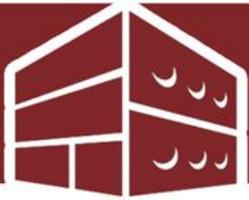




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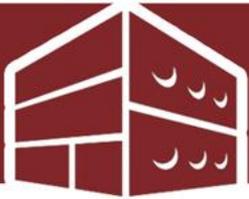
ALDERSHOT QUARRY COMMUNITY MEETING

- **CROSSROADS
CENTRE**
- 25 May 2017



Agenda

1. Introduction – Patrick Kelly, Meridian
2. Update on Company – Rob Campolo, Meridian
3. Overview of Site, History – Bob Long, Long Environmental
4. Site Plan – Bob Long
5. Stages of Extraction – Jack Hewitt - Meridian
6. Progressive Rehabilitation – Jack Hewitt
7. Questions and Answers – Patrick Kelly / John Armstrong
8. Emissions Estimation & Dispersion modelling– Ajay Madan - Pinchin
9. Air Quality & Human Health Assessment – Glenn Ferguson - Intrinsik
10. Species at Risk – Mitigation Plan – Bob Long
11. Archaeological Study – Bob Long
12. Noise Control Study – Hazem Gidamy - SS Wilson Associates
13. Questions and Answers – Patrick Kelly / John Armstrong
14. Next Steps – Jack Hewitt



Commitment to Community

- Meridian Brick is committed to Burlington, its residents and our employees and cares deeply about the environment, health and safety
- While the Aldershot Quarry is a fully licensed quarry, Meridian strives to be open, transparent, responsive and a good neighbour
- Having heard many of the comments from area residents, Meridian is undertaking a number of new and updated studies and making adjustments to the excavation plan in order to respond to residents



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Meridian Timeline

Canada Brick

1956 - 2003



2003 - 2014



2014 - 2016



2017 onwards

While there have been changes, the local leadership and the local workers remain in place – as does our commitment to the community



Meridian Brick

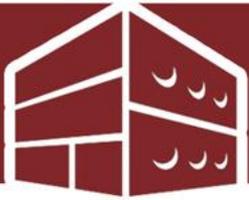
- Meridian Brick has been part of Burlington for nearly 60 years
- Produces 55% of clay brick manufactured in Canada
- 45% of Canadian clay brick production takes place in Burlington
- Meridian employs approx. 164 people at three clay brick plants and four quarries in Burlington. Average years of service = 19.6
- Local economic investment > \$150 million





Meridian Brick

- Meridian pays \$1.35m per year in local taxes
- Meridian pays \$3.5m to Burlington Hydro
- \$4m paid to local businesses for supplies and services
- \$5m to businesses in neighbouring communities
- Meridian supports Burlington and other community causes – e.g. Supplied brick for 140 Habitat for Humanity homes. We are supplying a team of volunteers and raising funds for Bolus Gardens Parkette in Warwick Surrey



Site Overview – Bob Long

- Bob is a 1971 Water Resource Engineering graduate and a founder of one of Ontario's first ecological consulting companies 1974
- He has developed a specialization in pits and quarries since 1980, as principal consultant for all existing and proposed southern Ontario shale quarries except a small one in Halton Hills
- Bob's firm has been retained to locate new shale sources; coordinate approval applications; design site plans; and advise on permitting and operations



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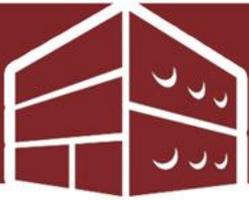
Aerial view of site





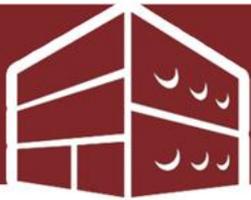
Aldershot Site Overview

- Clay products manufacturing was primary economic development of Aldershot
- Aldershot clay & shale has been an important raw material for clay products manufacturing since turn of 20th century
- Dominion Sewer Pipe opened its Aldershot plant in 1904
- Ryland New consolidated many of the local plants and quarries as National Sewer Pipe (NSP) during the 1920s
- Last Aldershot clay sewer pipe plant closed in 1981
- Our client acquired the Aldershot Quarries in 1990. Its objective was to construct a \$60 million brick plant, relying on the long term, fully permitted Queenston shale reserves
- When plant opened in 2000, about 38% of shale reserves were in East Quarry. West and Centre Quarries are approaching depletion.
- East Quarry deposit is essential for continued plant operation



Overview of Site Development - Addition

- 1990 - PQCA replaced by ARA
- 1994 - Jannock Properties applied for planning approvals for subdivision called Tyandaga West
- A key issue for Region and City planners was for Jannock to demonstrate that its subdivision could be compatible with adjacent, licensed East Quarry. Retained;-
 - S.S. Wilson – Noise Control Study, 1998 and
 - Agra – Dust Assessment

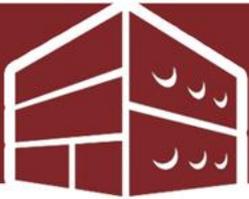


Overview of site development

- 1998: Ontario Municipal Board approve Tyandaga West based in part upon S. S. Wilson & Agra noise and dust recommendations
- 1997: Aggregate Resources of Ontario Provincial Standards under ARA
- 2000: Aldershot plant commences operation using West Quarry shale
- Also Tyandaga West subdivision is registered
- 2005: Provincial Greenbelt Plan
- 2010: Revised Site Plan under the new Ontario Provincial Standards, Greenbelt Plan and Tyandaga subdivision undertakings
- Aldershot Quarry fully compliant with Aggregate Resources Act, Endangered Species Act and Greenbelt Plan
- Two documents govern pits & quarry operations
 - License
 - Site Plan



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License



LICENCE
Aggregate Resources Act
PERMIS
Loi sur les ressources en agrégats

License No. _____
No du permis _____ 5500

Amended Licence

Pursuant to the Aggregate Resources Act and Regulations thereunder, and subject to the limitations thereof and to the conditions of the licence and the requirements of the site plan,

Conformément à la Loi de 1997 sur les ressources en agrégats et à ses règlements, et sujet aux restrictions qu'ils comportent, aux conditions d'octroi du permis et aux exigences du plan du site,

this Class licence is issued to:
nous délivrons ce permis de classe: A à:

FORTERRA BRICK, LTD./BRIQUES FORTERRA, LTEE.

5155 Dundas Street
Burlington, ON
CANADA
L7R 3Y2

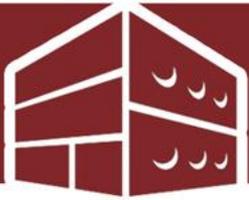
to operate a Quarry on a 62.4 hectare site located in:
pour exploiter un/une Quarry sur le terrain de 62.4 hectares situé à l'endroit suivant:

<u> Pt 2,3 & Pt 1,2,3 1 & 2 </u>	<u> </u>	<u> EAST FLAMBOROUGH </u>	<u> BURLINGTON </u>	<u> HALTON R </u>
Lot	Concession	Section	Geographic Township	Local Municipality
				County / Regional Municipality / District

The licence is subject to the following conditions:
Ce permis est assujéti aux conditions suivantes:

Effective the 25th day of November, 2016
En vigueur le


Minister of Natural Resources and Forestry
Ministre des Richesses Naturelles et des Forêts



1972 Aldershot Quarry Site Plan

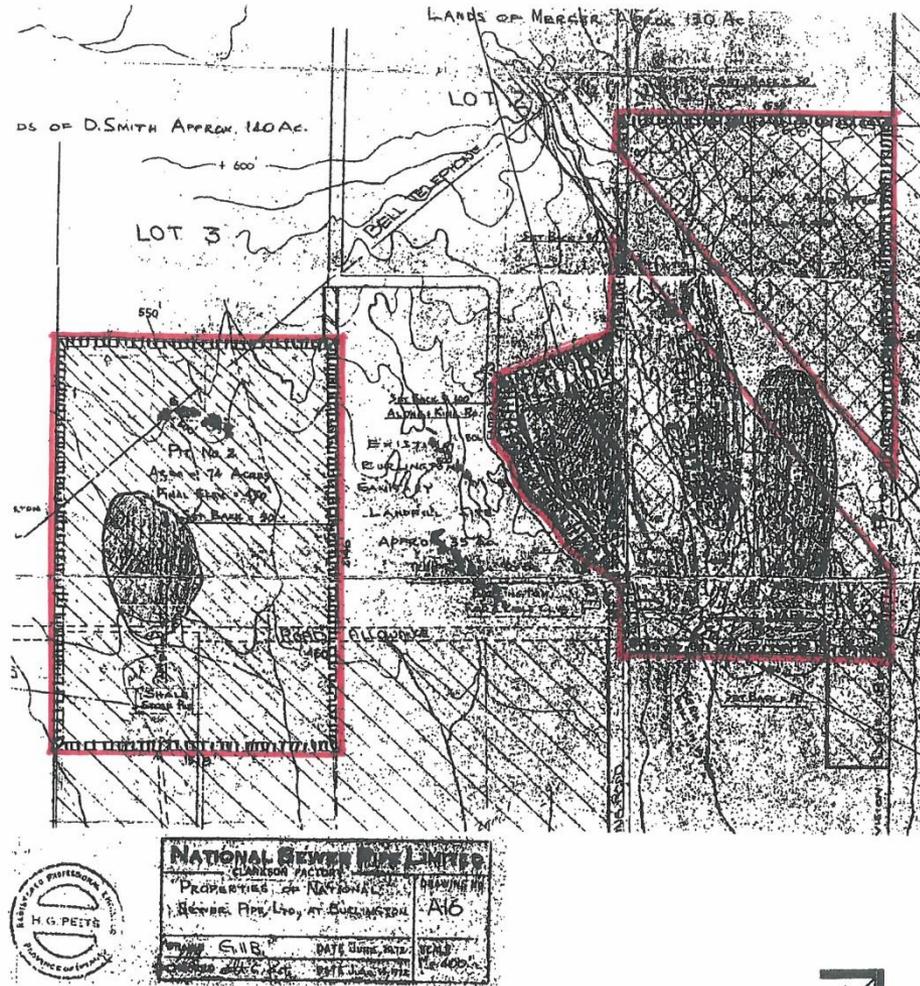
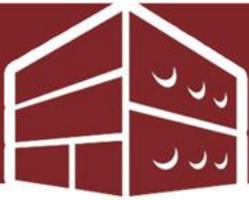


Figure 1
1972 SITE PLAN



Staging and Rehabilitation

- Jack Hewitt P Eng
- Meridian Brick
- Project and Environmental Manager

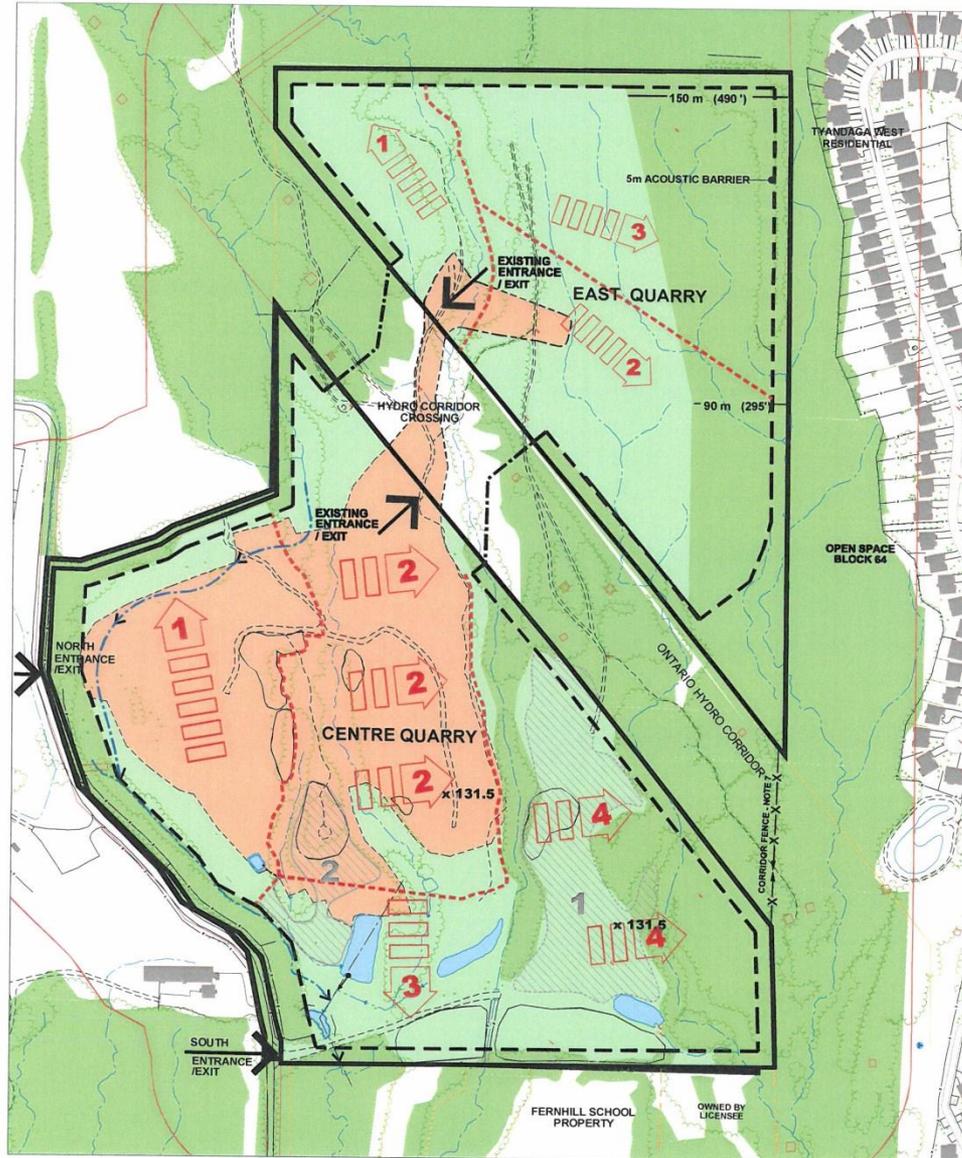


North Corner

- Excavation of the north corner will not take place until late in the site's life – approx. 15 to 20 years
- This setback will ensure approx. 150 metres in the north between our fence lines and the quarry (**an increase from 39 metres**)
- The entire site will be progressively rehabilitated and forested as the site is excavated



Stages of extraction – Year 1 to 5



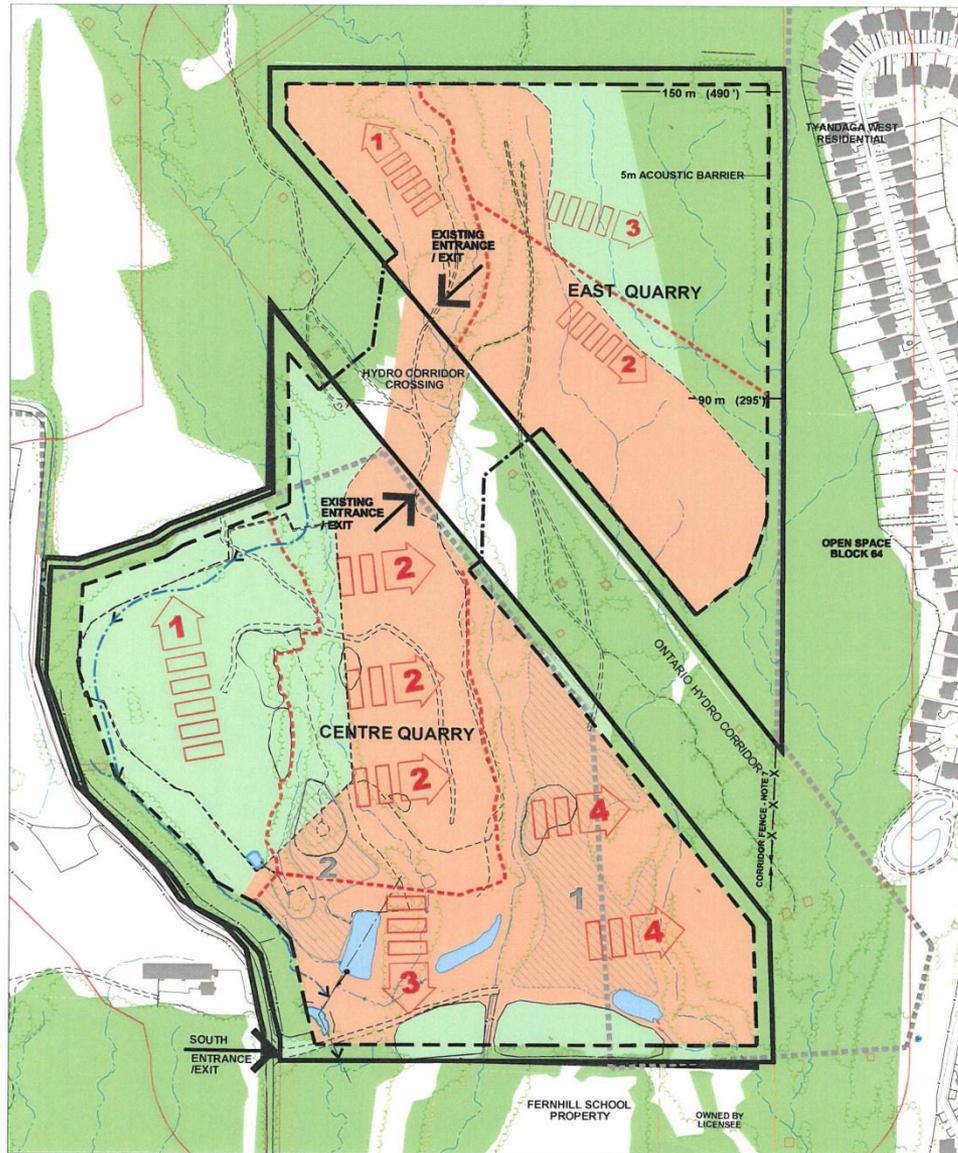
YEARS 1 - 5 STAGING CONCEPT

- CENTRE QUARRY STAGES 1 AND 2 EXCAVATION
- EAST QUARRY ACCESS CORRIDOR
- SARs MITIGATION PLAN & TRANSPLANTING
- EAST QUARRY TREE CLEARING AS TRANSPLANTING IS COMPLETED
- DASHED LINE IS THE REGULATED, 15 M WIDE EXCAVATION SETBACK
- MAINTAIN A 90 TO 150 M (490-295') WIDE BUFFER ALONG EAST BOUNDARY
- NORTH KING ROAD ENTRANCE FOR TRUCK ACCESS

- ACTIVE QUARRY OPERATIONS
- CLEARED & PROGRESSIVE REHABILITATION AREAS
- FORESTED, SETBACKS & FINAL REHABILITATED AREAS



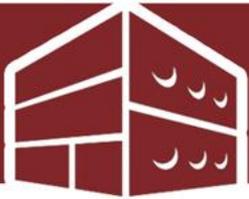
Stages of extraction – Years 6-15



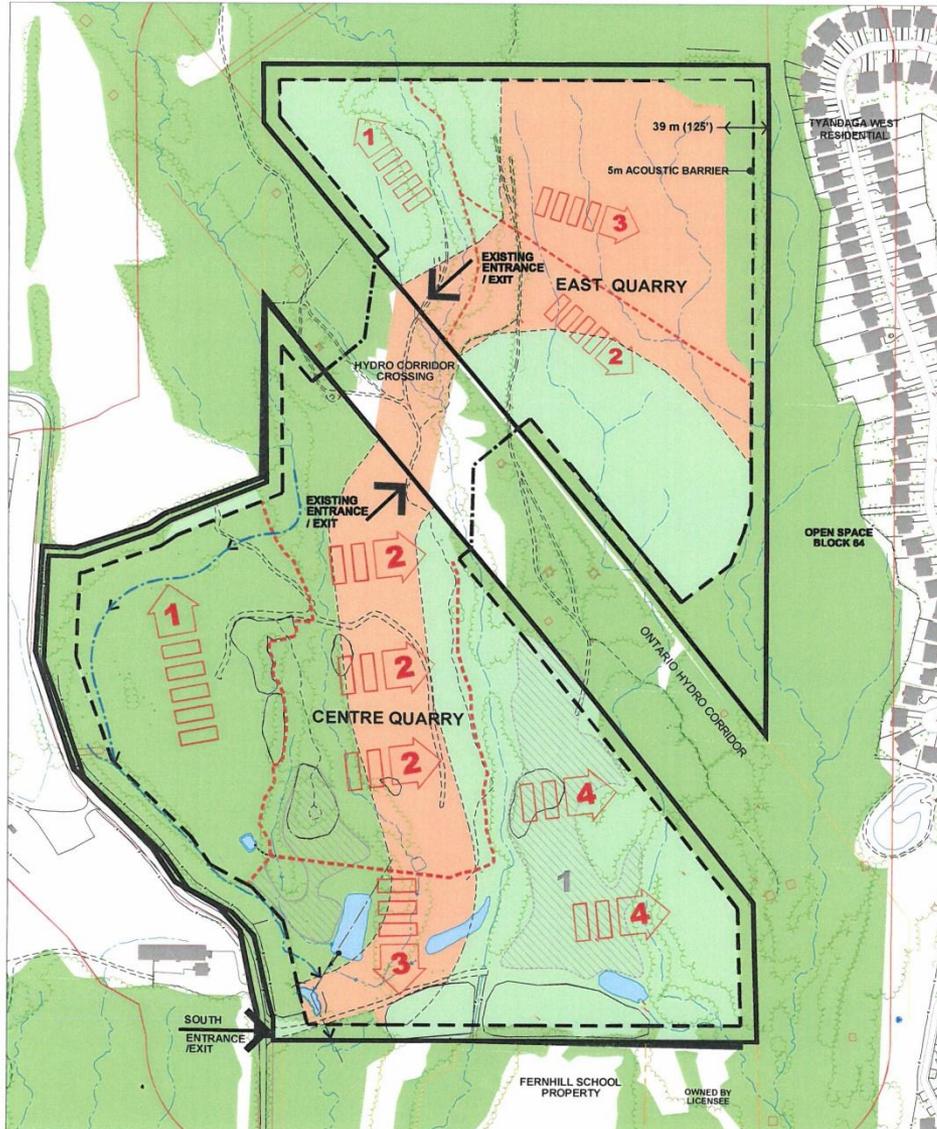
YEARS 6 - 15 STAGING CONCEPT

- CENTRE QUARRY STAGES 2 TO 4 EXCAVATION
- VIA SOUTH KING ROAD ENTRANCE
- EAST QUARRY STAGES 1 & 2 STRIPPING & SITE PREPARATION
- CENTRE QUARRY STAGES 1 & 2 PROGRESSIVE REHABILITATION
- EAST QUARRY STAGES 1 & 2 SHALE EXCAVATION
- CONTINUED SARs MITIGATION PLAN & TRANSPLANTING

-  ACTIVE QUARRY OPERATIONS
-  CLEARED & PROGRESSIVE REHABILITATION AREAS
-  FORESTED, SETBACKS & FINAL REHABILITATED AREAS



Stages of extraction – Year 16 to 25



YEARS 16 - 25 STAGING CONCEPT

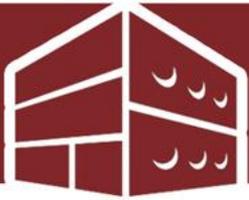
- EAST QUARRY BUFFER TREE CLEARING
- EAST QUARRY STAGE 3 STRIPPING & SITE PREPARATION
- EAST QUARRY STAGE 1 PROGRESSIVE REHABILITATION
- CENTRE QUARRY STAGES 3 & 4 PROGRESSIVE REHABILITATION
- EAST QUARRY STAGES 2 & 3 SHALE EXCAVATION
- SHIPPING VIA CENTRE QUARRY TO SOUTH KING ROAD ENTRANCE

-  ACTIVE QUARRY OPERATIONS
-  CLEARED & PROGRESSIVE REHABILITATION AREAS
-  FORESTED, SETBACKS & FINAL REHABILITATED AREAS



Progressive Rehabilitation





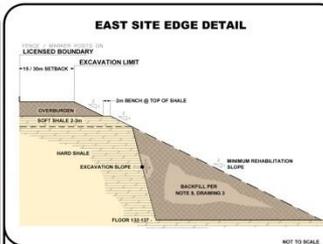
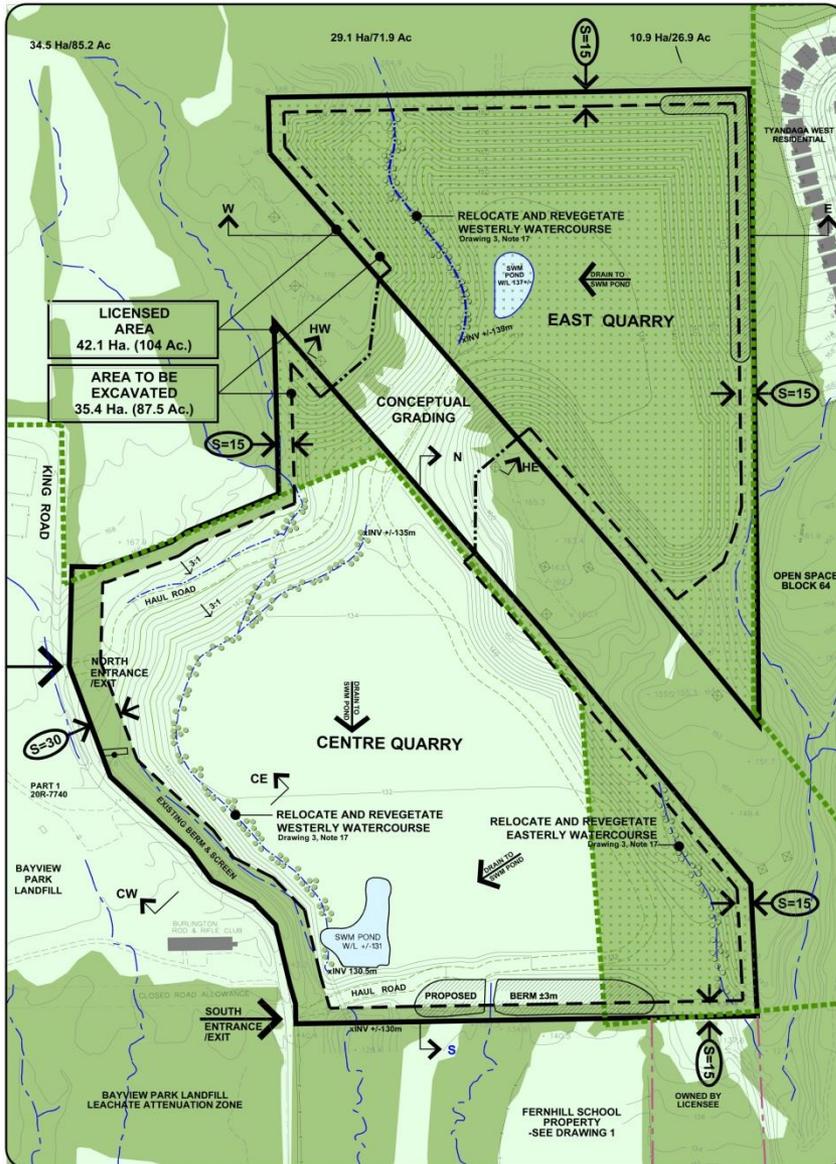
East Quarry – Rehabilitation Plan

	Area (ha)	Trees
East Quarry	13.5	21 600
Centre Quarry	4.7	7 520
Total	17.9	29 120

- East and centre Quarry will be rehabilitated to 100% forest cover at approximately 1600 trees per hectare
- Species for reforestation include: White Pine 30%, Red Oak 20%, White Oak 10%, Bur Oak 10%, Sugar Maple 10%, Basswood 5%, Shagbark Hickory 5%, Cottonwood 5%, Sycamore 5%



Rehabilitation Plan



GENERAL REHABILITATION NOTES:
GENERAL REHABILITATION NOTES 1 TO 10 FROM DRAWING 4 APPLY EQUALLY TO THIS SITE.

EAST SITE REHABILITATION PLAN NOTES:

1. THE WATERCOURSE DIVERSIONS ARE INTENDED TO CONVEY CLEAN RUNOFF FROM UPSTREAM TRIBUTARY AREAS AND REHABILITATED QUARRY SLOPES, BY-PASSING THE SWM PONDS, TO THE EXISTING OUTLET AT THE SOUTH ENTRANCE/EXIT.
2. REFER TO DRAWING 3 FOR PROGRESSIVE REHABILITATION DETAILS.
3. THE SITE PLAN VARIATIONS FROM THE OPERATIONAL STANDARDS, PROVIDED ON DRAWING 3, APPLY TO THIS DRAWING.

CENTRE QUARRY

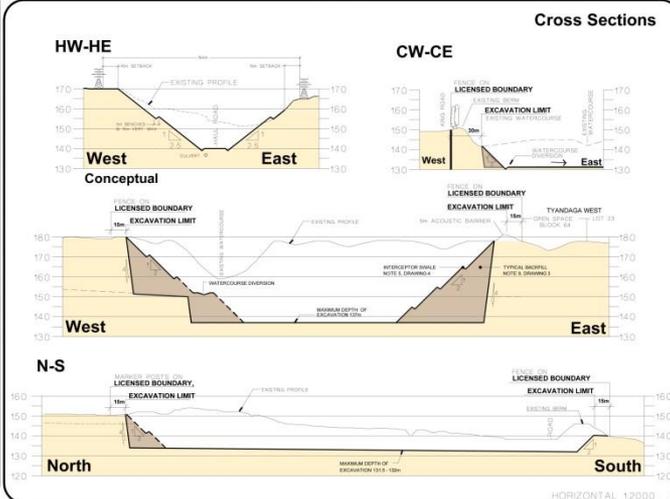
4. THE AREA TO BE REHABILITATED IS 21.9 HA, INCLUDING THE HYDRO CORRIDOR EXCAVATION SETBACK.
5. THE CENTRE QUARRY BERMS MAY BE REMOVED DURING SLOPE AND/OR FLOOR REHABILITATION.

EAST QUARRY

6. THE AREA TO BE REHABILITATED IS 13.5 HA, INCLUDING THE HYDRO CORRIDOR EXCAVATION SETBACK.
7. THE EAST QUARRY BERM AT TYNADAGA WEST MAY REMAIN IF OVERBURDEN & TOPSOIL NOT REQUIRED FOR 2:1 REHABILITATION.

GREENBELT PLAN AREA:
GREENBELT PLAN, Section 4.3.2.5

1. THE 4.7 Ha. AREA HIGHLIGHTED IN THE CENTRE QUARRY WILL BE REHABILITATED TO A 100% FOREST COVER & THE ENTIRE EAST QUARRY WILL BE REHABILITATED TO 100% FOREST COVER AT APPROXIMATELY 1,600 SEEDLINGS PER HECTARE.
2. SPECIES FOR REFORESTATION SHOULD INCLUDE: WHITE PINE 30%, RED OAK 20%, WHITE OAK 10%, SUGAR MAPLE 10%, BASSWOOD 5%, SHAGBARK HICKORY 5%, COTTONWOOD 5% & SYCAMORE 5%.
3. ALL WATERCOURSE DIVERSIONS AND REMAINING STORMWATER MANAGEMENT PONDS WILL BE REHABILITATED TO AQUATIC ENHANCEMENT, WHICH SHALL BE REPRESENTATIVE OF THE LOCAL NATURAL ECOSYSTEM.
4. PREPARATION OF THE PLANS FOR THE WATERCOURSE DIVERSIONS TO BE SUBMITTED FOR MNR APPROVAL, WILL INCLUDE A NATURALIZED PLANTING SCHEDULE.



Hanson
HEIDELBERG GROUP

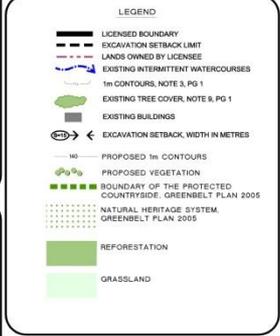
Hanson Brick Ltd.
5155 DUNDAS STREET WEST, BURLINGTON, ONTARIO

ALDRESHOT QUARRIES

Licence #5500

PART OF LOT 1, CONCESSION 1
PART OF LOTS 1 TO 3, CONCESSION 2
& PART OF THE CLOSED ROAD
ALLOWANCE BETWEEN CONCESSIONS 1 & 2
(Formerly East Flamborough Township)
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON

5 of 5 CENTRE & EAST SITE REHABILITATION PLAN



THIS SITE PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES IN CONJUNCTION WITH AN APPLICATION FOR A CLASS A LICENSE AND SITE PLAN AMENDMENT UNDER THE AGGREGATE RESOURCES ACT, 1997.

FILE: C:\BIA\SP\AMEND EAST_REHAB.dwg
DRAWN: T.M.L. (in Address)
CHECKED: R.J.L.
PLOTTED: 12 JULY 2010

AMENDMENT NO. 1

No.	DATE	DESCRIPTION	CHK'D

0 10 20 40 100m
1 : 2,000

LONG ENVIRONMENTAL CONSULTANTS INC.
ENVIRONMENTAL ENGINEERS & PLANNERS
Geographic Data

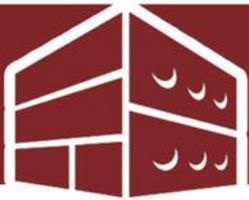


Tentative time lines

- 2017 summer – archaeological stage 2 test pit survey - continued salamander surveys - complete initial mitigation plan
- 2017 fall – construct lower part of access road - complete salamander assessment and mitigation plan – initial new jersey tea transplanting
- 2017/2018 winter – complete access corridor - initial tree clearing
- 2019 - 2023 – site preparation – stripping initial stage – initial rehabilitation of center quarry – SAR mitigation – begin east quarry shale excavation
- 2033 – 2038 – Stage 3 preparation and excavation



Questions ?

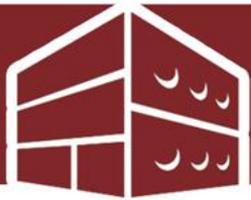


Additional Studies

- Meridian Brick has commissioned a number of updated and new studies as part of its pre-excavation due diligence:
 - **Air Quality and Human Health Assessment Studies**
 - **Species At Risk Mitigation Plan**
 - **Salamander Surveys**
 - **Stage 1 and 2 Archaeological Assessments**
 - **Noise Control Study**

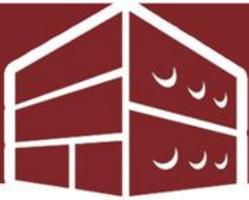


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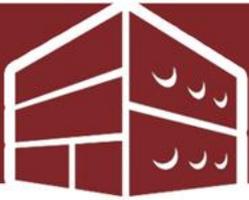
Emission Estimation and Human Health Study

- Aldershot Quarry – Emission Estimation and Dispersion Modelling conducted by Pinchin Ltd. – Ajay Madan
- SLHHRA – Screening Level Human Health Risk Assessment –
Dr. Glenn Ferguson – Intrinsik Corp.



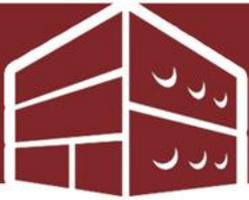
Ajay Madan – Pinchin Ltd

- Pinchin Ltd. Established in 1981, specializes in Environmental due diligence & Remediation, Occupational Health & Safety, Emissions Reduction and Compliance, Pollution Abatement
- Senior Project Engineer, Pinchin Ltd.
- 2002 – B.Eng. Chemical Engineering, McMaster University
- 2004 - Post Graduate Environmental Engineering Application, Conestoga College
- 13 years experience in environmental consulting preparing air quality assessments for Environmental Compliance Approvals (ECAs) and air quality studies.



Emission Estimation - Background

- An emission estimation and dispersion modelling assessment was completed to predict concentrations from the quarry on the surrounding community.
- The assessment captured operations at the Centre Quarry and the East Quarry.
- The assessment captured three scenarios based on three time periods:
 - A 5 year scenario (Centre Quarry only).
 - A 6 to 10 year scenario (Centre and East Quarry).
 - A 16 to 25 year scenario (East Quarry Only).



Emission estimation

Sources Assessed

The following sources were included in the assessment (at each quarry):

- Excavation of material from the quarry.
- Material delivery to storage piles by front-end loader.
- Material deliver to haul trucks.
- Road dust from haul trucks on unpaved haul routes.
- Wind erosion from piles.
- Road dust on King Road (paved) from haul trucks.

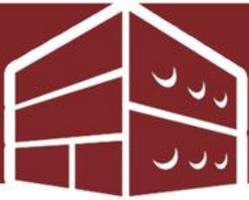
The most conservative assumptions were made (where applicable).



Emission Estimation

Airborne Particulate Matter Assessed

- The airborne particulate matter estimated in this assessment were:
 - Total Suspended Particulate (TSP)
 - Particulate Matter ≤ 10 micrometres (PM_{10})
 - Particulate Matter ≤ 2.5 micrometres ($PM_{2.5}$)
 - Crystalline Silica



Dispersion Modelling

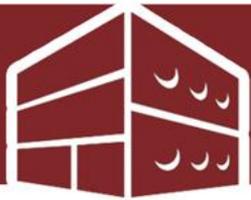
Methodology

- Site-specific Meteorological Data was developed for the site by the Ministry.
 - The data provided by the Ministry was based on actual meteorological weather from the year 2012 through 2016.
- Sources were modelled as being continuous during operating hours (7am to 4pm, Monday to Friday), with the exception of wind erosion from piles, which was assessed as occurring at all times.
- Predicted concentrations were found to be below their respective MOECC regulatory benchmarks for all receptors.
- Modelling results were forwarded to Intrinsik for its human health assessment.



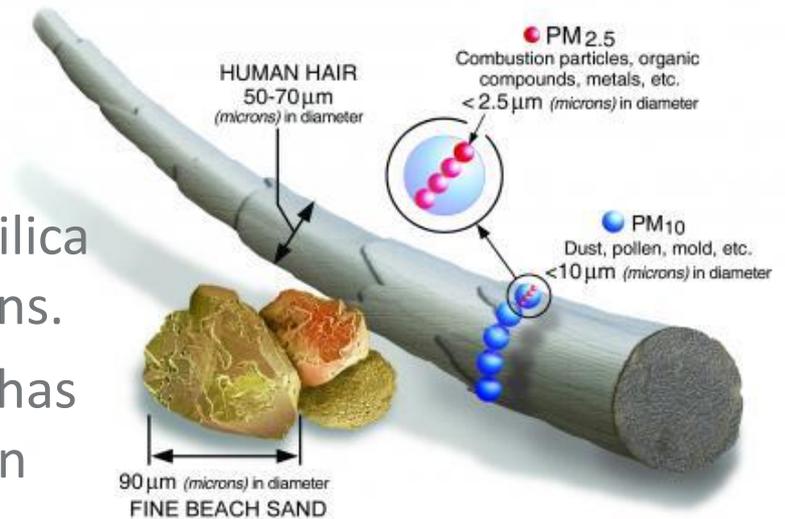
Dr. Glenn Ferguson - Intrinsic

- Intrinsic is one of Canada's leading science based, health risk consulting firms specializing in providing expert advise to a wide range of clients on toxicology issues related to human health, the environment and regulatory affairs
- Dr Glenn Ferguson is a Vice President and Senior Environmental Health Scientist for Intrinsic Group with more than 25 years of experience in areas of toxicology, epidemiology, human health and ecological risk assessment, and risk communication
- Glenn has a Ph.D. from University of Waterloo and is considered a Qualified Person – Risk Assessment (QP_{RA}) as defined by the Environmental Protection Act of Ontario. Glenn has been qualified as an expert witness on issues related to toxicology and risk assessment in both Ontario Court and the Ontario Municipal Board
- University of Waterloo: Adjunct Professor in the School for Public Health and Health Systems. Lectures on Environmental Toxicology and Public Health



Human Health Risk Assessment – Particulate Exposures

- Two of the key issues identified by community members has been the potential for health risks arising from exposure to airborne particulate and silica from the Meridian extraction operations.
- From a health point-of-view, research has shown that particulate matter less than $2.5\ \mu\text{m}$ (*i.e.*, respirable particulate) poses the greatest health risk.
- For the current assessment, $\text{PM}_{2.5}$ concentrations were compared to a 24-hour acute benchmark of $25\ \mu\text{g}/\text{m}^3$ established by the World Health Organization as the lowest levels at which health risks increase.
- Annual average $\text{PM}_{2.5}$ concentrations were compared to the chronic benchmark of $8.8\ \mu\text{g}/\text{m}^3$ established by CCME protective of health.





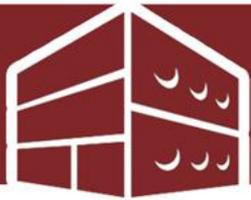
Human Health Risk Assessment– Particulate Exposures

- For the current assessment, $PM_{2.5}$ (*i.e.*, respirable particulate) concentrations were predicted at the 35 receptor locations within the surrounding community.
- Air concentrations were predicted based on both emissions from Meridian operations alone, as well as cumulatively (*i.e.*, Meridian-contributions on top of existing regional background concentrations) for two exposure scenarios:
 - Short-term 24-hour exposures
 - Long-term chronic exposures
- Air concentrations were also provided for each of the three stages of extraction for the proposed Meridian operations.
- These concentrations were then evaluated using appropriate health-based regulatory benchmarks.



Human Health Risk Assessment – Particulate Exposures

- **Conclusions on Particulate Assessment:**
- Emissions of particulate matter from Meridian operations represent a small fraction of the overall cumulative particulate concentration (*i.e.*, regional background sources dominate).
- Particulate concentrations emitted from Meridian sources alone are predicted to be significantly less than both acute and chronic health-based benchmarks, even under worst-case conditions.
- Furthermore, cumulative particulate concentrations (*i.e.*, regional background + Meridian) are predicted to be less than both the acute and chronic health-based benchmarks at all receptor locations, in each of the three proposed extraction phases of the Project.
- Potential health risks to individuals in the surrounding community related to particulate emissions from the proposed expansion are expected to be negligible.



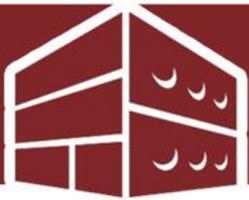
Human Health Risk Assessment– Silica Exposures

- Silica is an off-white granule that occurs naturally in various crystalline and amorphous forms.
- Crystalline silica is a basic component of soil, sand, granite, and many other minerals. Quartz is the most common form of crystalline silica, followed by cristobalite and tridymite being the other two forms. All three forms may become respirable size particles when industrial activities chip, cut, drill, or grind objects that contain crystalline silica.
- Silica is present in 255 industries, including mining, foundries, metallurgical operations, ceramics, cement, and glass industries, construction, sandblasting, agriculture, and denture manufacture.
- It is possible for silica to be emitted by Meridian operations, and as such have been evaluated in the current health assessment.



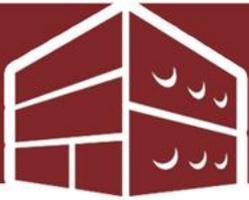
Human Health Risk Assessment – Silica Exposures

- Silica is emitted into ambient air from a variety of natural and man-made sources. The US EPA has indicated the range of background silica air concentrations in urban/suburban areas is 0.3 to 5 $\mu\text{g}/\text{m}^3$ with an average of 1.9 $\mu\text{g}/\text{m}^3$.
- Trace levels of silica can be identified in urban and suburban air as a fractional component of particulate emissions such as agricultural dust or from industries that use silica in their processes.
- Exposure to high concentrations of silica occurs primarily in *confined* workplaces (*e.g.*, hard rock mining).



Human Health Risk Assessment– Silica Exposures

- To evaluate the potential for health concerns from ambient silica concentrations, regulatory agencies have established a number of regulatory benchmarks.
- In Ontario, the Ontario Ministry of the Environment and Climate Change (MOECC) has a 24-hour Ambient Air Quality Criteria (AAQC) of $5 \mu\text{g}/\text{m}^3$.
- This AAQC was established to protect against long-term exposure to respirable silica leading to the potential for lung silicosis.
- The MOECC has projected a long-term number into a short-term 24-hour benchmark to ensure compliance as part of a facility's air quality approval permit.
- The $5 \mu\text{g}/\text{m}^3$ benchmark also includes a 10-fold safety factor.
- Therefore, potential silicosis risks would require frequent significant exceedances of the benchmark on a consistent and reoccurring basis.



Human Health Risk Assessment– Silica Exposures

- The California EPA has established a chronic annual average benchmark of $3 \mu\text{g}/\text{m}^3$.
- The Texas Commission on Environmental Quality (TCEQ) has also established a chronic annual average benchmark of $2 \mu\text{g}/\text{m}^3$.
- Thus, potential chronic risks to the nearby community surrounding the proposed Project arising from silica exposures can be estimated based on a comparison of the predicted worst-case annual average silica ambient concentrations to these benchmarks.



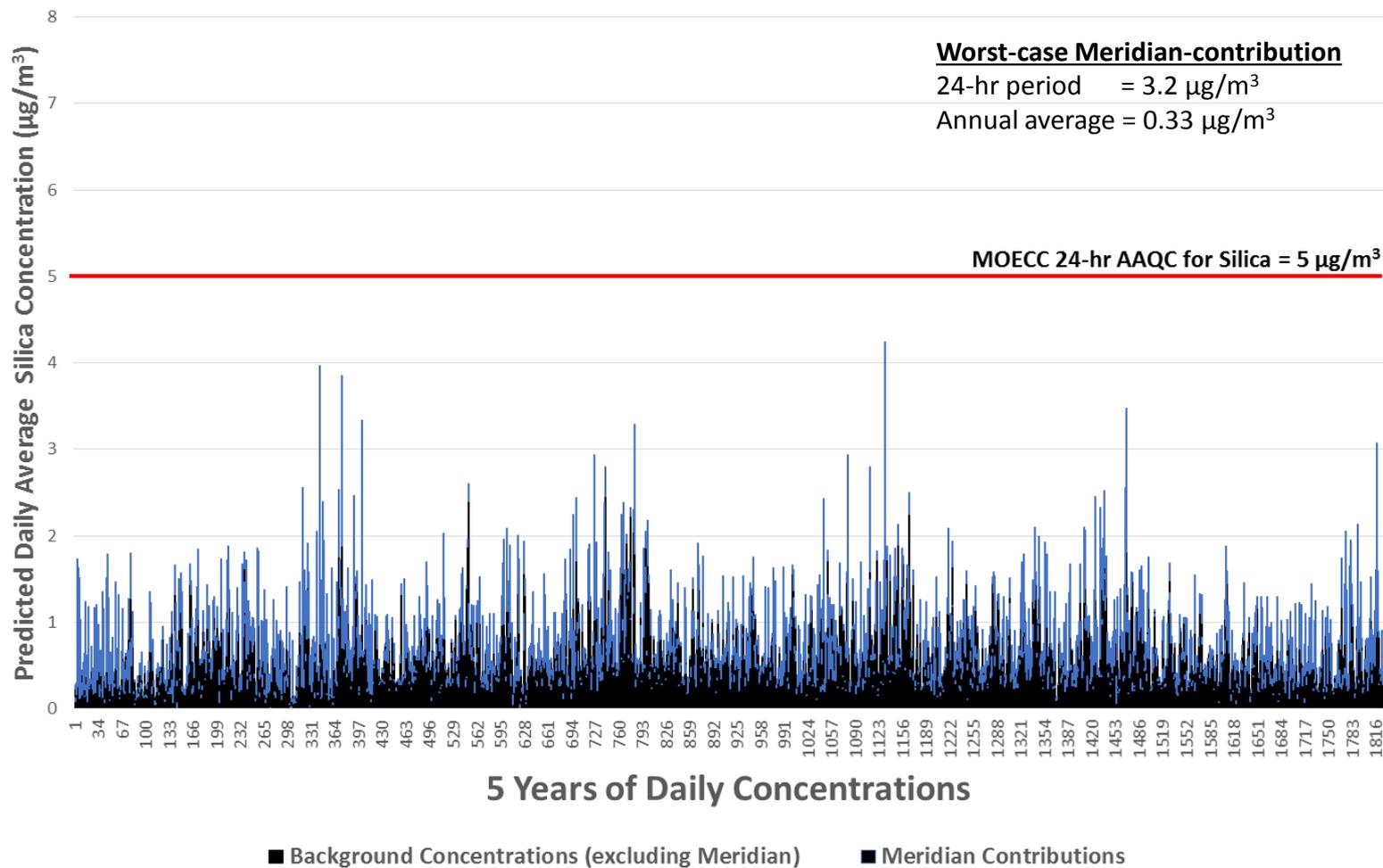
Human Health Risk Assessment – Silica Exposures

- Like the particulate assessment, silica concentrations (Meridian-alone and cumulative) were predicted at the 35 receptor locations within the surrounding community for both:
 - Short-term 24-hour exposures
 - Long-term exposures
- These concentrations were then evaluated using appropriate health-based regulatory benchmarks.
- The following two slides provide an example of the cumulative silica concentration prediction for five years of daily concentrations at one of the closest residential receptor locations for the third phase of the Project (*i.e.*, 16 to 25 year extraction stage scenario).



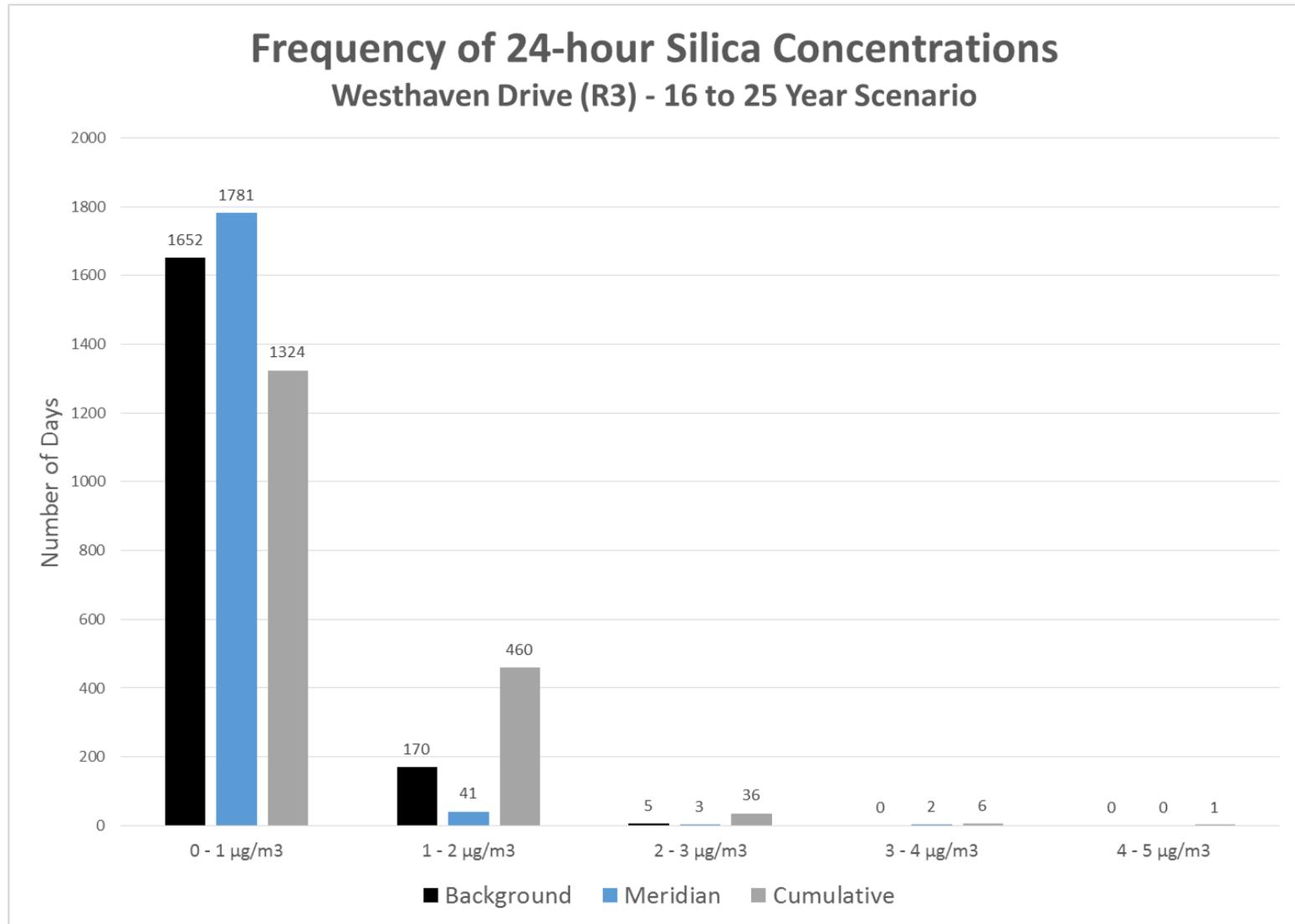
Human Health Risk Assessment – Silica Exposures

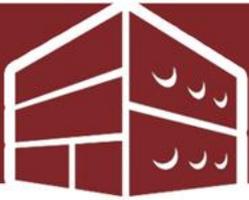
Predicted 24-hour Cumulative Silica Concentration Westhaven Drive (R3) - 16 to 25 Year Scenario





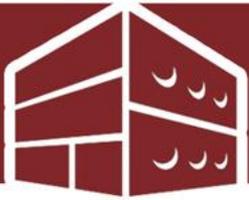
Human Health Risk Assessment – Silica Exposures





Human Health Risk Assessment– Silica Exposures

- **Conclusions on Silica exposures:**
 - Silica concentrations emitted from Meridian sources alone are predicted to be significantly less than both acute and chronic health-based benchmarks, even under worst-case conditions.
 - Furthermore, cumulative silica concentrations (*i.e.*, regional background + Meridian) are predicted to be less than both the acute and chronic health-based benchmarks at all receptor locations.
 - Potential health risks to individuals in the surrounding community related to silica emissions from the proposed expansion are expected to be negligible.
 - Routine air monitoring of particulate and silica concentrations are planned throughout all phases of the Project to demonstrate compliance with these health-based standards.



Species at Risk – Mitigation Plan

- Consultant - Plan B Natural Heritage
 - Species at Risk – Mitigation Plan
 - 2013-17



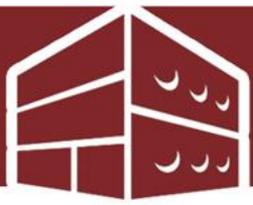
Species at Risk – Mitigation Plan

- **Species at risk which have been identified:**
 - **Mottled Duskywing Butterfly (Habitat is New Jersey Tea)**
 - **American Columbo**
 - **Eastern Flowering Dogwood**
- Registered activity under Ontario Regulation 242/08 under the Endangered Species Act – ID M-102-7113630826 - 2015
- Species at risk were identified in 2013
- Engaged ecologists 2013 to draw up Mitigation plan to protect species at risk; plan should be completed in 2017
- Mottled Duskywing Butterfly (pupa) with host New Jersey Tea plants will be transplanted to suitable areas on the site before tree clearing begins
- Eastern Flowering Dogwood will be replanted in appropriate areas on site. Some existing trees will be protected within the setback area
- American Columbo will be preserved in place with 60 m buffer



Species at risk - salamanders

- Jefferson Salamander, Allegheny Mountain Dusky Salamander and Northern Dusky Salamander are all listed as Endangered on the Species at Risk in Ontario (SARO) List – none of these species have been found on the quarry property to date
- In October 2016 MNRF circulated photographs taken earlier by one or more neighbours, including some photos that appear to be a Dusky Salamander. Red-backed Salamander and both Dusky Salamander species look similar to one another
- Plan B Natural Heritage retained Goodban Ecological Consulting Inc. (GEC) to conduct a salamander survey
- MNRF Permits to handle salamanders and take DNA samples were obtained
- GEC is working collaboratively with other salamander experts including Dr Jim Bogart



Salamander Survey

Red-backed Salamander



Allegheny Mountain Dusky Salamander





Salamander Survey

- Red-backed Salamander and Spotted Salamander have been found on or immediately adjacent to the property and they are fairly common in the local area – these two species are not listed on the SARO List



November 1, 2016 Field Survey



Headwater tributary



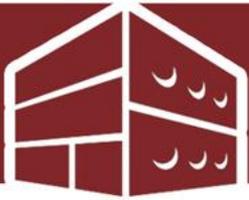
Spotted Salamander



Red-backed Salamander



Red-backed Salamander



Salamander Survey

- The initial survey took place on November 1, 2016
- A follow-up survey was completed on April 17, 2017
- Habitat conditions in the headwater tributary system appear to be suitable for Dusky Salamanders
- No Endangered salamander species were observed during the field surveys completed to date
- Further exhaustive field surveys are planned for the 2017 field season and continue until late September
- The ecological consultants are interested in receiving information on salamanders from the neighbours, in order to ensure that the 2017 surveys are as thorough as possible.



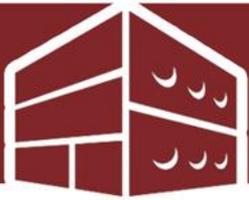
Archaeological Study

- Archaeological Services Inc. (ASI)
- Archaeological & Cultural Heritage Services
 - Stage 1 Archaeological Assessment of the
 - Aldershot East Quarry
 - Dec. 22, 2016



Archaeological Study

- Stage 1 Background assessment completed
- Stage 2 has been approved by Meridian and will be completed this summer



Noise Study

- Detailed Noise Control Study
- East Quarry, Aldershot Quarries
 - Sep. 9, 2016



Noise Study

Hazem Gidamy M.Eng., P.Eng.

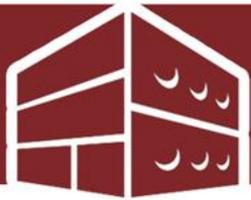
- Principal SS Wilson Associates Consulting Engineers for past 32 years
- Provided training on environmental noise to Burlington By-Law Enforcement and City Planning staff
- Previously Head of MOECC's Noise Assessment Section of 13 years





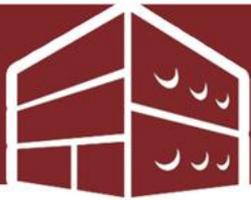
Noise Control Study

- Retained during 1990 by Jannock Properties, developer of proposed Tyandaga West subdivision
- Undertake noise assessment studies and recommend mitigation measures to ensure proposed residential development be compatible with Aldershot quarry



Recommended Mitigation Measures

- 4 m berm on east boundary
- Central air conditioning
- Building envelope materials to MOECC noise control standards
- Warning clause registered on title
- Measures approved by Region, City and MOECC



Meridian Brick retain SSWA in 2015

- Revisit previously approved noise study to reflect updated site plan and activities
- Address any potential changes to noise control policies
- Recommend any additional noise mitigation if warranted to further protect Westhaven Dr residents



2016 Operational noise control study

- Based on MOECC, MNRF and City of Burlington comprehensive noise standards
- Actual sound level readings taken for equipment in existing phase of quarry
- Detailed operational sound level modelling based on MOECC strict noise standards
- SSWA used the “predictable worst case operational scenario” for modelling
- For Tree clearing noise, SSWA undertook detailed **Voluntary** noise assessment



Noise Study

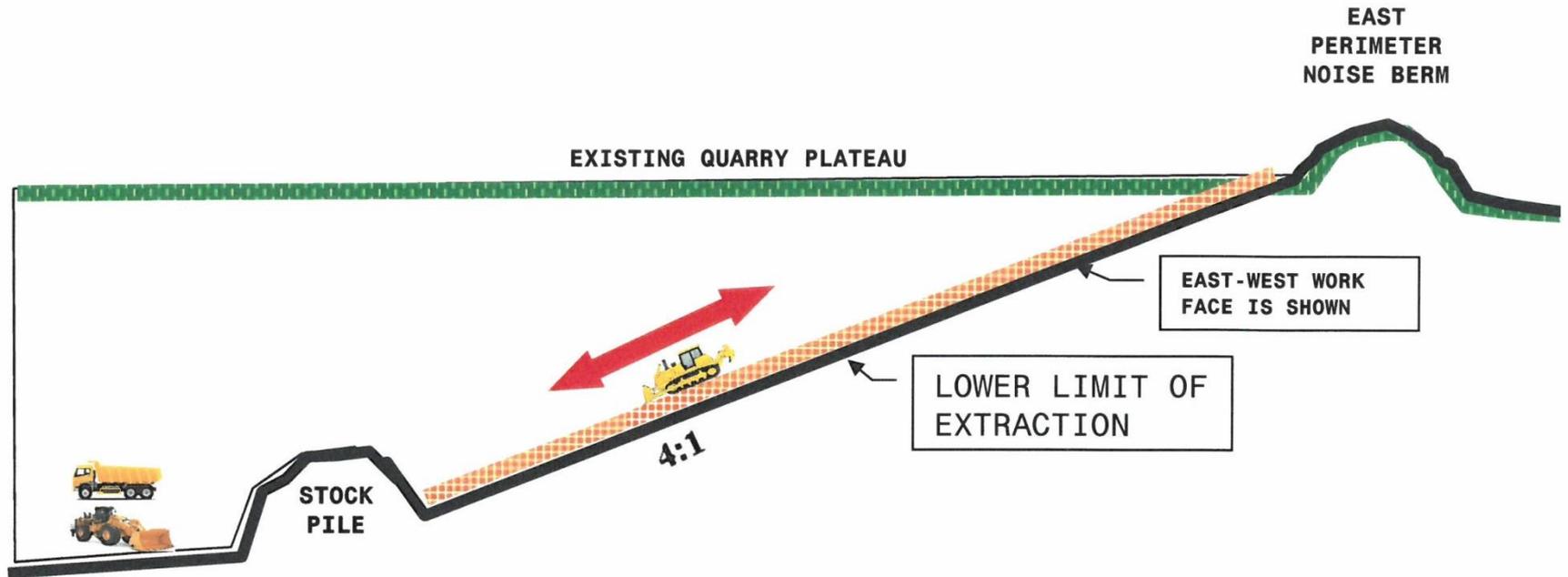
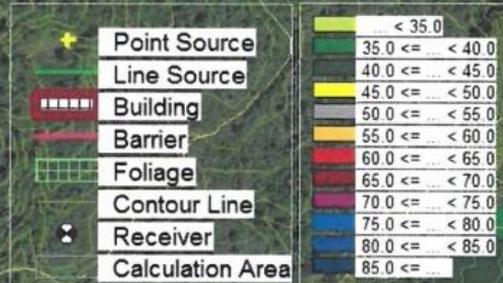


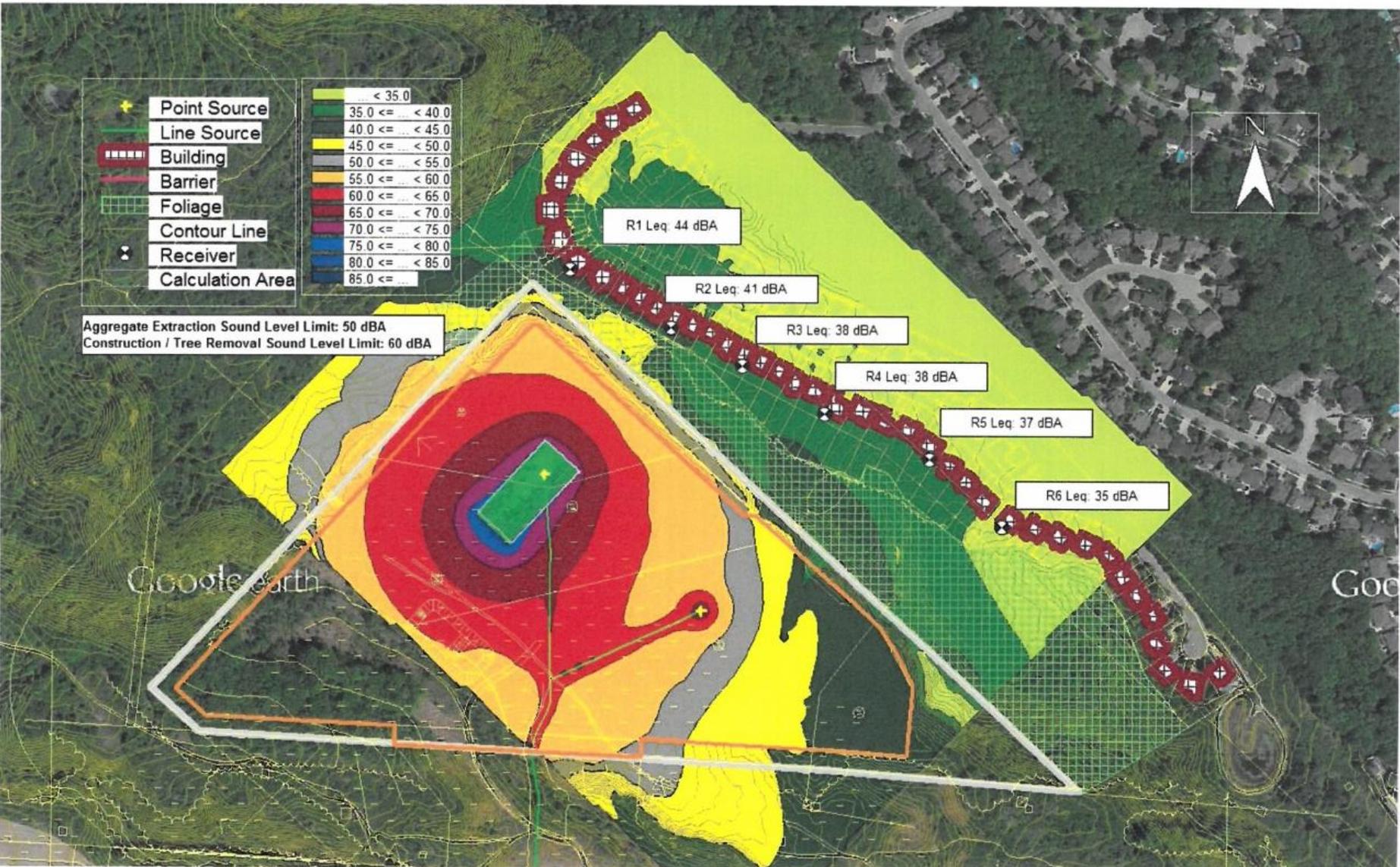
FIGURE 9
Typical & Conceptual Section through an East–West Work Face

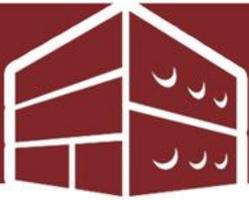


Stage 1 & 2 – Aggregate Extraction Operation



Aggregate Extraction Sound Level Limit: 50 dBA
Construction / Tree Removal Sound Level Limit: 60 dBA





Findings and Recommendations

- Predicted sound levels due to quarry extraction are in compliance with applicable strictest sound level criteria of MOECC
- Wind noise around trees south of existing homes is comparable to the extraction noise – wind noise levels in range of 40 – 50 dBA
- Existing 5m berm is adequate for existing and future control of aggregate extraction operation



Findings and Recommendations

- Tree removal activity (Stage 1) predicted not to exceed sound level criteria
- Tree removal and other associated activities shall comply with city of Burlington by-law; undertaken during winter, equipment fitted with mufflers



Berm from south end





Conifers on top of berm





Berm from north end



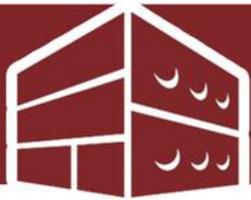


Natural foliage on berm





Questions



Thank you

- www.aldershotquarry.ca
- Next meeting – October 2017