	May-2014	25	0.51	360.03	360.54	37.89
M15-3	Multi-Installation Drilled Groundwater Monitor	May-2014	25	0.51	360.03	360.54	19.88
M16	Drilled Groundwater Monitor	TBD*	TBD*	TBD*	TBD*	TBD*	TBD*
M17	Drilled Groundwater Monitor	TBD*	TBD*	TBD*	TBD*	TBD*	TBD*
TP1	Test Pit Location With Drilled Groundwater Monitor	Sep-1996	32	1.07	355.35	356.81	4.00
TP2	Test Pit Location With Drilled Groundwater Monitor	Sep-1996	32	1.37	354.66	356.03	5.08
TP3	Test Pit Location	Sep-1996	n/a	n/a	358.45	n/a	8.00
TP4	Test Pit Location	Sep-1996	n/a	n/a	n/a	n/a	8.00
TP5	Test Pit Location With Drilled Groundwater Monitor	Sep-1996	32	0.86	355.68	356.64	7.46
TP6	Test Pit Location	Sep-1996	n/a	n/a	359.30	n/a	7.00
TP7	Test Pit Location	Sep-1996	n/a	n/a	356.25	n/a	8.00
TP8	Test Pit Location With Drilled Groundwater Monitor	Feb-2012	32	0.81	359.45	360.36	0.97
TP9	Test Pit Location With Drilled Groundwater Monitor	Feb-2012	32	0.84	356.65	357.59	4.57
MFN-1	Mini-Facometer	Jul-2009	19	0.84	354.67	355.51	2.07
MFN-2	Mini-Facometer	Jul-2009	19	1.20	355.29	356.58	1.62
MFE-1	Mini-Facometer	Jul-2009	19	0.79	354.71	355.60	2.12
MFE-2	Mini-Facometer	Jul-2009	19	0.79	355.29	356.08	2.12
MFS-1	Mini-Facometer	Jul-2009	19	0.77	354.73	355.50	2.14
MFS-2	Mini-Facometer	Jul-2009	19	0.68	355.84	356.27	2.23
MPW-1	Mini-Facometer	Jan-2011	19	0.58	354.90	355.28	2.26
MPW-2	Mini-Facometer	Jan-2011	19	0.76	355.09	355.85	1.88
MP1	Mini-Facometer	Nov-2010	19	1.14	355.81	356.95	3.61
MP2	Mini-Facometer	Nov-2010	19	0.44	356.85	357.58	4.32
MP3	Mini-Facometer	Nov-2010	19	0.75	359.89	360.55	4.00
MP4	Mini-Facometer	Nov-2010	19	0.76	359.23	359.99	3.99
SW1	Surface Water Gauge	Aug-1996	n/a	n/a	n/a	355.34	n/a
SW2	Surface Water Gauge	Aug-1996	n/a	n/a	n/a	355.28	n/a
SW3-D	Surface Water Gauge and Streamflow Measurement	Aug-1996	n/a	n/a	349.04	351.02	n/a
SW3-U	Surface Water Gauge and Streamflow Measurement	Aug-1996	n/a	n/a	n/a	351.96	n/a
SW3A/SW3	Streamflow Measurement	Mar-2009	n/a	n/a	n/a	355.33	n/a
SW4	Surface Water Gauge and Streamflow Measurement	Aug-1996	n/a	n/a	358.87	360.52	n/a
SW5	Surface Water Gauge	Aug-1996	n/a	n/a	354.72	355.06	n/a
SW6	Surface Water Gauge	Oct-2001	n/a	n/a	n/a	354.88	n/a
SW7	Surface Water Gauge and Streamflow Measurement	Oct-2001	n/a	n/a	n/a	356.46	n/a
SW14	Surface Water Gauge	Mar-2012	n/a	n/a	n/a	358.64	n/a
RS1	Surface Water Gauge and Streamflow Measurement	Apr-2004	n/a	n/a	n/a	359.78	n/a

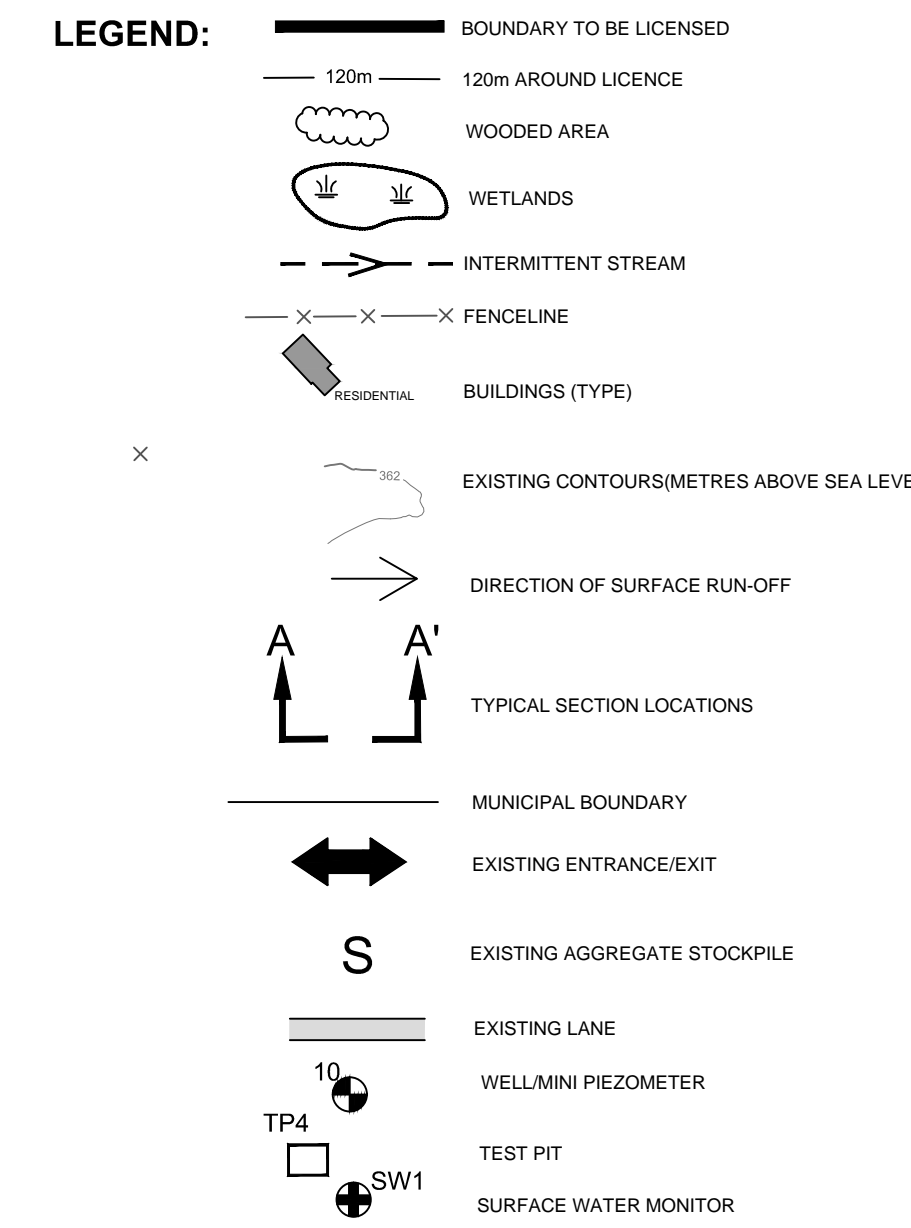
TBD - To Be Determined

### ZONING SCHEDULE:



LEGEND:  
**M1** RURAL INDUSTRIAL  
**H** HAZARD LAND  
**A** AGRICULTURAL

TOWNSHIP OF GUELPH-ERAMOSA  
ZONING BYLAW  
(CONSOLIDATED 2009, DEC. 31)



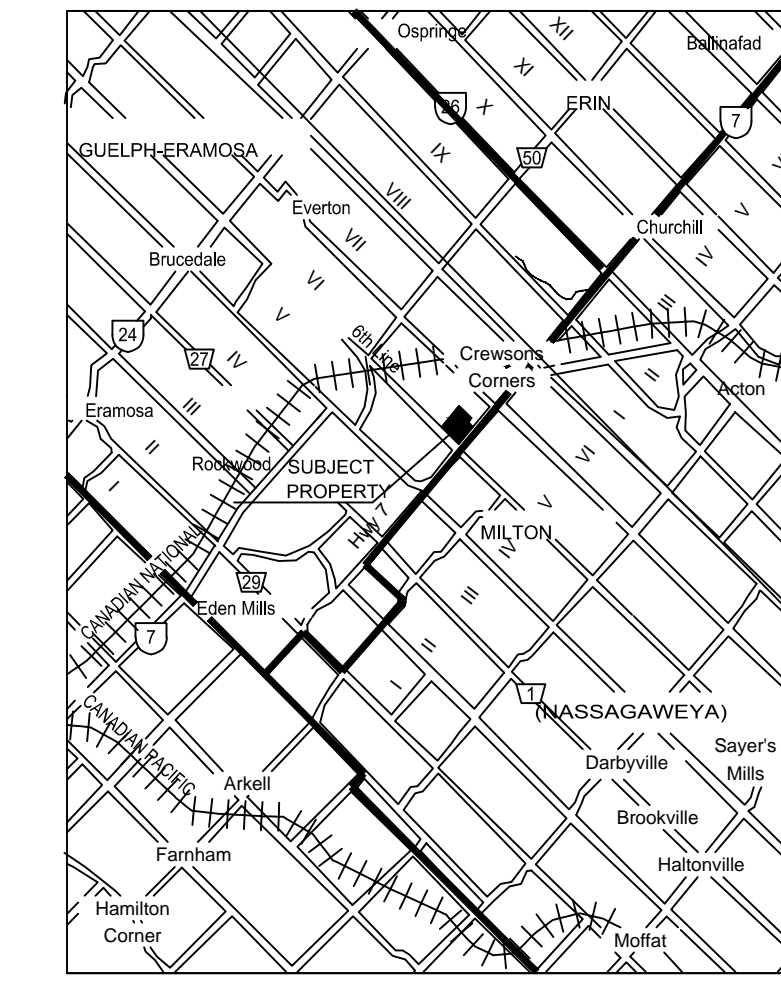
### NOTES:

- This Site Plan has been prepared for submission to the MNR under the Aggregate Resources Act for a Class 'A' Licence, Category 2, Quarry Below Water.
- This Site Plan has been completed using information taken from Township of Guelph-Eramosa Zoning By-law, the 1:100,000 scale Provincial Highway Mapping and County Roads mapping, Ontario Base Mapping (1:10,000), topographic base mapping and water elevations - Harden Environmental Services Ltd, field information and recent aerial photography of the local area.
- This site is comprised of plantation, woodlands, a former waste pit and a small pond/wetland. Zoning for the site is Agricultural and Hazard (See Zoning Schedule). Lands to the south are zoned Rural.
- The existing entrances to the site are shown on this plan.
- Stockpiles of aggregate are shown on the plan.
- Wells on the site and adjacent to the property are shown on the site. A description of wells is provided in Table 1.
- Along the southern portion of the site, there is a house and a shed. Residences and other structures within 120 m of the site are shown.
- There are no existing piles of scrap on the site.
- There are no existing fuel storage areas on this plan.
- The existing surface water drainage is shown on this plan. An intermittent watercourse is shown on the Site Plans. Wetlands/ponds on the site and adjacent to the site are illustrated on the Site Plans. The riparian wetland boundary and the PSW boundary were flagged by GWS staff and verified in the field by the GRCA on June 7, 2013.
- The existing ground water table ranges from 348 to 356 (mast) measurements shown on the Site Plans are in metres.
- Proposed Licensed Area = 39.4 ha.

### REFERENCES:

- Aerocoustic Engineering Ltd. November 19, 2012. Noise Impact Study, Project No. 11007, Hidden Quarry, Rockwood, Ontario.
- Cole Engineering Limited. 2012. Traffic Impact Assessment of the Proposed Hidden Quarry.
- County of Wellington. 1999. Official Plan.
- Explotech Engineering Ltd. November 19, 2012. Blast Impact Analysis -James Dick Hidden Quarry.
- Grand River Conservation Authority. 2011. Contour Information and Aerial Photography.
- GWS Ecological and Forestry Services Inc. 2012. Proposed Hidden Quarry - Level 2 Natural Environment Technical Report.
- Harden Environmental Services Ltd. 2012. Level 1 and 2 Hydrogeological Investigation - Hidden Quarry.
- K. W. Ingram. 1990. Borehole Records - Lot 1, Concession 6, Eramosa Township, County of Wellington.
- RWDI. 2012. Air Quality Assessment - Proposed Hidden Quarry - Report # 1201429.
- Township of Guelph-Eramosa. Comprehensive Zoning By-law.
- York North Archaeological Services., 2012. Stage I-II Archaeological Assessment of the Proposed James Dick Ltd. Hidden Quarry

### KEY MAP



THIS SITE PLAN IS PREPARED UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS A LICENCE, CATEGORY 2 - QUARRY BELOW WATER.

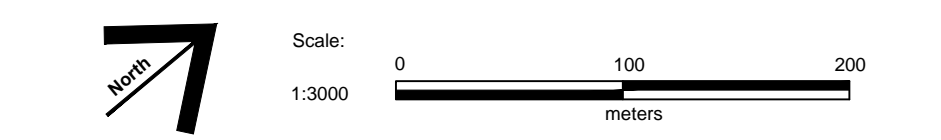
THESE SITE PLANS HAVE BEEN PREPARED UNDER THE DIRECTION OF AND CERTIFIED BY A PERSON APPROVED BY THE MINISTER OF NATURAL RESOURCES (AS PER SECTION 8(4) OF THE AGGREGATE RESOURCES ACT).

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

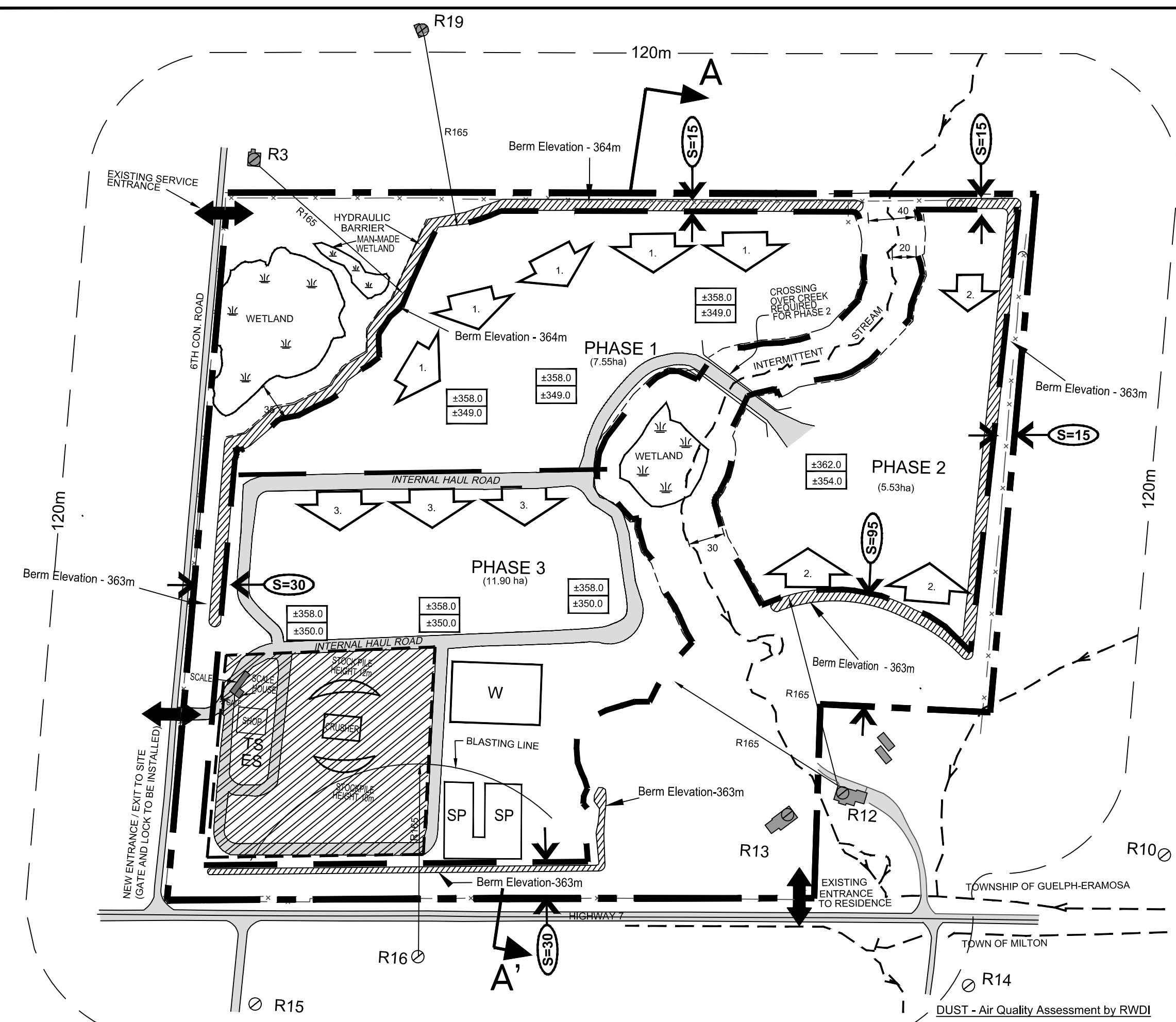
PREPARED FOR: **JAMES DICK CONSTRUCTION LTD**  
 www.jamesdick.com  
 Box 470 Bolton Ontario L7E 5T4  
 Bolton:(905)857-3500 Fax:(905)857-4833  
 Toll Free: 1-888-535-3333

APPROVED: R.P.S. DRAWN: G.K.S.  
 PLOTTED: AUGUST 1, 2014 FILE: 2381707

No. DATE DESCRIPTION  
**AMENDMENTS**



**STOVEL and Associates Inc.** 237 BRIARHILL DRIVE STRATFORD, ONTARIO N5A 7T1 PHONE (519) 272-2884



SPILLS CONTINGENCY AND RESPONSE PROGRAM

- 1. Liquid petroleum products (fuels, oil) in quantities greater than 500 litres... 2. Temporary fuel storage facilities will be inspected for leaks... 3. Spills containment materials (for example, absorbency materials and portable containers) are to be available on-site as part of the temporary fuel storage equipment... 4. In the case of an accidental spill of fuel or oil, the following action is to be taken:

- HOURS OF OPERATION
1. Shipping and Loading; 6 am to 6 pm - Weekdays and 6 am to 1 pm - Saturdays.
2. Extraction and Processing; 7 am to 7 pm - Weekdays and 7 am to 1 pm - Saturdays.
3. Drilling 7 am to 7 pm - Weekdays, 7 am to 1pm - Saturdays.
Blasting: 8 am to 5 pm - Weekdays.
4. Closed for Operations on Sundays and Public Holidays.
5. Maintenance and Rehabilitation may occur during normal weekday hours, 6 am to 7 pm, and on Saturdays from 7 am to 5 pm.

SITE PLAN OVERRIDE TABLE
THE FOLLOWING CONDITIONS ILLUSTRATED ON THIS PLAN VARY FROM THE REQUIREMENTS OF THE PROVINCIAL STANDARDS THAT APPLY TO LICENSED PITS AND QUARRIES IN ONTARIO.
Table with 2 columns: OVERRIDE and STANDARD. Rows include 'Rehabilitation of side slopes may occur at a slope steeper than 2:1 to promote ecological diversity' and 'Selected trees will not be removed within 5m of the extraction face.'

Blasting - Blasting Impact Assessment by EXPLOTECH

It is recommended that the following conditions be applied for all blasting operations at the proposed James Dick Construction Hidden Quarry.

- 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 for the development of site specific attenuation relations. This study will be used to confirm the applicability of the initial guideline parameters and assist in developing future blast designs.
2. 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) digital seismographs - one installed in front of the blast and one installed behind the blast. Monitoring shall be performed by an independent party engineering firm with specialization in blasting and monitoring.
3. Orientation of the aggregate extraction operation will be designed and maintained so that the direction of the overpressure propagation and flyrock from the face will be away from structures as much as possible.
4. 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 applicable guidelines and regulations. Decking, reduced hole diameters and sequential blasting techniques will be used to ensure minimal explosives per delay period initiated.
5. Clear crushed stone will be used for stemming.
6. Primary and secondary dust collectors will be employed on the rock drills to keep the level of rock dust to a minimum.
7. Blasting procedures such as drilling and loading shall be reviewed on a yearly basis and modified as required to ensure compliance with industry standards.
8. Detailed blast records shall be maintained. The MOE (1985) recommends that the body of blast reports should include the following information:

DUST - Air Quality Assessment by RWDI

- 1. The quarry is limited to 12 hours of operation per day, from 7:00 am to 7:00 pm for site preparation, drilling, blasting, excavation, processing operations and rehabilitation activities, and 6:00 am to 6:00 pm for shipping operations.
2. The maximum processing rate of 6,000 tonnes per day is not exceeded.
3. Equipment specific controls will be implemented including a 25km/hr speed limit, appropriate tail pipe emission tiers, and dust suppression.
4. An Environmental Compliance Approval under Section 9 of the Environmental Protection Act (EPA) will be obtained as required.
5. A Best Management Practices Plan will be developed and implemented.
6. The processing plant should be located approximately as shown on the site plans.
7. Stripping of overburden should be limited to times when extraction, production and shipping activities are well below the estimated peak rate of 6,000 tonnes per day.
8. The following recommendations are provided in order to meet the applicable criteria:

Table 4: Recommended Stockpile Height and Position. Columns: Stockpiles Positioned to Shield Receptor Or, Minimum Stockpile Height (m). Rows: R1, R15, R16, R17, R19, R2, R3, R4, R5, R11, R18.

- 1. A quiet drill with a maximum sound power rating of 112dBA should be used. This corresponds to a maximum sound pressure level rating of 75dBA at 30 meters.
2. Earth berms should be constructed to the elevations shown and located as shown on the site plans.
3. The recommended direction of extraction is indicated on the site plans.
4. The permanent processing plant area should be established at an elevation of 349m, and a haul route trench connecting the processing plant area to Phase 1 extraction area should be excavated to the same 349m elevation.
5. All construction equipment used in site preparation/construction must meet the sound emission standards defined in MOE publication NPC-115. The relevant background information on non-stationary noise sources as well as publication NPC-115 is given in MOE Model Municipal Noise Control Bylaw, 1978 as well as the sound source exclusions defined in MOE publications NPC 205/232, 1995, included in the attached.
6. An Acoustic Audit by an independent third-party contractor be conducted during the first year of operation of the quarry, to ensure that the noise emissions from facility equipment meet NPC-115 limits.

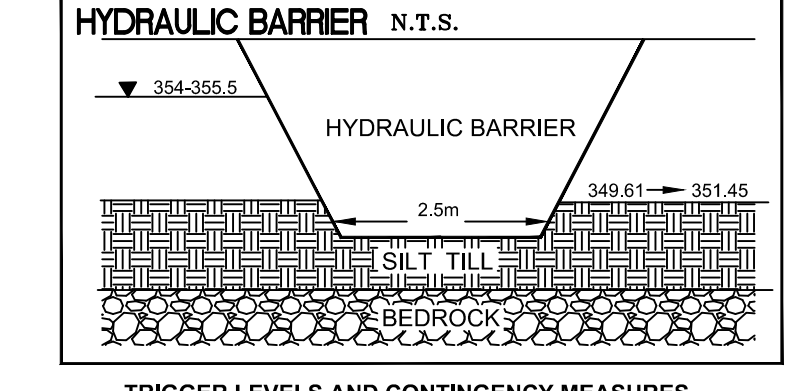
TECHNICAL RECOMMENDATIONS

Water - Hydrogeological Investigation Report by Harden Environmental
The monitoring program for this proposed pit/quarry involves the following activities:

Table with 3 columns: Parameter, Monitoring Location, Frequency. Rows include Groundwater Levels, Surface Water Levels, Surface Water Flow, Groundwater Quality, and Closure.

A hydraulic barrier shall be installed along the southern and eastern portions of the wetland. The barrier will limit the outflow of groundwater downgradient of the wetland. The schematic of the hydraulic barrier is set out on the Site Plans.

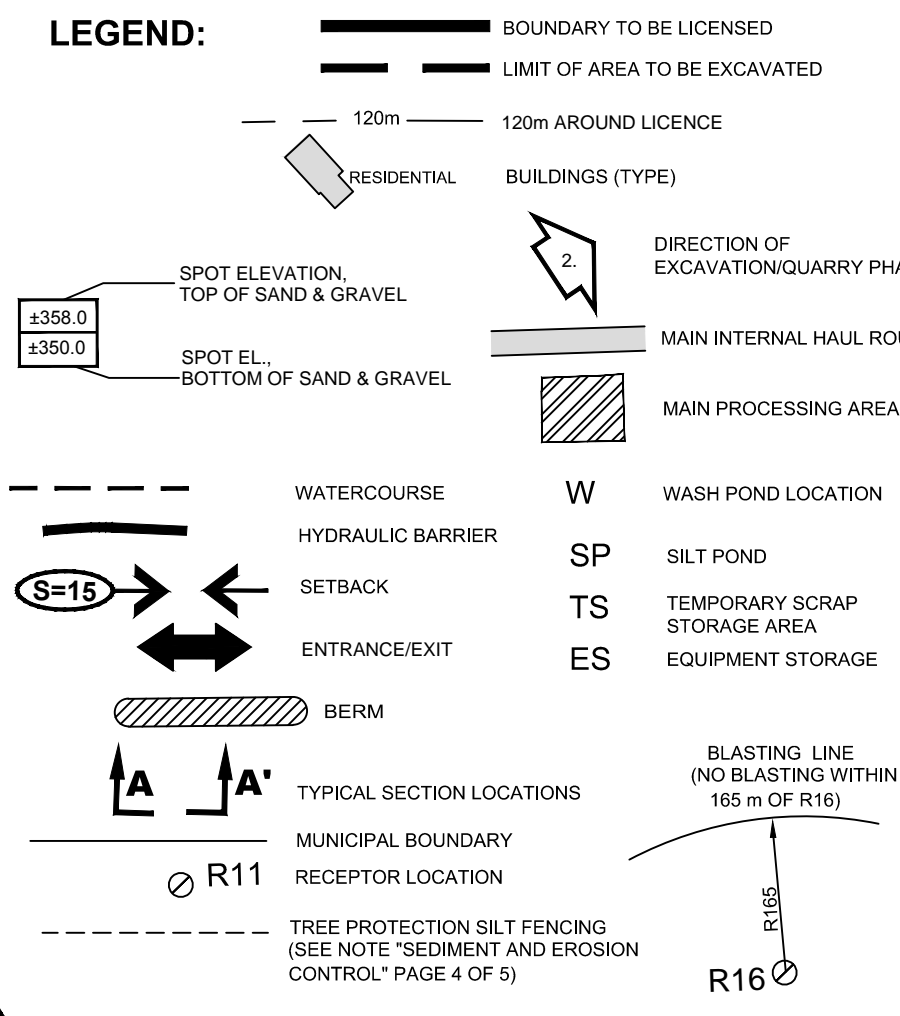
A water well complaint protocol will be implemented. Details are contained in the Harden report.



TRIGGER LEVELS AND CONTINGENCY MEASURES
This section is contained on page 4.

Level II Natural Environment Technical Report by GWS Ecological Services

- 1. A 30m buffer will be established from the limit of the PSW provided the identified Archaeological Feature is cleared. If this is not the case the hydraulic barrier will be installed approximately 20m from the PSW in this area in order to maintain buffer requirements around the Archaeological feature. This is shown in Figure 4-2 of the Hydrogeological Investigation prepared by Harden Environmental Services. The riparian wetland boundary and the PSW boundary were flagged by GWS staff and verified in the field by the GRCA on June 7, 2013.
2. In the southeastern portion of the site qualified staff will flag and/or stake the dripline of trees which mark the boundary of FOM2-2 and will also assist the surveyor in staking the setback required from the existing off-site residence (i.e. minimum of 165 m) which traverses portions of woodland units CUP5-12a, FOC2-2, FOD5-7 and CUP3-12b. Elsewhere on the property the surveyor must stake the required setbacks from property boundaries.
3. Prior to the initiation of tree clearing operations trees which occur immediately beyond the specified setbacks will be marked with orange spray paint by qualified staff to further ensure there are no intrusions into tree protection areas. Trees to be removed will be marked with an orange dot at chest height and a slash of the butt which extends to the ground. Existing vegetation will be retained until just prior to stripping extraction.
4. Tree protection measures will be installed as required around the limit of the extraction area after all tree clearing and grubbing is completed.
5. To facilitate access to the eastern extraction area an appropriately sized culvert must be installed in the intermittent stream at the location shown in the Operations Plan. Culvert installation should occur in the summer months when there is no flow in the stream. No in-water work is to occur during the warm water fisheries timing window (April 1 - June 31).
6. Topsoil and overburden will be stripped and stored separately in bermed stockpiles as illustrated on the Operations Plan. All berms will be graded to stable slopes and seeded to prevent erosion and minimize dust. See note 10.
7. Dust control will be implemented in accordance with the procedures described on the Operations Plan.
8. Progressive rehabilitation will be implemented as specified in the Site Plans and replanting will commence as early as possible with an emphasis on the area adjacent to the PSW and northern property line (i.e. Phase 1 on the Operations Plan). Extracted areas will be promptly restored to an ecological after-use as set out on the Progressive and Final Rehabilitation Plan.
9. All tree and shrub planting stock will be obtained from nurseries that utilize seed from the same genetic seed zone wherein the James Dick property is located.
10. Shoreline wetlands will only be planted with native species taken from local wetlands.
11. A mix of coniferous / deciduous trees (minimum spacing of 3m) will be planted along the 6th Line to increase forest density in an attempt to provide an effective natural corridor in the north and west side of the property.



NOTES:

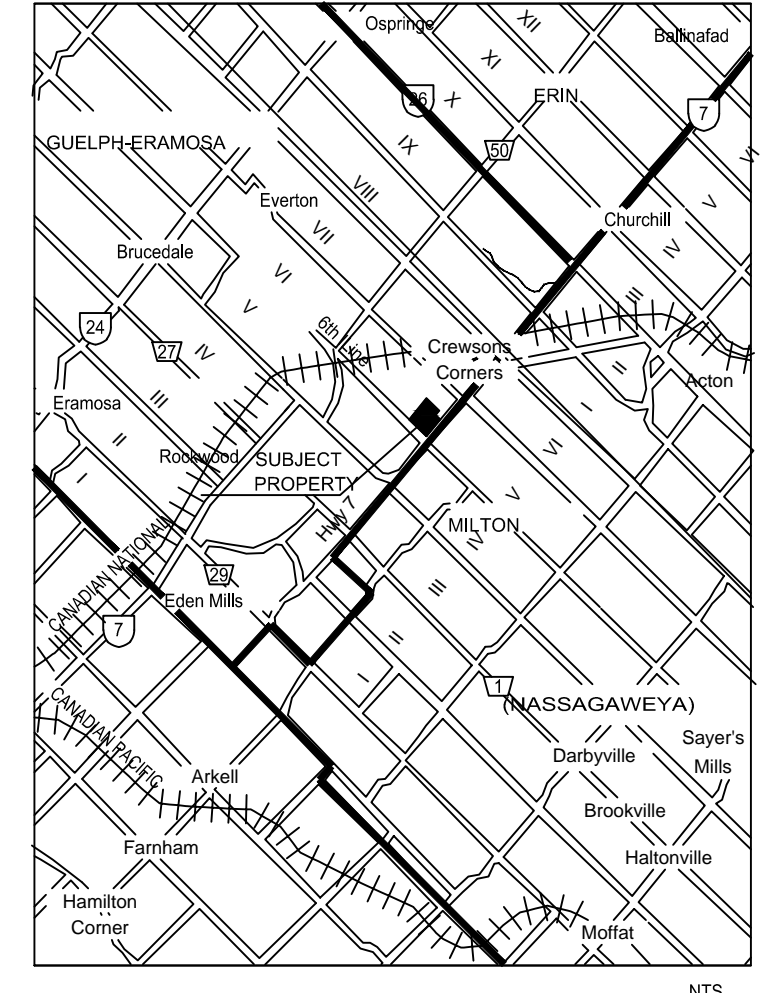
- 1. This plan depicts a schematic operations sequence for this property based upon the best information available at the time of preparation. Phases shown are schematic and may vary with demand and variations in the aggregate deposit. Phases do not represent any specific or equal time period. Phases and lifts may be operated concurrently. Excavation will occur above and below the water table.
2. The lands are to be rehabilitated to an ecological after-use with the incorporation of a lake (s).
3. The site will be operated in several Phases, consisting of two lifts, as shown on the Site Plan. The first lift will involve the extraction of the unconsolidated material above the water table. The second lift will involve the extraction of consolidated material above and below the water table. Due to the variability in stone and sand gradations, and with fluctuations in market demand for various aggregate products, extraction may occur simultaneously at different portions of the site, unless otherwise specified in the technical reports, i.e. noise and dust.
4. Extraction operations will use loaders, drag-lines and excavators, which will feed a processing plants, i.e. crushing, screening and washing plants. Other equipment to be used on the site includes: trucks, tractors, portable drill, scrapers, and dozers. Equipment will be stored in the main processing area. Existing property limits are fenced. Once extraction initiated, fencing repairs and fence installation will occur along the perimeter of the site as required. A gate will be installed about 20m in front of the scale house. Fencing will follow both sides of the entrance into the quarry to the gate.
5. On site permanent fuel storage will not occur in quantities greater than 500 litres.
6. Processing equipment and aggregate stockpiles resulting from this operation shall proceed as close to the excavation face as possible, during the initial phase of operations. A main processing area will be developed in the south western portion of the site once a sufficient area has been cleared.
7. It is anticipated that the only buildings or structures that will be constructed are a scale, scalehouse and a maintenance shop/office/ quality lab. The scale and scalehouse will be located close to the main entrance to the site, adjacent to the 6th Concession.
8. Scrap will not be stored permanently onsite. Temporary scrap piles will be located in the main processing area as shown on the Site Plan.
9. Onsite overburden quantities are minimal, therefore overburden and topsoil may be kept together in the stockpile locations or perimeter berms. Where there is a sufficient depth of subsoil and overburden, stripping and storage will occur separately.
10. Topsoil and overburden stockpiles will be seeded with an appropriate grass legume seed mixture to prevent erosion (See typical screening berm detail).
11. All vegetation planted during the operation of the site will be maintained in a healthy growing condition. Should any planted vegetation die, it will be replaced within one growing season.
12. One (topsoil) internal haul road is shown on the plan. Internal haul roads may need to be modified during the course of operations to permit efficient access to different product stockpiles. The internal haul road will be paved from the entrance to the scale. The internal haul road will be inspected daily, or more often as required, to ensure that dust and aggregate are not tracked onto the municipal road system. Dust will be controlled through mechanical sweeping and or treatment with water.
13. Aggregate will be transported from the pit to a year-round access onto 6th Concession. Trucks will use Provincial Highway 7 as the main haul route. The existing ground water table occurs at +/- 348 to 356 mast.
14. There will be no proposed water diversions or points of discharge to surface water from this site. Surface drainage will be allowed to percolate through the rehabilitated pit/quarry floor and reflect the existing surface drainage as much as possible.
15. Dust control will be maintained through the use of a MOE approved dust suppressant or water as required.
16. During the early stages of operation a small pond (< 0.4 ha in size) may be temporarily established on the pit/quarry floor to permit washing operations and to provide water for dust suppression. Silt may be deposited in quarry ponds. A permit to take water will be obtained from the MOE prior to any washing operations taking place as required.
17. The location of existing vegetation/natural tree screening is shown on Page 1. Any trees or stumps that are needed to be removed from the extraction area shall be harvested, mulched or used for rehabilitation purposes. The area to be extracted is 24.5 ha.
18. The maximum tonnage to be removed from this license in any calendar year shall be 700,000 tonnes.
19. The existing Service Entrance at the north end of the site on the 6th line will permit access for maintenance and operational vehicles only. Commercial traffic will be restricted to the main commercial scale entrances only.
20. The commercial entrance to the site will be designed in accordance with the Township of Guelph/Eramosa Design Standards within the right of way. The design of the commercial entrance shall allow at least one full truck to be off the travelled portion of the road with the gate closed.
21. Topsoil that is stripped from operational areas will be placed in screening berms around the perimeter of the site as shown on the site plans. As part of final rehabilitation the topsoil in berms will be used to achieve final contours as indicated on the site plans.
22. Truck Entrance warning signs will be placed on the sixth line as required, according to the Ontario Traffic Manual, based on 80km/hr speed (6th line and 100km/hr (Hwy 7) subject to MTO recommendations for Hwy 7.
23. Vegetation clearing operations will not take place during the breeding bird period (May 15 - July 31).

# HIDDEN QUARRY

PART OF LOT 1, CONCESSION 6 TOWNSHIP OF GUELPH-ERAMOSA FORMER TOWNSHIP OF ERAMOSA COUNTY OF WELLINGTON

# OPERATIONS PLAN

KEY MAP



THIS SITE PLAN IS PREPARED UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS A LICENSE, CATEGORY 2 - QUARRY BELOW WATER.

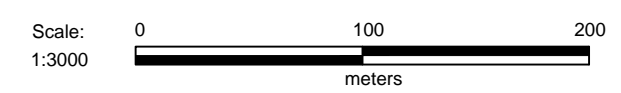
THESE SITE PLANS HAVE BEEN PREPARED UNDER THE DIRECTION OF AND CERTIFIED BY A PERSON APPROVED BY THE MINISTER OF NATURAL RESOURCES (AS PER SECTION 6(4) OF THE AGGREGATE RESOURCES ACT).

SIGNATURE: DATE:

PREPARED FOR: JAMES DICK CONSTRUCTION LTD. www.jamesdick.com Box 470 Bolton Ontario L7E 5T4 Bolton: (905)857-3500 Fax: (905)857-4833 Toll Free: 1-888-535-3333

APPROVED: R.P.S. PLOTTED: AUGUST 1, 2014 DRAWN: G.K.S. FILE: H2009-00000000

Table with 4 columns: No., DATE, DESCRIPTION, APP'D

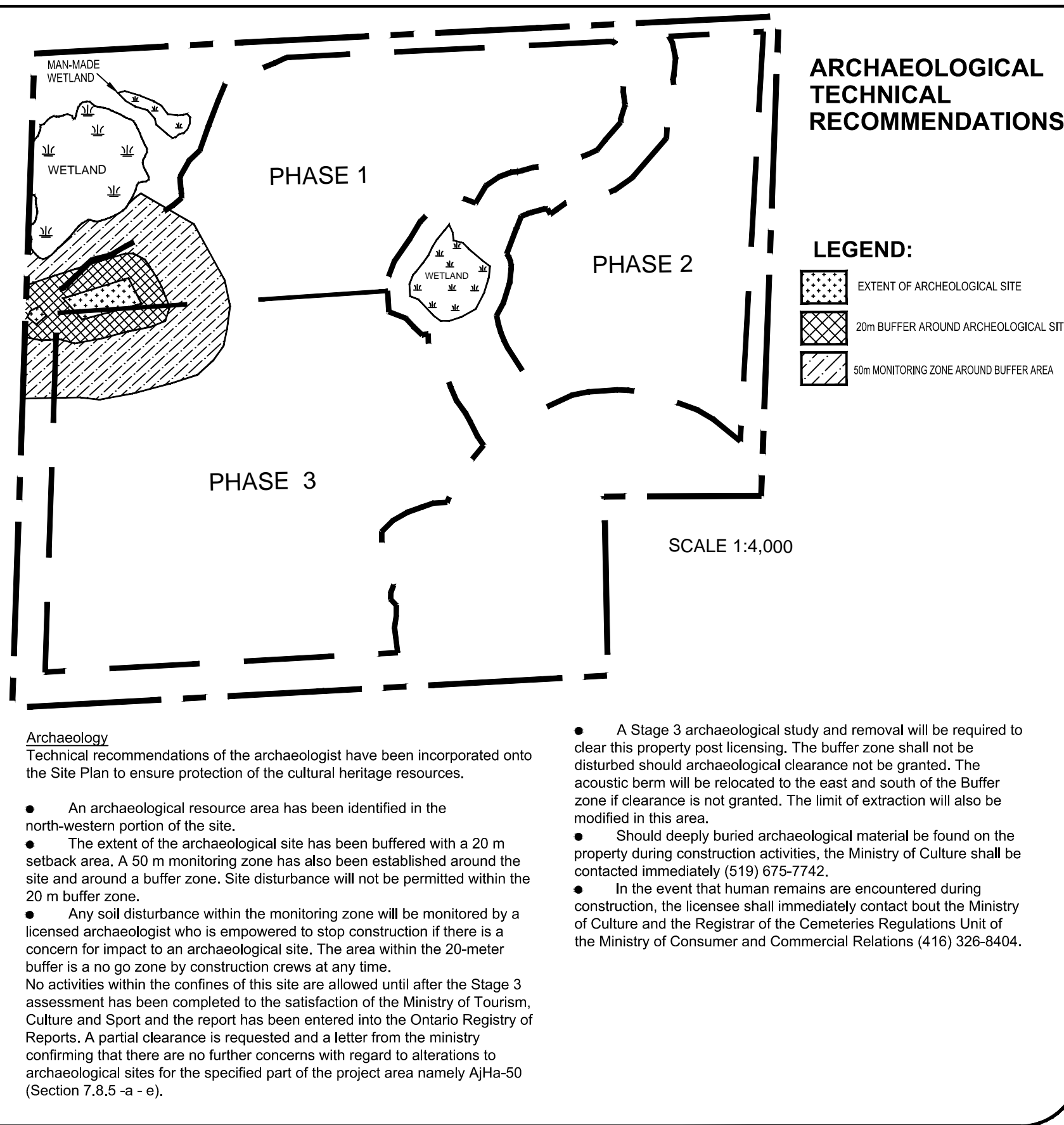
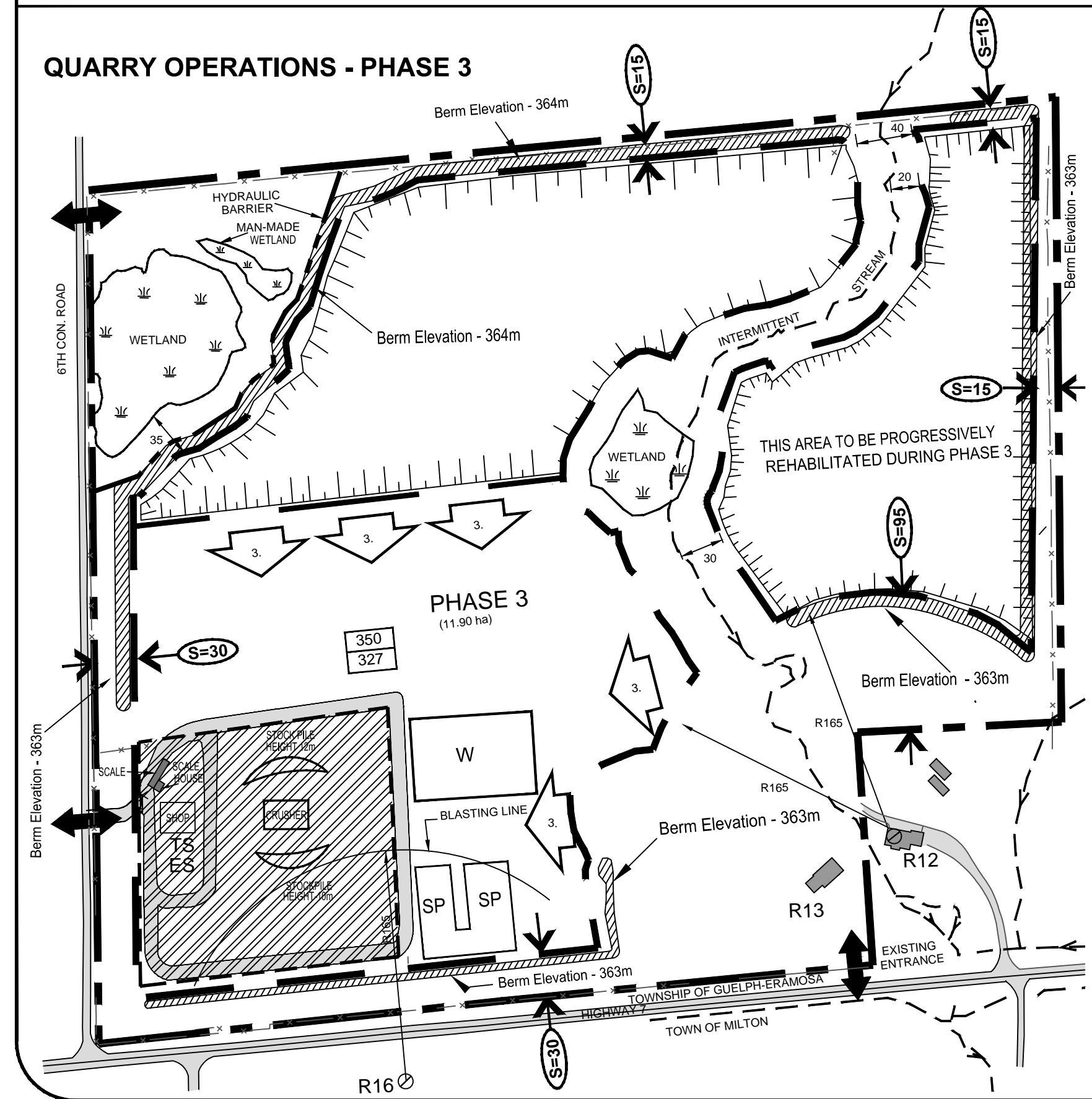
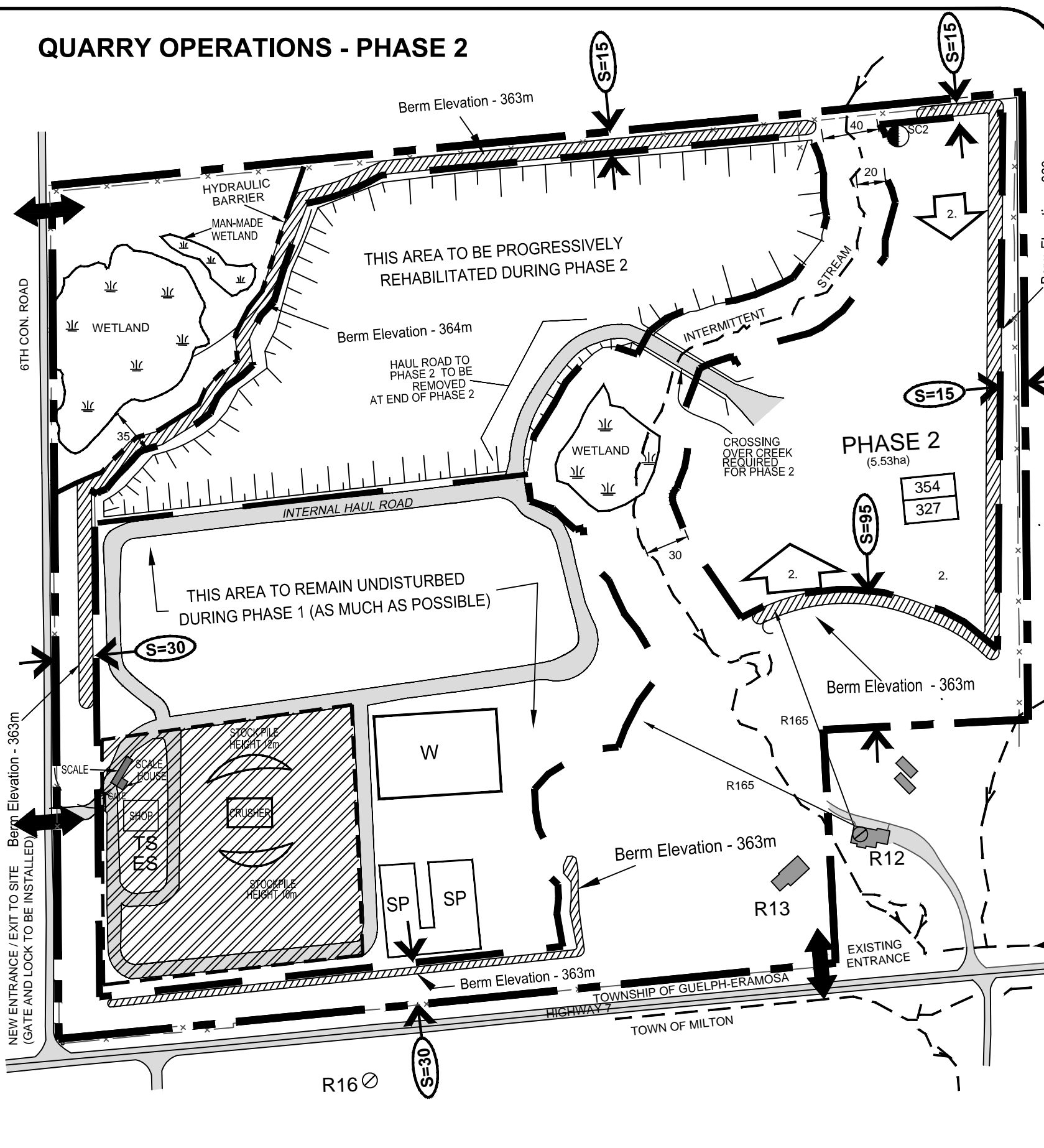
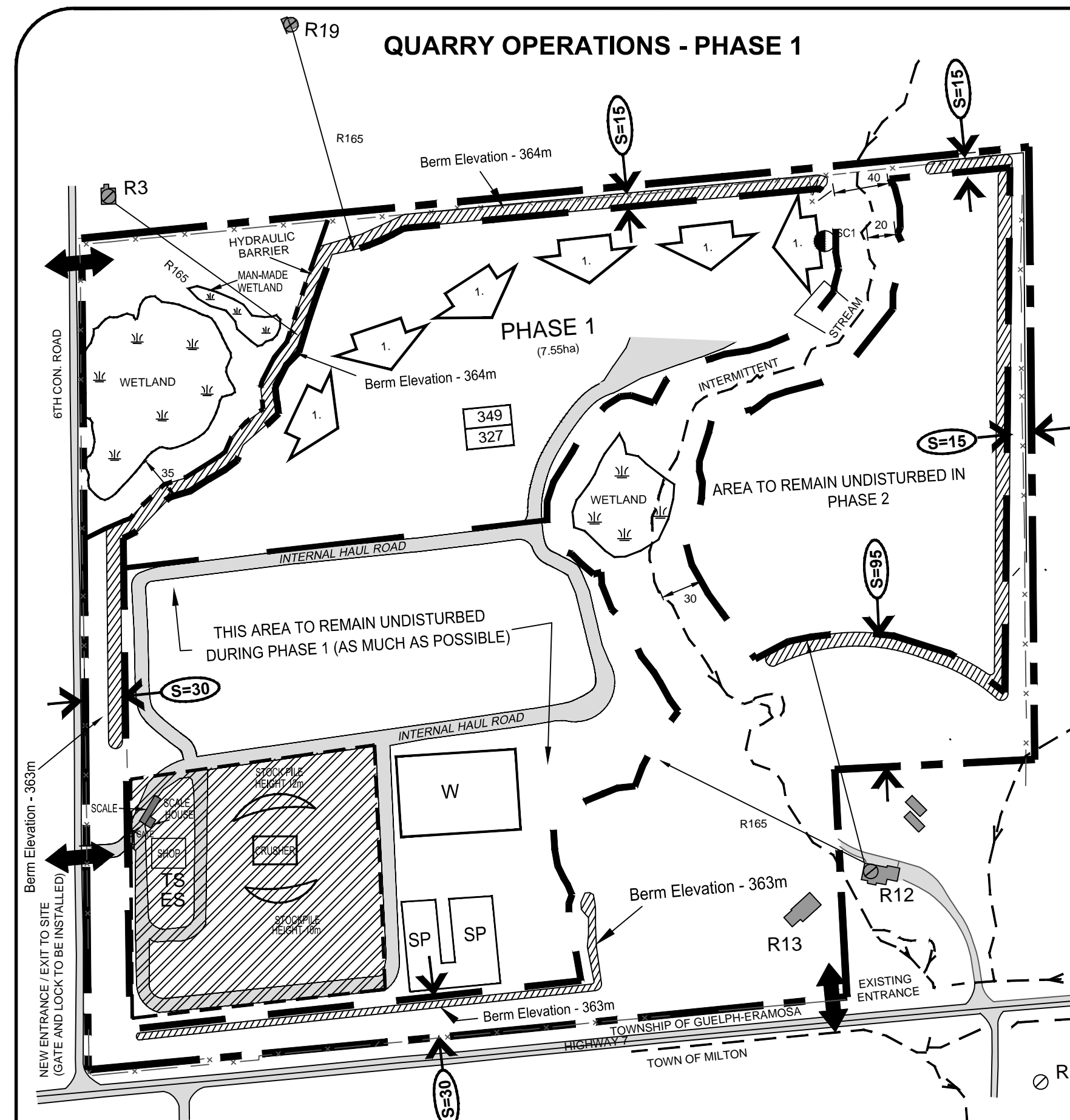


STOVEL and Associates Inc. 237 BRIARHILL DRIVE STRATFORD, ONTARIO N5A 7T1 PHONE (519) 272-2884

# HIDDEN QUARRY

PART OF LOT 1, CONCESSION 6  
TOWNSHIP OF GUELPH-ERAMOSA  
FORMER TOWNSHIP OF ERAMOSA  
COUNTY OF WELLINGTON

## Page 3 of 5 QUARRY PHASING



**LEGEND:**

- BOUNDARY TO BE LICENSED
- LIMIT OF AREA TO BE EXCAVATED
- SETBACK
- RESIDENTIAL BUILDINGS (TYPE)
- DIRECTION OF EXCAVATION
- MAIN INTERNAL HAUL ROUTE
- HYDRAULIC BARRIER
- ENTRANCE/EXIT
- BERM
- EXCAVATION FACE
- W WASH POND LOCATION
- TS TEMPORARY SCRAP STORAGE AREA
- SP SILT POND
- ES EQUIPMENT STORAGE
- MAIN PROCESSING AREA
- 354 EXISTING BEDROCK ELEVATION
- 327 PROPOSED QUARRY FLOOR ELEVATION
- SNINKING CUT WATER LEVEL MONITORING LOCATION

- NOTES:**
- Quarrying Operation:
- Dolomite extraction will occur above and below the water table.
  - Dolomite extraction will occur once overburden, including sand and gravel, is removed and the bedrock surface is prepared for drilling and blasting.
  - The use of under water excavation will result in the quarry being able to operate without the need to dewater the excavation area.
  - Underwater blasting will be used in order to reduce the blasting noise and vibration impact. The frequency and timing of blasts over the duration of the operation will be variable.
  - Drilling and blasting will not occur within a distance of approximately 165 m to the adjacent sensitive receptor(s). Should the blasting pattern be revised, extraction may occur within this setback.
  - Once the dolomite is broken up by blasting, the quarried rock will be removed by an excavator or drag-line, and placed on the working floor of the quarry to dry.
  - Quarry haul trucks will be used to transport raw material from the active quarry area to the main processing area. A looped internal haul road system has been identified on the Site Plans. The size and location of this internal road system may be adjusted by the operator.
  - The main processing area will include equipment such as crushing/screening plant(s) and a wash plant. Processed aggregate will be stockpiled in this area.
  - Loaders will load highway trucks with finished aggregate product. Trucks will leave the site via an improved entrance on Concession 6.
  - The depth of dolomite extraction is anticipated to be +/- 23-28 m. The quarry floor will be established at 327 masl.
  - The final blast for each respective phase will be adjusted to permit a more roughened face. This will allow for ecological diversification of the quarry face, as per the rehabilitation program.
  - As part of the rehabilitation program, stockpiled soil and overburden will be graded and planted with suitable vegetation within the extraction area.
- Phase 1 Operations:**
- Phase 1 is approximately 7.4 ha in size.
  - Extraction of dolomite will start at the approximate elevation of 349 masl and terminate at 327 masl.
  - Perimeter berming, as established in the Noise Impact Study, will be established in respective phases prior to quarrying.
  - A hydraulic barrier will be installed in the northwest portion of the site, prior to extraction below the water table in Phase 1.
  - Extraction will proceed in a southerly direction.
- Phase 2 Operations:**
- Phase 2 is approximately 5.5 ha in size.
  - Extraction of dolomite will start at the approximate elevation of 354 masl and terminate at 327 masl.
  - Perimeter berming, as established in the Noise and Blast Impact Study, will be established in respective phases prior to quarrying.
  - Extraction will proceed such that the extraction face proceeds towards the perimeter berm.
- Phase 3 Operations:**
- Phase 3 is approximately 11.6 ha in size.
  - Phase 3 involves the extraction of the southwesterly portion of the site, including the Central Processing Area.
  - Extraction of dolomite will start at the approximate elevation of 350 masl and terminate at 327 masl.
  - The internal haul route will be adjusted to allow for the extraction of this area.
  - Perimeter berming, as established in the Noise and Blast Impact Study, will be established in respective phases prior to quarrying.
  - Extraction will proceed such that the extraction face proceeds towards the perimeter berm.

**ARCHAEOLOGICAL TECHNICAL RECOMMENDATIONS**

**LEGEND:**

- EXTENT OF ARCHAEOLOGICAL SITE
- 20m BUFFER AROUND ARCHAEOLOGICAL SITE
- 50m MONITORING ZONE AROUND BUFFER AREA

**Archaeology**

Technical recommendations of the archaeologist have been incorporated onto the Site Plan to ensure protection of the cultural heritage resources.

- An archaeological resource area has been identified in the north-western portion of the site.
- The extent of the archaeological site has been buffered with a 20 m setback area. A 50 m monitoring zone has also been established around the site and around a buffer zone. Site disturbance will not be permitted within the 20 m buffer zone.
- Any soil disturbance within the monitoring zone will be monitored by a licensed archaeologist who is empowered to stop construction if there is a concern for impact to an archaeological site. The area within the 20-meter buffer is a no go zone by construction crews at any time. No activities within the confines of this site are allowed until after the Stage 3 assessment has been completed to the satisfaction of the Ministry of Tourism, Culture and Sport and the report has been entered into the Ontario Registry of Reports. A partial clearance is requested and a letter from the ministry confirming that there are no further concerns with regard to alterations to archaeological sites for the specified part of the project area namely A/Ha-50 (Section 7.8.5 -a - e).
- A Stage 3 archaeological study and removal will be required to clear this property post licensing. The buffer zone shall not be disturbed should archaeological clearance not be granted. The acoustic berm will be relocated to the east and south of the Buffer zone if clearance is not granted. The limit of extraction will also be modified in this area.
- Should deeply buried archaeological material be found on the property during construction activities, the Ministry of Culture shall be contacted immediately (519) 675-7742.
- In the event that human remains are encountered during construction, the licensee shall immediately contact both the Ministry of Culture and the Registrar of the Cemeteries Regulations Unit of the Ministry of Consumer and Commercial Relations (416) 326-8404.

**General Notes:**

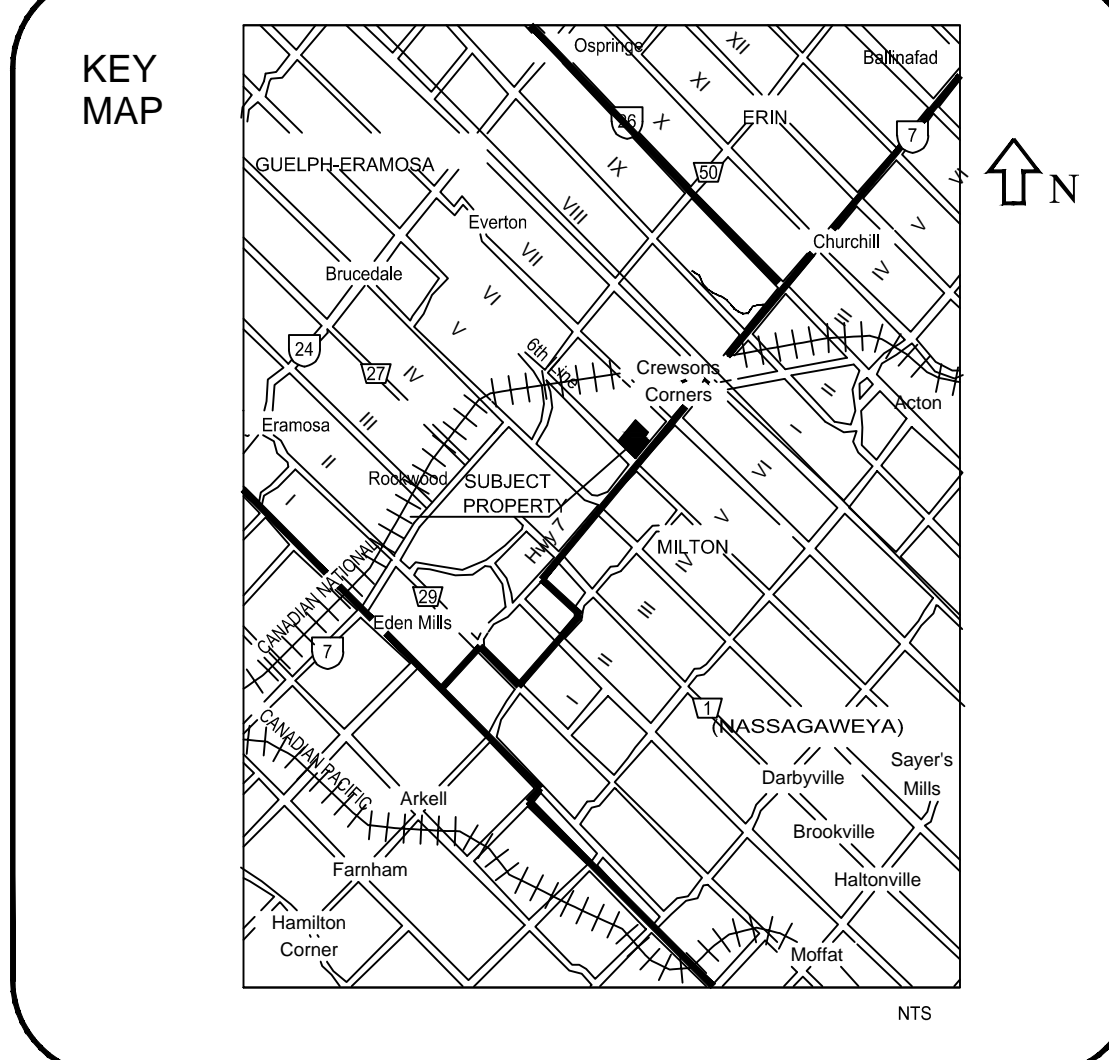
Asphalt or concrete plants are not proposed and are not permitted in this licensed area.

Fuel, oil, radiator and hydraulic fluid, and other chemicals needed from the maintenance and functioning of on-site aggregate processing equipment shall be appropriately handled and shall meet the requirements of the Technical Standards and Safety Act (TSSA) and Liquid Fuels Handling Code, and in accordance with the Ministry of Environment's chemical storage guidelines. All refuelling shall be within a containment pad and any spill shall be removed and disposed of immediately at the appropriate MOE approved facility and in accordance with the required spills contingency program for the licensed operation.

The importation and storage of snow on the subject land is not an accessory use under the Extractive Industrial zoning or deemed ancillary to an aggregate operation. As such, the importation and storage of snow is not permitted at this site.

Environmental Compliance Approvals will be obtained from the Ministry of Environment, as required.

Location of internal haul road is approximate and may vary or be altered during the course of site extraction.



**THIS SITE PLAN IS PREPARED UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS A LICENCE, CATEGORY 2 - QUARRY BELOW WATER.**

**THESE SITE PLANS HAVE BEEN PREPARED UNDER THE DIRECTION OF AND CERTIFIED BY A PERSON APPROVED BY THE MINISTER OF NATURAL RESOURCES (AS PER SECTION 8(4) OF THE AGGREGATE RESOURCES ACT).**

SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

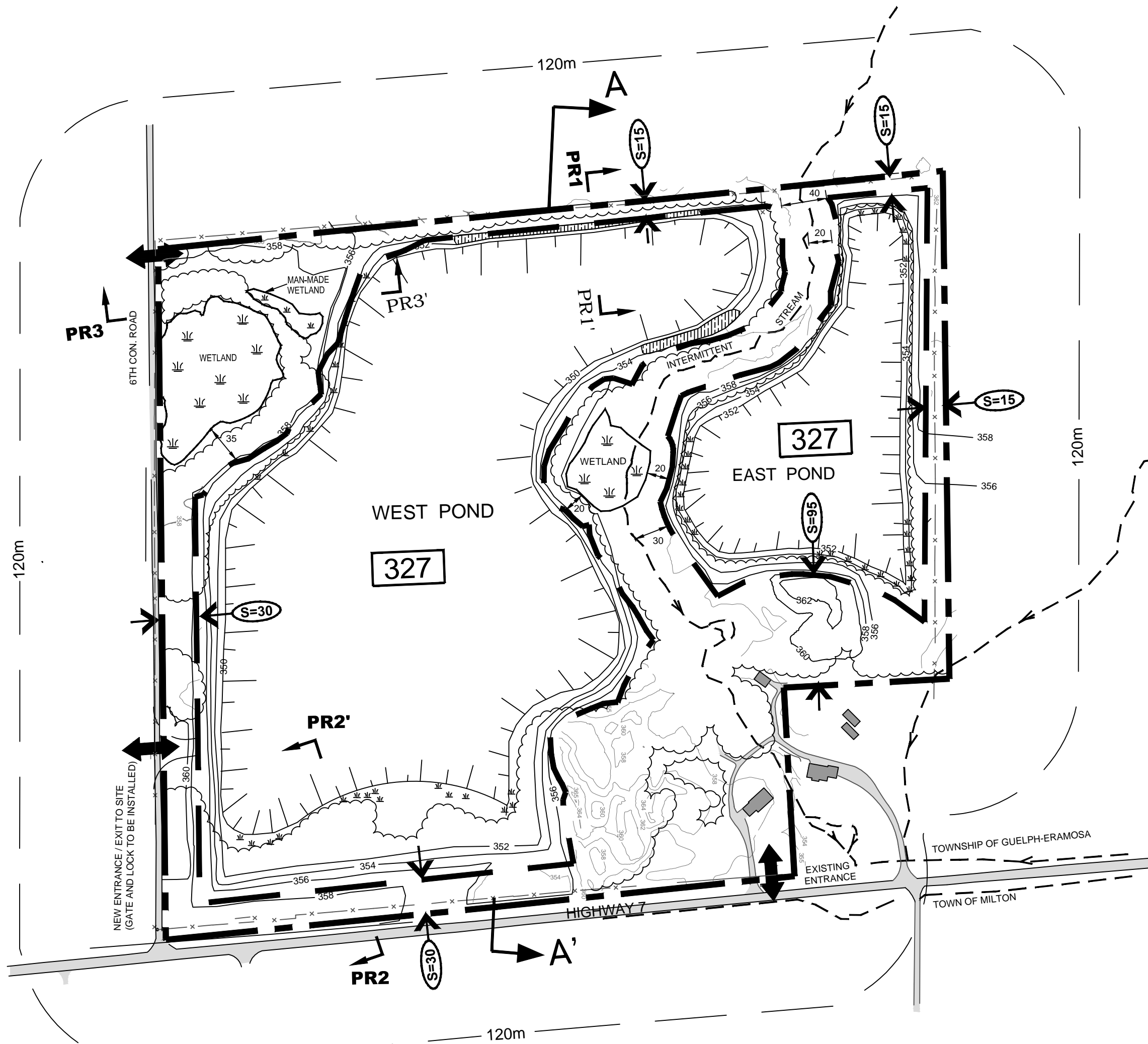
PREPARED FOR: **JAMES DICK CONSTRUCTION LTD**  
www.jamesdick.com  
Box 470 Bolton Ontario L7E 5T4  
Bolton:(905)857-3500 Fax:(905)857-4833  
Toll Free: 1-888-535-3333

APPROVED: R.P.S. \_\_\_\_\_ DRAWN: G.K.S. \_\_\_\_\_  
PLOTTED: AUGUST 1, 2014 FILE: 20140801

No.	DATE	DESCRIPTION	APP'D
<b>AMENDMENTS</b>			

Scale: 1:3000 0 100 200 meters

**STOVEL and Associates Inc.** 297 BRIARHILL DRIVE STRATFORD, ONTARIO N5A 7T1 PHONE (519) 272-2884



**Ecological Enhancement Strategy:**

The goal of the ecological enhancement strategy is to create a growing environment that will provide for the long-term development of a healthy, diverse ecosystem.

The following features will be incorporated into the rehabilitation plan:

- Quarry lake areas, including the littoral zone,
- Quarry face,
- Created wetland areas, and
- Reforested tableland areas.

**Quarry Lake Areas:**

The extracted quarry lake areas will comprise good quality cold/cool water. The following features will be incorporated into the rehabilitation plan:

- Large boulders can be left in the bottom of the quarry
- Stone and screening piles can be left in the bottom of the quarry
- Boulders, stone and screening piles can be dumped over the bank of the quarry
- Along the edge of the quarry, a productive littoral zone can be created by dumping soil over the edge. Stumps and logs can be strategically placed along the shoreline.

The opportunity exists to create a diversified shoreline through the extraction process. In near shore areas, on lands that will not be rehabilitated as wetlands, variable shorelines will also be considered. The area receiving this modified side sloping detail focuses on the first 2 m of the final lake water level. Side sloping and planting details similar to the wetland enhancement program will be employed.

**Cliff and Talus Slope Rehabilitation:**

Cliffs will be created where steep exposures of bedrock remain after extraction that are more than 3 m high. Sharp to variably broken edges, faces, and rims will be established by rough blasting the final face. Vegetation cover will be established that ranges from patch to < 60 % tree cover, and an average substrate depth of < 15 cm.

Talus are slopes of rock rubble, with coarse rocky debris making up > 50 % of substrate surface and an average substrate depth of < 15 cm, and a vegetation cover that ranges from patch to < 60 % tree cover. Talus slopes will be created where limestone faces are less than 3m high after extraction. Species to be planted in these areas are Canada Bluegrass, White Cedar, Sugar Maple, and trowwood.

It is recommended, however, that at least 20 per cent of the quarry face remain barren and untreated.

**Created Wetlands:**

The site plans illustrate areas on the subject property where wetlands will be created. These areas are in immediate proximity to where the perimeter berming is located. The objective of this process is to create wetland with a slope of approximately 5:1 to 10:1. Appropriate native vegetation should be planted in this area.

**Reforested Tableland Areas:**

Once the tableland areas have been graded using overburden to backfill, these areas should be treated with a layer of topsoil, and then planted with appropriate native vegetation. In general, the tableland areas will have a finished slope not to exceed 2:1. The objective is to achieve a soil mass of 50-100 cm in depth with a topsoil layer that is 10-20 cm in depth.

During the rough grading stage of the northwestern and southern portion of the site, the licensee shall consider creating microhabitat features such as, small depressions, mounding of soil in long, linear formations, brush piles, ephemeral pools, and small stone and screening piles. The intent of this grading program is to diversify the landscape and to create habitat opportunities for a variety of wildlife including amphibians. It is also recommended, that in portions of the rehabilitated quarry, the exposed dolostone quarry floor be left in a roughened condition without the treatment of a soil layer or planted with native vegetation.

Native species, such as white pine, white spruce, white cedar, red oak, sugar maple, red maple, white birch and bur oak, shall be used. Seeding stock from an appropriate nursery can be used with a minimum planting density of 1500 seedlings per ha, planted at a 2.4 x 2.4m spacing. Prior to reforestation common buckthorn and other invasive non-native shrubs shall be cut down low to the ground and/or treated with an appropriate herbicide. A minimum of 70% of the trees planted as part of the reforestation program will be coniferous trees. The following shrubs may be included in the replanting program, grey dogwood, red-osier dogwood, staghorn sumac, nannyberry, chokecherry and serviceberry. Forest cover should be approximately 80% of the tableland area.

To reduce undesirable competition and improve the probability of seeding survival and growth, grass and weed competition in planting areas may be scalped or controlled by other methods.

Watering of planted trees, shrubs and ground cover required during droughty periods.

All vegetation planted shall be maintained in a healthy growing condition. Should planted vegetation die, it shall be replaced within one growing season.

**MONITORING**

Monitoring will be carried out to ensure that the survival and growth of planted trees, shrubs and ground covers are sufficiently established to restore the site to the desired woodland and wetland vegetation.

Monitoring will be carried out until trees and shrubs are considered free to grow which means their root systems well established and the height of the competing herbaceous vegetation particularly grass and golden rod (i.e. about 1m).

It is estimated that this will take 5 years.

To ensure adequate stocking in reforested areas, there must be at least 80% seedling survival after 5 years or when trees are considered free to grow.

A seedling survival census will be carried out on an annual basis during late summer/early fall to determine the need for refill plantings in failed areas during the following spring. The same species will be used for refill plantings unless there is good reason for a change. Bareroot transplant stock 20-40 cm in height is recommended for plantings on these difficult sites.

Once Progressive Rehabilitation has commenced:

- Photographic surveys from common vantage points will be taken annually.
- Compliance with final ground elevations shown on the rehabilitation plans (subject to minor modification so long as rehabilitation objectives are met).
- Quarterly assessment of depth of water (not to exceed 2m) for staff gauges installed within created wetland areas.
- Prior to license surrender, a biological survey of wetland vegetation characteristics including species density, distribution and percent cover such that in wetland areas hydrophytic cover should be at least 25% and dominated with rushes, grasses and sedges. Biological surveys of target conservation species will be made at the time of license surrender and results of the study will be circulated to the MNR and the GRCA.

Surface water quality testing will be conducted on a semi annual basis (spring and fall) and will assess nutrient levels (nitrate and phosphorous), pH, dissolved oxygen and alkalinity.

**SEDIMENT AND EROSION CONTROL**

Due to topographic conditions and the abundance of forest cover on this site, tree protection fencing must be erected at the limit of all setback where ground elevations are equal to or lower than the elevations in the adjacent extraction area. This is particularly required nearby wetlands, in the stream valley and where noise berms are to be constructed. Standard paige wire farm fence or similar fence should be installed in the locations identified on the Operations Plan after tree clearing and grubbing has been completed. Silt screen must also be attached to the paige wire fence where required and have its base covered with soil to ensure it can effectively trap sediment. Along the stream corridor silt fence will be located inside the extraction area and there will be a "no touch zone" within 2 meters of the silt fence.

TRIGGER LEVELS AND CONTINGENCY MEASURES (FROM PAGE 2 OF 5)

Parameter	Monitor Location	Warning Level	Trigger Level	Trigger Level Contingency Measures which shall be implemented
Bedrock Aquifer	M1D	349.98	349.78	Increase Monitoring Frequency and one or more of:
	M2	348.31	347.81	
	M13D	351.63	351.28	Decrease the Rate of or Cease Extraction; and/or
	M14D	352.36	351.98	
	M15	TBD	TBD	
NW Wetland	M16	TBD	TBD	Increase the Length or Width of Barrier; and/or
	M16	TBD	TBD	
SW4 Wetland	SWS Winter	354.35	354.2	Change Mining Configuration or Mining Extent; and/or
	SWS Spring	354.48	354.33	
Allen Wetland	SW4 May	<25 L/S		Alter Timing to Coincide with High Water Season, such that water levels recover above Trigger Level
	SW4 June 22	No Flow		
Sinking Cut	Buoy in Pond	346.83		Cease Extraction until Water Levels Recover

If any trigger level is breached, the following measures will be taken;

- Confirmation of water level within 24 hours. Increase monitoring to weekly until source of the trigger level exceedence is identified.
- Within seven days conduct an evaluation of precipitation, groundwater monitoring data and quarry activities to determine if quarry activities are responsible for the low water level observed.
- If quarry activities are found to be responsible, the following actions will be considered and a response presented to the GRCA and the Township of Guelph-Eramosa.

**LEGEND:**

- BOUNDARY TO BE LICENSED
- LIMIT OF AREA TO BE EXCAVATED
- 120m 120m AROUND LICENCE
- TYPICAL SECTION LOCATIONS
- MUNICIPAL BOUNDARY
- FENCELINE
- RESIDENTIAL BUILDINGS (TYPE)
- VERTICAL FACE
- SETBACK
- FLOOR OF REHABILITATED QUARRY LAKE
- REFORESTED TABLELAND AREA
- MAN-MADE / CREATED WETLANDS
- WETLAND AREA
- CLIFF EDGE REHABILITATION
- ENTRANCE/EXIT

**NOTES:**

**General:**

- The site will be rehabilitated to an ecological end use, with two ponds. Wetlands will be created along the edges of the two ponds. Tableland areas will be reforested with appropriate native trees and shrubs as indicated.
- Surface runoff shall be directed toward the onsite ponds.
- The access road shall be maintained during the course of progressive rehabilitation efforts.
- Fencing shall remain around the perimeter of the quarry licence.
- All equipment and machinery within the extraction limits will be removed upon completion of extraction.
- The area to be rehabilitated is 24.5 ha.
- Topsoil that is stripped from operational areas will be placed in screening berms around the perimeter of the site as shown on the site plans. As part of final rehabilitation, the topsoil in berms will be used to achieve final contours as indicated on the site plans.
- If soil becomes significantly compacted, the rehabilitated lands will be ripped prior to the application of topsoil. The final surface soil layer should be loose with undulations so that soil depth over bedrock is variable and micro-habitats are created.
- The riparian wetland boundary and the PSW boundary were flagged by GWS staff and verified in the field by the GRCA on June 7, 2013.

**Aquatic Rehabilitation**

- The onsite ponds are approximately 13.9 ha and 3.5 ha in size.
- The predicted final water levels for the lakes are: a) 348.6 masl in the west quarry lake, and b) 348.4 masl in the east quarry lake.
- The area extracted below the water table will have a variable slope face that will range from 2:1 to vertical slopes.
- The rehabilitated lakes will be approximately 23 m in depth. The lakes will be rehabilitated for fish and aquatic habitat. Habitat enhancement measures for the lakes include the following: boulder features, shoals, and littoral zone development.
- Given the depth of the quarry ponds, it is anticipated to be suitable for walleye and smallmouth bass.
- Vertical faces can be modified during the final blast. The quarry face can remain roughened, to create ledges and crevices, thus enhancing micro-habitats.
- Available native, onsite soil and large rock piles or boulders can be dumped over the quarry face to provide a diversity of habitat.

**Wetland Creation**

- The edges of the quarry ponds will be rehabilitated to create artificial wetlands as indicated.
- Wetland communities can be created along the pond edges with a maximum 2 m water depth from the final estimated water table, i.e. wetland floor at <= 348 to 349 m MASL.
- In these wetlands, the excavation pattern will be modified to create a slope of approximately 5:1 to 10:1.
- Available overburden and soil can be used to create these slopes as well.
- Available soil can be graded to provide a medium for wetland plant communities.
- Once the wetland side slope has been graded, a minimum of 100 mm of soil will be applied to this area to permit the establishment of wetland vegetation. This area will be allowed to naturally regenerate to a wetland habitat.
- Wetland plants suitable for planting in created wetlands include: Northern water-plantain, broadleaf arrowweed, blueflag, pickerel weed, Bebb's sedge, stiptate sedge, soft rush, low marsh grass, Virginia wild rice, rice cut-grass, woodgrass, dark-green bulrush, softstem bulrush, broad-leaved cattail, white water-lily, water smartweed, sago pondweed, floating pondweed.
- To help accelerate the natural process of plant succession the following wetland species will be randomly planted in small clusters at a 0.5 to 1.0m spacing along the shoreline of the quarry ponds: northern water plantain, broadleaf arrowweed, as well as the species listed in the point above.
- Substrates may vary from bare bedrock to parent mineral material (sand, gravel, cobble) to organic substrates. Hydrophytic emergent cover should exceed 25% and be dominated by grasses, sedges, and rushes. Water levels within shallow marsh areas should not exceed 2m.

**Terrestrial Rehabilitation**

- The side slopes of the setback areas will be graded to achieve a slope of 2:1. Overburden may be applied to the side slope areas and tableland areas to achieve the necessary grade. A minimum of 100 mm of topsoil will be applied to the graded side slope areas.
- Terrestrial areas will be planted with suitable native shrubs and trees, such as white spruce, white pine and eastern white cedar. Shrubs that may be used include staghorn sumac, red-osier dogwood and raspberry. Additional plants are listed on the Site Plan.
- The sideslopes and tableland areas of the quarry floor will be covered with available overburden and topsoil and seeded with a suitable native upland meadow seed mix.
- Should seeding fail, the area shall be re-seeded as soon as possible.
- Minor grading of the setback areas may be required to permit proper final slopes for the site in areas not to be forested.

**SITE PLAN OVERRIDE TABLE**

THE FOLLOWING CONDITIONS ILLUSTRATED ON THIS PLAN VARY FROM THE REQUIREMENTS OF THE PROVINCIAL STANDARDS THAT APPLY TO LICENSED PITS IN ONTARIO.

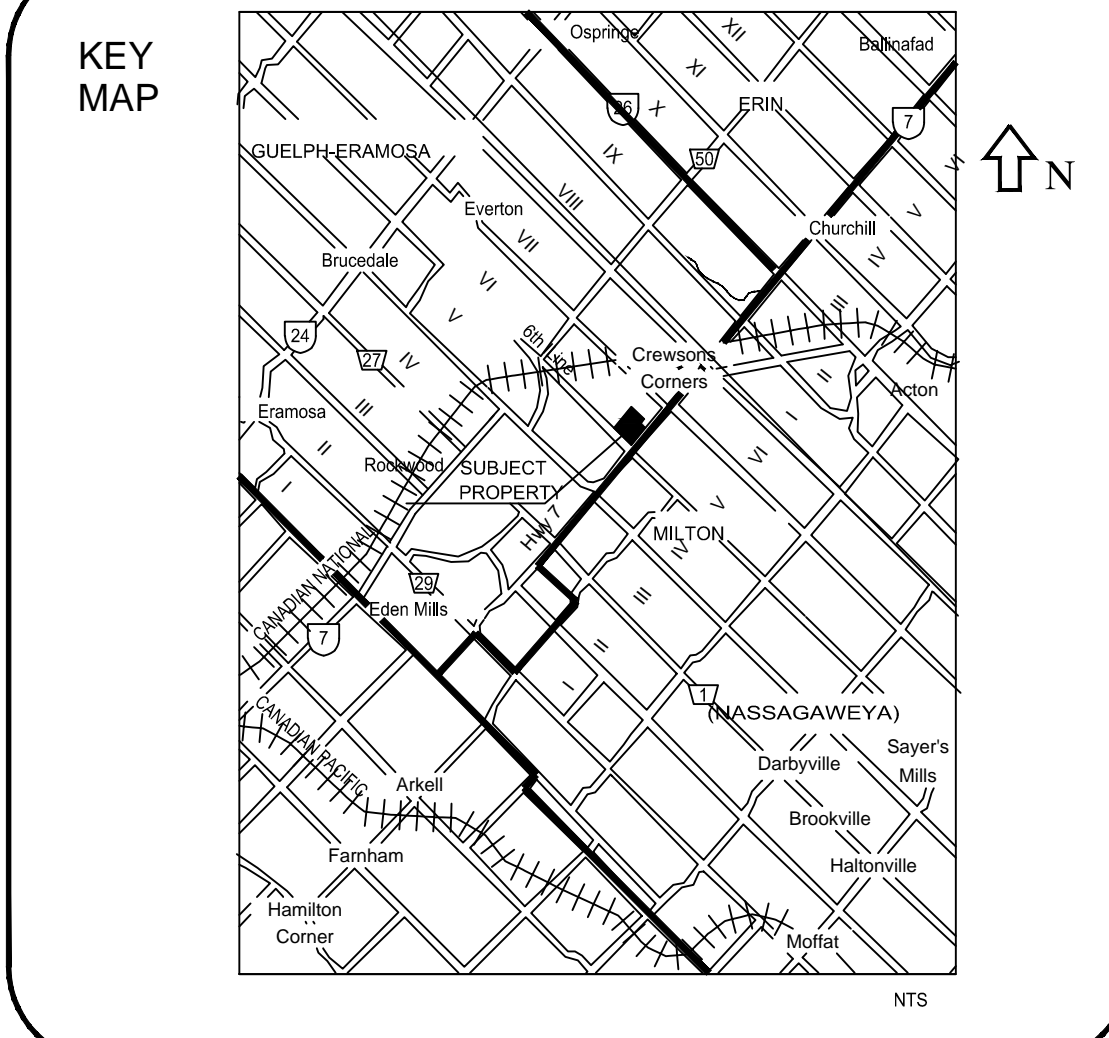
OVERRIDE	STANDARD
VARIANCE OF THE SIDE SLOPES FROM 2:1 IS PERMITTED TO PROMOTE ECOLOGICAL DIVERSIFICATION	5.10
SELECTED TREES WILL NOT BE REMOVED WITHIN 5M OF THE EXTRACTION FACE.	5.5

# HIDDEN QUARRY

PART OF LOT 1, CONCESSION 6  
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## Page 4 of 5

# PROGRESSIVE REHABILITATION AND FINAL REHABILITATION



THIS SITE PLAN IS PREPARED UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS A LICENCE, CATEGORY 2 - QUARRY BELOW WATER.

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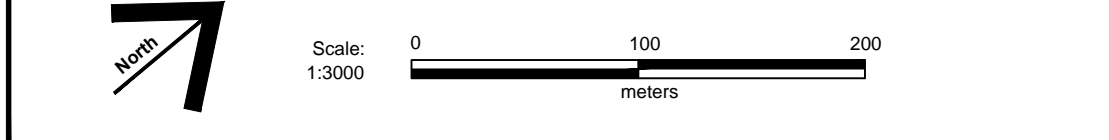
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PREPARED FOR: **JAMES DICK CONSTRUCTION LTD**

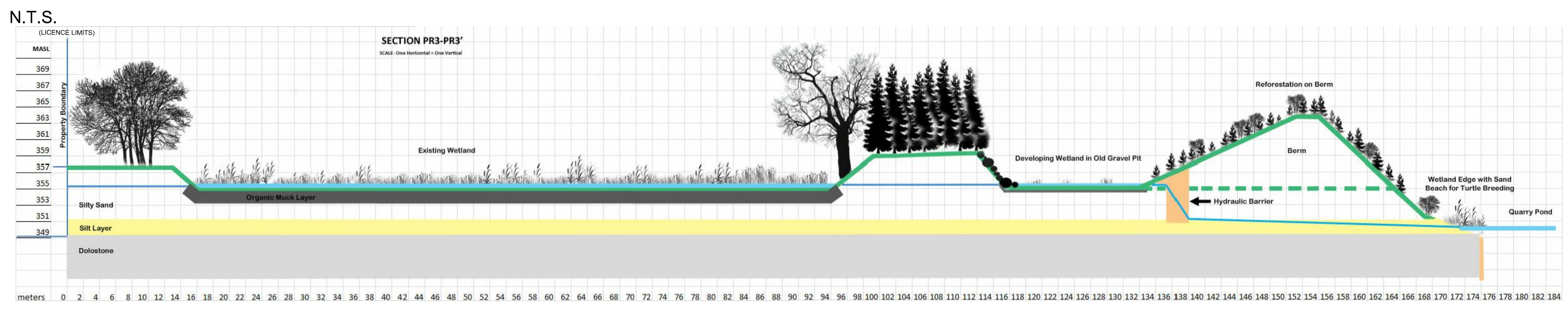
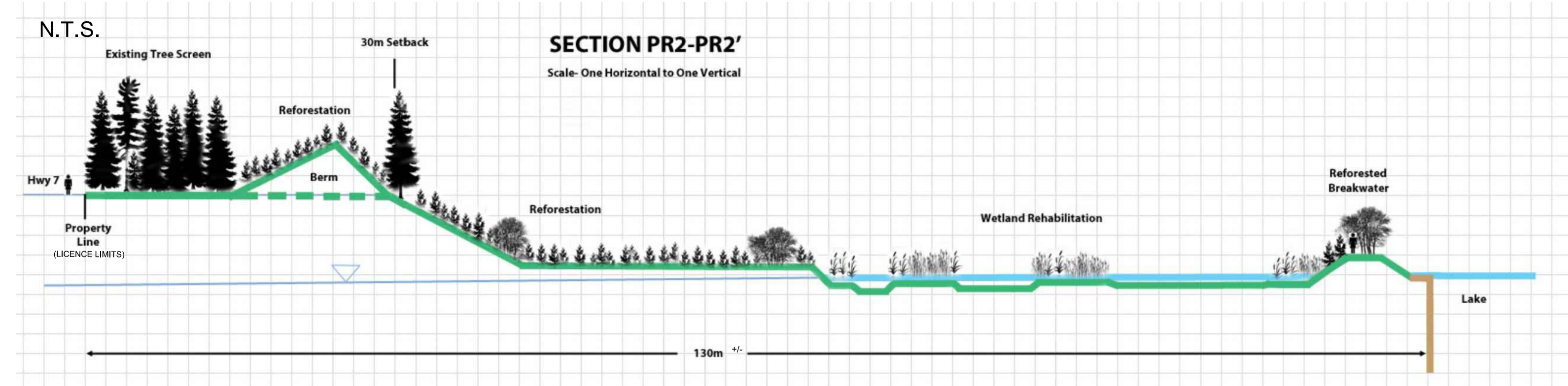
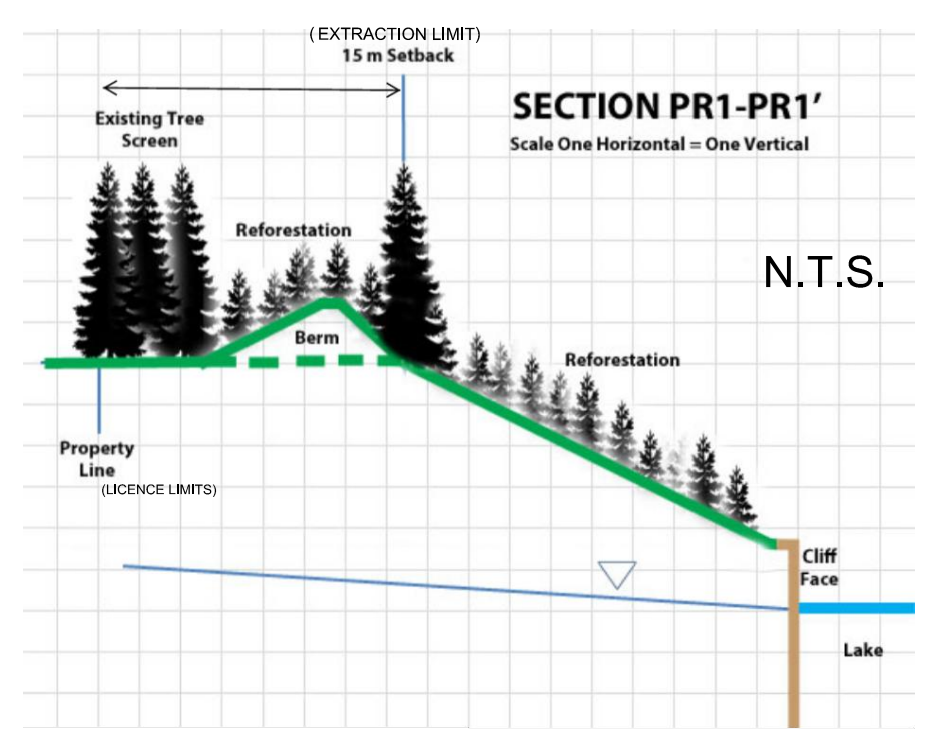
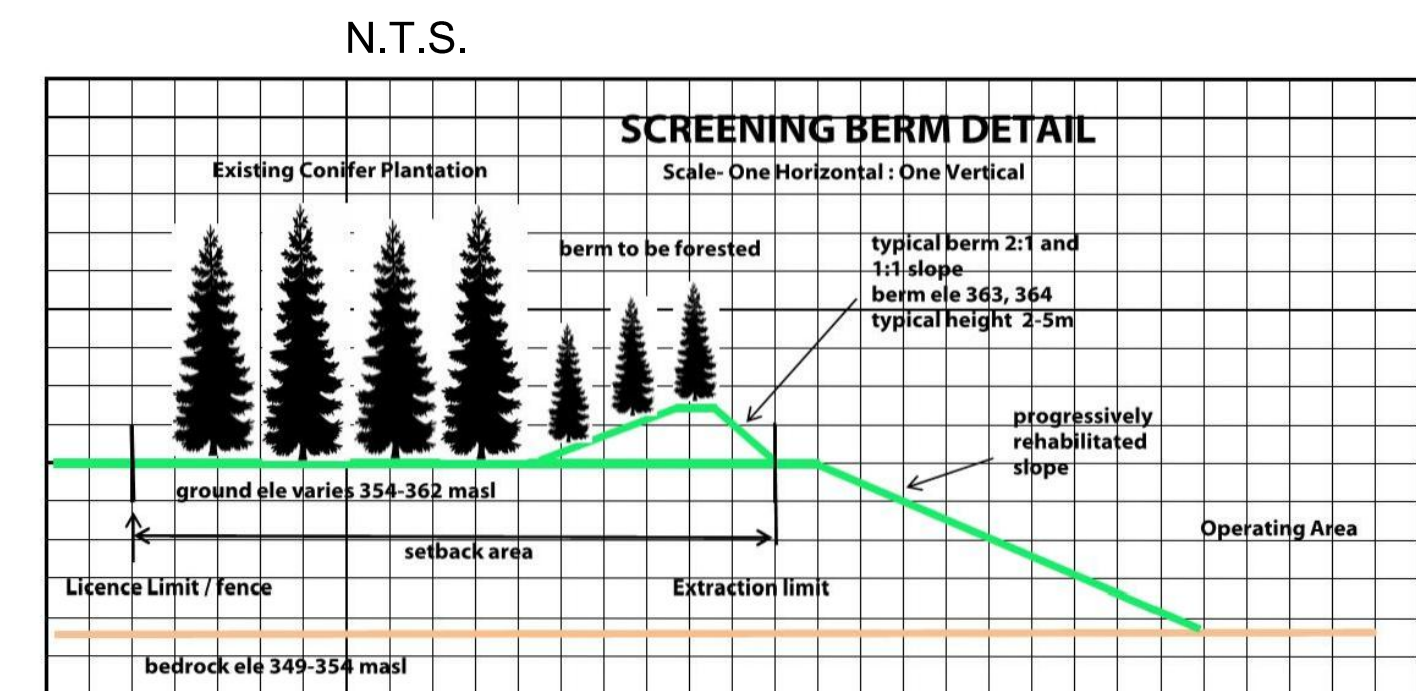
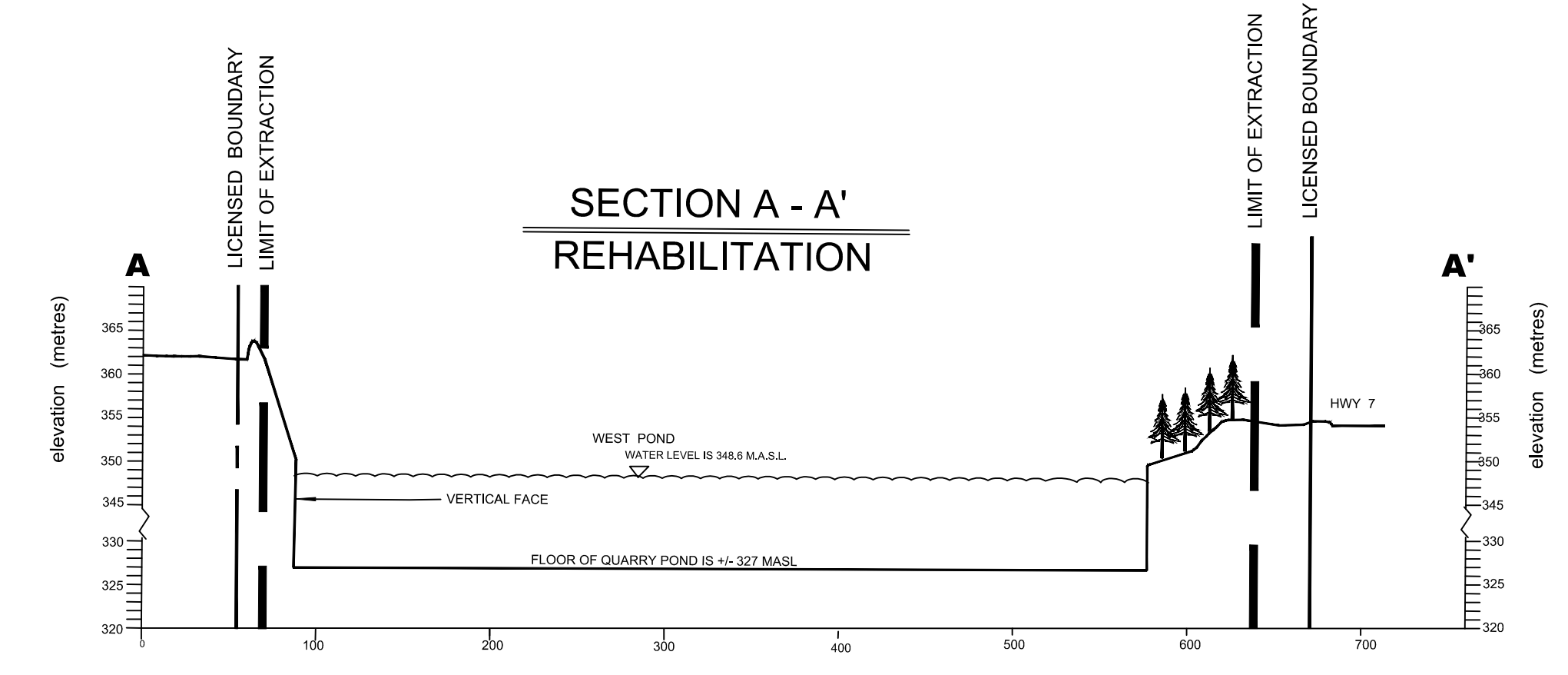
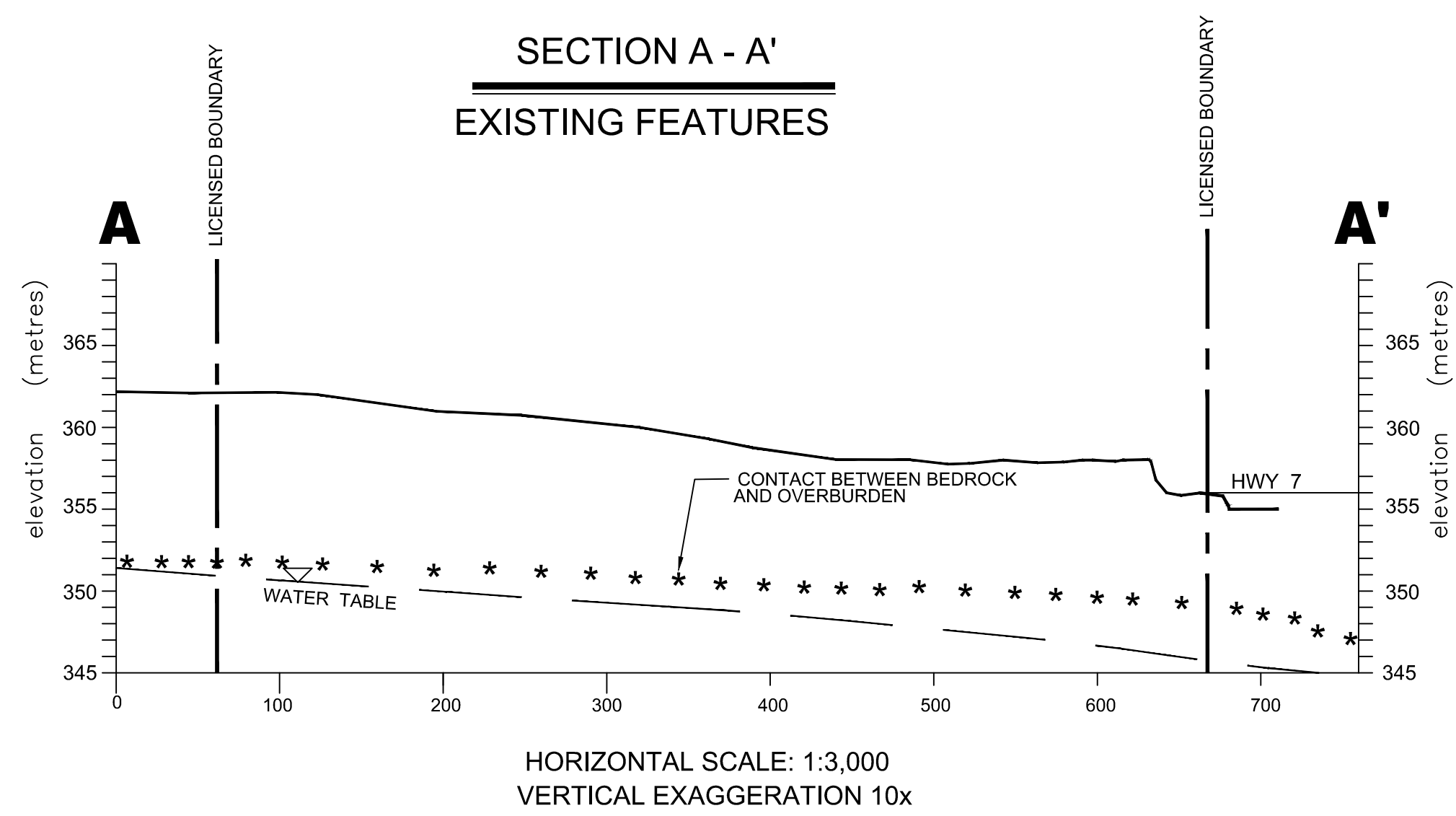
www.jamesdick.com  
Box 470 Bolton Ontario L7E 5T4  
Bolton:(905)857-3500 Fax:(905)857-4833  
Toll Free: 1-888-535-3333

APPROVED:	R.P.S.	DRAWN:	G.K.S.
PLOTTED:	AUGUST 1, 2014	FILE:	34871375

No.	DATE	DESCRIPTION	APP'D
<b>AMENDMENTS</b>			



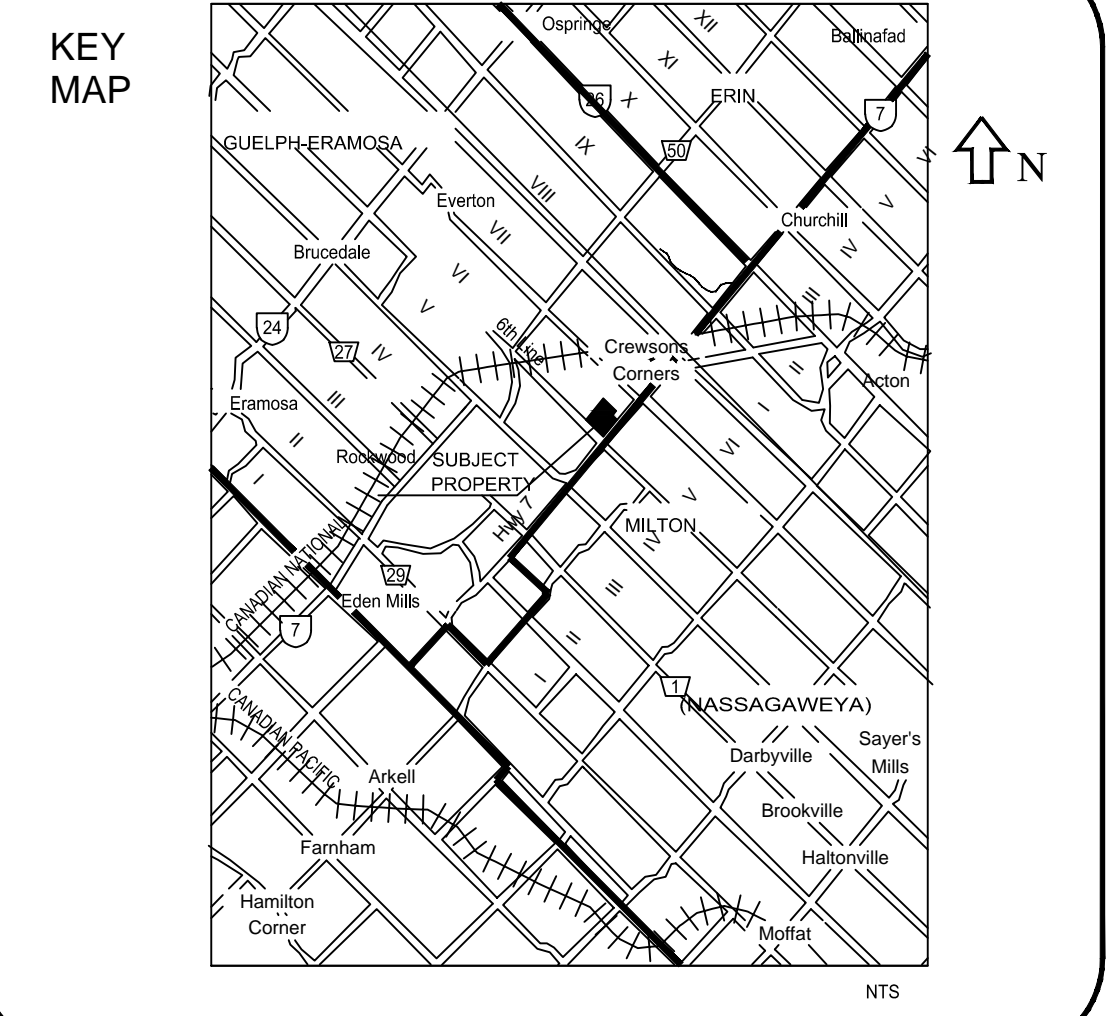
**STOVEL and Associates Inc.** 297 BRIARHILL DRIVE  
STRATFORD, ONTARIO  
N5A 7T1  
PHONE (519) 272-2884



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COUNTY OF WELLINGTON

## Page 5 of 5 CROSS SECTIONS



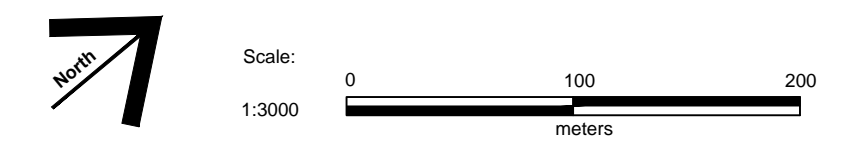
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SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

PREPARED FOR: **JAMES DICK CONSTRUCTION LTD**  
www.jamesdick.com  
Box 470 Bolton Ontario L7E 5T4  
Bolton: (905)857-3500 Fax: (905)857-4833  
Toll Free: 1-888-535-3333

APPROVED: R.P.S. DRAWN: G.K.S.  
PLOTTED: AUGUST 1, 2014 FILE: 14081401

No.	DATE	DESCRIPTION	APP'D
<b>AMENDMENTS</b>			



**STOVEL and Associates Inc.**  
297 BRIARHILL DRIVE  
STRATFORD, ONTARIO  
N5A 7T1  
PHONE (519) 272-2884