Hanson Aggregates New York LLC

Honeoye Falls Quarry
Draft Environmental Impact Statement
October 16, 2015
Rev.1, February 9, 2016
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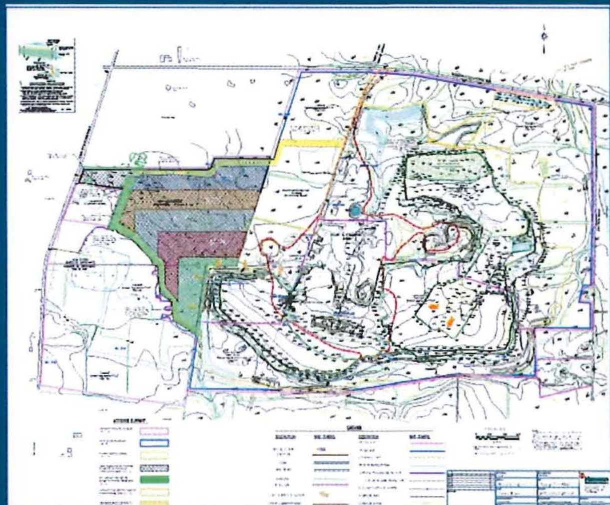

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DRAFT ENVIRONMENTAL IMPACT STATEMENT
HANSON AGGREGATES NEW YORK LLC HONEOYE FALLS QUARRY

PROJECT TITLE: Proposed Honeoye Falls Quarry Expansion

PROJECT LOCATION: 2049 Honeoye Falls No. 6 Road
Honeoye Falls, NY 14472

TOWNS: Rush and Avon

COUNTIES: Livingston and Monroe

LEAD AGENCY: New York State Department of Environmental Conservation (NYSDEC)

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DATE OF DEIS ACCEPTANCE: May 10, 2016

DATE OF PUBLIC HEARING: June 14, 2016; Avon Veterans' Hall, 6:00 p.m.

DEADLINE FOR ACCEPTANCE OF COMMENTS: June 30, 2016

NYSDEC NO. 8-9908-00113/00005 **MLR NO.** 80030

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FEBRUARY 9, 2016, Rev. 1

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TABLE OF CONTENTS

APPENDICIES

FIGURES

TABLES

1 INTRODUCTION

1.1 PROJECT DESCRIPTION

Hanson Aggregates New York LLC ("Hanson") proposes to add approximately 63.6 acres to the current life of mine at the Honeoye Falls Quarry. The Applicant, Hanson, prepared this Draft Environmental Impact Statement (DEIS) at the direction of the New York State Department of Environmental Conservation (NYSDEC) as the "Lead Agency" in compliance with Article 8 of the *Environmental Conservation Law,* also known as the New York State Environmental Quality Review Act (SEQRA), and its implementing regulations (6 NYCRR Part 617).

The mining permit application, with supporting documents, including an updated "Mined Land Use Plan," were submitted to NYSDEC on August 12, 2013. The application included an updated Mining Permit Application form, Organizational Report, Financial Surety, and list of other Hanson mines which are provided in Appendix I. Also included with in the application were updated Mining and Reclamation Maps (Appendix II), as well as an updated Full Environmental Assessment Form (EAF) (Appendix III).

On August 26, 2013, the NYSDEC issued a "Notice of Incomplete Application" (NOIA) based on a preliminary review of the application documents. Hanson addressed the items in the NOIA and submitted an updated application and supporting documents, including a revised "Sound Level and Attenuation Analysis," on November 25, 2013. The Towns of Rush and Avon were identified as "involved agencies." NYSDEC coordinated the SEQRA review with the Towns and assumed Lead Agency. On February 27, 2014, NYSDEC issued a SEQRA "Positive Declaration" of environmental significance and notice of intent to prepare a draft scope for the DEIS. In support of its determination of need for a DEIS, NYSDEC cited the following potential environmental impacts that it believed were not fully addressed in the initial application, as well as the additional detail provided in Hanson's response to the NOIA:

- Potential adverse impacts upon groundwater/surface water quantity and/or quality within the area.
- Potential noise, dust, and/or visual impacts from equipment and blasting.
- Potential adverse impacts on fine particulate matter emissions.
- Impacts upon agricultural districts in which the proposed project is located.

A public DEIS scoping meeting was held September 25, 2014 at the Avon Veteran's Hall, in East Avon, NY. Notices of the public meeting were published in the *Livingston County News,* and the Honeoye Falls *Sentinel* on September 11, 2014, as well as the NYSDEC's "Environmental Notice Bulletin" on September 10, 2014. Additionally, NYSDEC did not receive any public comments on the draft DEIS scope. No members of the public attended the scoping meeting. A copy of the official meeting transcript has been provided to the NYSDEC – Region 8 Division of Environmental Permits.

The Final DEIS Scoping Outline, dated November 4, 2014, identified the following areas of concern that may be impacted by the proposed project:

- Agricultural Districts and Agricultural Land
- Air Resources and Dust
- Blasting
- Noise
- Water Resources

The potential impacts above have been assessed further and are described in this DEIS.

1.2 Executive Summary

1.2.1 Background

Hanson Aggregates New York LLC (Hanson) currently operates a consolidated limestone quarry at 2049 Honeoye Falls No. 6 Road, Honeoye Falls, NY 14472, approximately 2 miles west of the Village of Honeoye Falls. Hanson proposes to add approximately 63.6 acres to the current approved life-of-mine at the Honeoye Falls Quarry. The proposed expansion is necessary to allow the facility to remain in business and continue to meet the local demands for construction aggregates. Hanson owns and leases approximately 594.6 acres of land at the site, which is located in both Monroe and Livingston Counties. Currently, approximately 429 acres of land have been permitted to mine by the New York State Department of Environmental Conservation (NYSDEC) since 1975. The quarry has been in operation since 1959. Hanson proposes to extend the limits of mining further into parcels of land it owns to the west of its currently permitted facility. To do so, Hanson has applied to the NYSDEC for a modification of its current Mined Land Reclamation permit.

High-quality stone reserves within the Honeoye Falls Quarry will be exhausted within the current life of mine in the near future. The stone below the Onondaga Formation is of an inferior quality and unacceptable for use as a New York State Department of Transportation approved crushed stone aggregate. Therefore, advancing further into the floor is not an acceptable alternative. The proposed project will allow for a continuation of the existing consolidated surface mining activity at the quarry.

No changes to the method of mining are proposed in this modification. No processing of aggregate will occur in the proposed expansion area. The processing plant will remain in its current location within the existing permitted area. Hanson will continue to use the entrance to the facility from Honeoye Falls No. 6 Road which has existed since the facility opened for mining in 1959. No increase in customer truck traffic will result since this modification is solely to ensure that the current operation can continue its business.

The area of proposed expansion is currently used primarily for agricultural purposes, with some areas containing wooded land. No houses or other structures are within the project area. Nearby land-uses are agricultural and residential. The expansion area is on the east side of Oak Openings Road, approximately 0.3 miles southeast of the intersection of Oak Openings Road and Honeoye Falls No. 6 Road. The project area is within both the Towns of Rush and Avon.

In conjunction with the preparation of the application, the following environmental aspects were considered and are further addressed in this DEIS.

1.2.2 Environmental Considerations

Air - No changes to the mining method, rate, or processing of material are proposed. Therefore, no changes to the ambient air quality are anticipated.

Archaeology – As required by the NYS Office of Parks, Recreation and Historic Preservation (OPRHP), Phase I and Phase II cultural resources surveys were completed within the proposed modification area. OPRHP issued a “No Impact” letter upon review of the archaeological studies.

Flora & Fauna – No rare, threatened, or endangered species or significant natural communities are known to be present at the site according to the NYSDEC Natural Heritage Program.

Mining - No changes to the method of mining are proposed in this modification. No processing of aggregate will occur in the proposed expansion area. The processing plant will remain in its current location within the permitted area. A phased mining progression is proposed for the new area.

Noise - A “Sound Level and Attenuation Analysis” indicated that there will be <3dBA (decibel) increase at the closest receptor to the proposed modification area. A worse-case scenario was used as the basis of the study.

Reclamation – No changes to the water-based reclamation plan are proposed other than the extension of the reclaimed area into the proposed modification area. As an enhancement, a “wetland development area” is proposed.

Traffic - No increase in customer truck traffic will result since this modification is solely to ensure that the current operation can continue its business. No increase in production will result from the modification. Hanson will continue to use the entrance to the facility from Honeoye Falls No. 6 Road which has existed since the facility opened for mining in 1959.

Water - No proposed changes to the current dewatering sump location or pumping rate are proposed or anticipated.

Water Resources – A hydrogeological consultant performed an assessment of potential groundwater impacts associated with the proposed modification. The conclusions from the study indicate that there will be no impact to residential wells as a result of the project. No streams or wetlands will be impacted as part of the project.

Visual – A visual impact assessment shows no significant impacts to nearby receptors. A perimeter berm and Eastern white pine trees (in select locations) will provide additional visual screening of the proposed project area.

The information presented in this document is submitted in compliance with the application requirements contained in Article 23, Title 27, of the New York State Environmental Conservation Law (ECL) and known as the Mined Land Reclamation Law (MLRL).

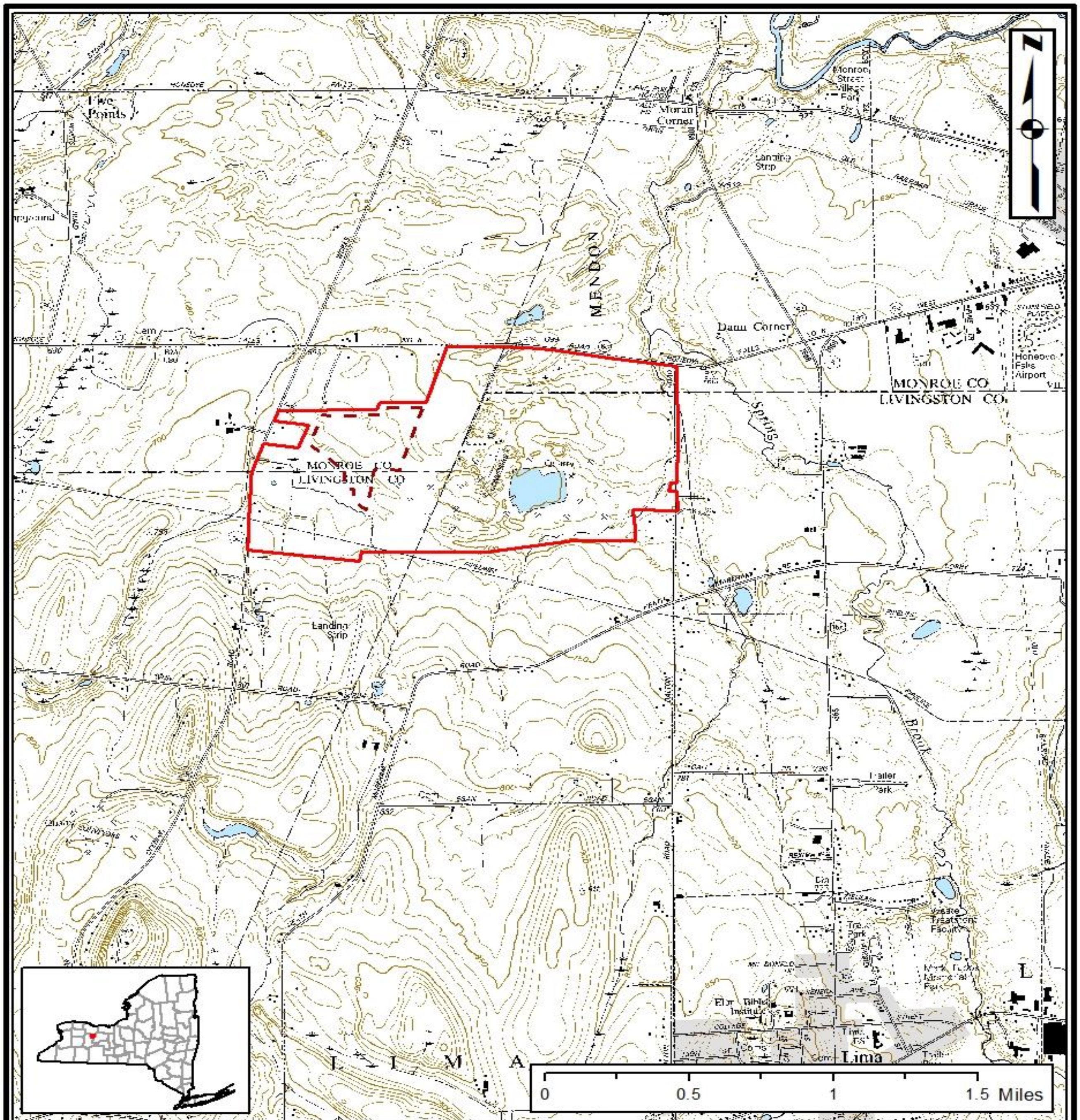
1.2.3 Location & Adjacent Land Use

The Hanson – Honeoye Falls Quarry site is located within the Towns of Avon, Lima, Mendon, and Rush, New York approximately two miles west of the Village of Honeoye Falls as shown on the Site Location Map (Figure #1). The proposed expansion area is within both the Towns of Rush and Avon, and in both Monroe and Livingston Counties. The town and county boundary lines are shown on the Mine Plan Map (Figure 2), Appendix II.

The currently permitted Honeoye Falls Quarry is located on the south side of Honeoye Falls No. 6 Road and east of Oak Openings Road, in the Counties of Livingston and Monroe.

The area of proposed expansion is currently used primarily for agricultural purposes, with some areas containing wooded land. The majority of the proposed area is within an agricultural district of Monroe County. No houses or other structures are within the project area. Nearby land-uses are mining, agriculture, woodland, and rural-residential.

The site is geographically located near the northern edge of the Allegheny Plateau physiographic province. The Helderberg Escarpment forms the northern and northeastern boundary of the plateau and is formed of erosion-resistant limestones and dolomites of the Helderberg Group and Onondaga Formation. The quarry site is located on the northern-most edge of this escarpment south of Rochester.



LEGEND

- – – Approximate excavation limit at end of mining (future)
- —— Approximate Hanson Property Boundary

Source:
-NYSDOT 7.5-minute topographic map (Honeoye Falls and Rush quadrangles)
-Contour interval is 10 feet.

ALPHA GEOSCIENCE
Proj. No. 11110

FIGURE 1
Site Location

Honeoye Falls Quarry Expansion
Hanson Aggregates NY, LLC
Livingston and Monroe Counties, NY

Path: Z:\projects\2011\11100-11120\11110 - Hanson Honeoye Expansion\GIS\Fig 1 - Site Location Map.mxd
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1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

The mining and construction materials industry in New York State makes an economic impact on the state's economy as great as 30,000 jobs, $1.3 billion in total payroll and about $100 million in public sector revenues[1]. Total sales for the industry are between $3.3 billion and $3.5 billion. The majority of mining in New York provides construction materials that are used to build and maintain the state's infrastructure. Mine operations such as the Honeoye Falls operation are essential in supplying aggregates for three critical project resources: a) hot mixed asphalt (HMA), b) ready mix concrete (RMC), and c) crushed stone. The Center for Government Research performed an economic and fiscal study of the mining industry at the request of the NYS Geological Survey. A copy of their study, "The Economic Impact of New York State Mining and Construction Materials Industry" (October, 2011) is included in Appendix IV.

Mining operations such as the Honeoye Falls plant, literally provide the "building blocks" for nearly all types of construction projects (e.g., black-top roads, parking lots, and driveways; concrete sidewalks; building foundations; bridges; commercial and public construction projects; drainage control; etc.) Almost all of the limestone mined at the Honeoye Falls plant is used to supply such infrastructure projects within a 20 mile radius. Thus, if the existing quarry were to be closed, these materials would have to be trucked in from greater distances, driving up the cost or, a new mine would need to be opened up on a pristine site. Both of these alternatives would have significant local and regional environmental impacts.

The costs of construction aggregates are heavily determined by transportation and handling. Because it is a low unit-value product, aggregates cannot be cost-effectively transported very far from where it is produced. The proposed project area, contains thousands of tons of high-quality stone that can be processed into construction aggregates for use in local infrastructure and commercial, industrial, and residential projects. If the Honeoye Falls Quarry was closed down, there would be a financial burden upon the community since aggregates would need to be trucked in from farther away. This would increase the per ton cost, as well as consume more fossil fuels.

The existing quarry has been at its current location providing a benefit to the community for more than 50 years. Keeping the current quarry open would have inherently fewer environmental impacts as compared to starting an entirely new quarry at an undisturbed location where a mining operation does not currently exist.

1.3.1 Mining and Aggregate Planning

Stone is found everywhere around the globe. High quality stone that meets today's stringent transportation and building requirements, however, is mined from deposits that must be of very high quality, located near the surface, and located near a sustainable market to be economically viable. The stone mined at the Honeoye Falls Quarry, as well as that within the proposed additional area, meets these requirements. Economically obtainable deposits do not exist in every Town nor do they recognize political boundaries. Therefore, reserves at the Honeoye Falls Quarry are an important resource for the nearby communities. Unlike other businesses in New York, including agriculture, the demand for these products remains consistent. These products include: various crushed limestone aggregates and the stone used to make black-top (92-95% stone) and ready-mix concrete (80% stone).

[1] *The Economic Impact of the New York State Mining and Construction Materials Industry – Report,* New York State Geological Survey/New York State Museum, Rochelle L. Rugger, Ph.D. and Kent Gardner, Ph.D., October 2011.

There are several important facts about mining[2]:

- There are no substitutes for natural aggregate. Sand, gravel, and stone cannot be replaced by another material. Concrete and asphalt pavement ("black top") each contain natural aggregate.
- Aggregate resources are recyclable but are nonrenewable.
- Mines can only be located where suitable resources exist.
- Resources were placed by nature, and seldom correspond with man-made features such as zoning lines.
- Areas of the state have few aggregate deposits of suitable quality; other areas are running out of these resources. Still other areas have sufficient quantities to supply regional needs, but the reserves may not be properly zoned.
- Little planning is being done to ensure future generations will have adequate supplies of construction materials.
- The number of mines has decreased significantly in the last decade. Mines are being depleted and not replaced while demand continues to increase. The decrease in the number of mines is also attributable to difficulty in permitting, lack of suitable resources and the failure to identify and preserve valuable deposits for future use.
- Current land development practices lead to "resource sterilization," as buildings/infrastructure effectively preclude access to mineral resources.
- The cost of importing these resources from more distant sources is dramatic: hauling aggregate 20 miles doubles the cost to the consumer. This does not include the additional hidden costs and environmental impacts associated with increased traffic.
- Areas experiencing aggregate shortages pay approximately 2 to 3 times the normal price for aggregates.
- Approximately 10 tons of construction materials are consumed per person annually in New York. Highway departments, major consumers of aggregates, typically account for the largest line item in a rural community's budget.
- Increased costs of construction materials will inevitably lead to increased taxes or reduced services. Failure to adequately maintain the infrastructure will affect the public's health, safety and welfare and affect business investment in New York.

In addition to the above facts about the importance of maintaining local supplies of aggregates mentioned above, the National Stone, Sand, and Gravel Association (NSSGA) has conducted studies of the importance of the aggregate industry on the U.S. economy. Some notable findings of the NSSGA's analyses are summarized below:

Importance of Aggregates on a National Level

- For every dollar of output in the aggregates industry, an additional $1.58 is generated in the U.S. economy.
- For each one million dollars in output produced by the aggregates industry, 19.5 jobs are created.
- The aggregates industry contributed $14.59 billion in direct output to the U.S. economy in 2002. When indirect benefits are added to the direct output, the industry contributes $37.6 billion to the gross domestic product (GDP) and supports 284,090 jobs in all sectors of the economy with personal earnings totaling $10.74 billion.
- Over the past 30 years, there has been a 30% increase in the nation's population, a 64% increase in the number of licensed drivers, and a 125% increase in the number of vehicle miles traveled. However, there has only been a 6% increase in highway capacity.

[2] *New York Construction Materials Association Position Paper On Aggregate Planning,* January 2010.

- An estimated 38,000 tons of aggregates are necessary to construct one lane-mile of a four-lane interstate highway.
- Construction of an average modern home requires about 400 tons of aggregates.
- 15,000 tons of aggregates are required for the construction of an average size school or hospital.
- About 1% or less of the construction aggregates used annually in the U.S. is imported.
- During the past 60 years, the production of aggregates has more than quadrupled. Additionally, the per capita consumption has increased from 3.5 tons per year to 10 tons annually.
- The production of crushed stone, sand and gravel in the U.S. went from about 200 million tons in 1940 to approximately 2.74 billion tons in 2001.

1.4 BENEFICIAL IMPACTS

1.4.1 Economical Long-Term Source of Quality Construction Aggregates

Maintaining the existing quarry operation by expanding into the proposed area will ensure that a high-quality construction aggregate source is available for the local municipalities and community for many years to come. It is noted that the four townships of Avon, Mendon, Lima, and Rush, in which the current quarry is situated, are all customers of the quarry. This is also true of both Monroe and Livingston Counties. Since shipment of aggregates by truck is the predominant means of transportation for crushed stone, the local community will benefit financially from continuing to have a nearby source of construction aggregates. As previously mentioned, the cost of importing these resources from more distant sources is dramatic: hauling aggregate 20 miles doubles the cost to the consumer. This does not include the additional hidden costs and environmental impacts associated with increased traffic.

In terms of maintaining a source of high-quality aggregate such as the “friction stone” that is required to meet DOT quality specifications for most state and some local municipal road construction projects, the Honeoye Falls Quarry is a vital resource. The non-carbonate “friction stone” at the Honeoye Falls Quarry, including the deposits within the proposed expansion area, is used in the hot-mix asphalt or “black top” that surfaces the roads and highways of the surrounding area. This black-top, contains the required amount of “friction stone” that is durable enough and has the friction properties specified by the New York State DOT to prevent vehicles from skidding. The Honeoye Falls Quarry produces approximately one million tons of friction stone annually that are used at the two hot-mix asphalt (HMA) plants that are also located at the quarry property.

With the current price of fuel, the cost to haul crushed stone is approximately 30 cents per ton-mile (i.e., one ton of freight carried one mile, as a unit of traffic) and about 45 cents per ton-mile for black top. In general, the price approximately doubles at hauling distances greater than 20-30 miles. If the Honeoye Falls Quarry were to close, the next closest existing quarry with high “friction stone” is approximately 25 miles away. This would have a significant negative financial impact on the nearby communities that the quarry currently serves. The cost to transport crushed stone further distances would just be one negative economic effect of not having the existing quarry. Since all of the stone supplied to the hot-mix asphalt plant, which is also operated by Hanson at the quarry site, is provided by the quarry, the hot-mix asphalt plant would also close and leave no local source of hot-mix asphalt for paving projects. For example, the transportation cost of a typical 6-mile road re-surfacing project, located 5 miles from the Honeoye Falls Quarry, would be approximately \$30,000-\$35,000. Whereas, the transportation costs for the black-top to be trucked in from 30 miles away would be approximately \$190,000-\$200,000.

1.4.2 Local Economic Benefits

The economic impact of Hanson's Honeoye Falls plant was evaluated by faculty at Trinity University (San Antonio, TX), who has partnered with the National Stone, Sand & Gravel Association (NSSGA) to provide economic analyses services to the aggregates industry. A copy of their full report is provided in Appendix IV. A summary of the Trinity University economic impact report is provided below.

According to the Trinity University report, the total impact of the Hanson Aggregates Honeoye Falls plant on the local area economy is substantial. In 2009, Trinity estimated that the economic contribution totaled approximately $23.3 million. To put this amount into perspective, it is about $8,805 for each of the 2,647 residents of Honeoye Falls and over $29 for each of the nearly 800,000 residents residing in both Monroe and Livingston counties.

Since a portion of Hanson's products are sold to customers outside the two counties, some of its income is what regional economists call "export sales." In other words, when Hanson sells to an out-of-town customer, it brings new money into the region. This new money circulates many times in the local economy, so that the company's impact is much greater than its revenues alone might indicate.

Additionally, to produce its product, Hanson employs approximately 30 local residents at good wages. Its total payroll for 2009 was nearly $1,774,000. Also, Hanson purchases significant amounts of goods and services from local businesses large and small.

Hanson's employees and suppliers spend a large share of their income received from Hanson on other local goods and services. These businesses then help provide jobs for local residents and income for their own suppliers. These individuals and businesses in turn spend a large share of what they earn locally. Thus, there are many citizens in Monroe and Livingston counties who do not work at Hanson but whose livelihood benefits from the company's presence in the community.

The Trinity University study concluded that Hanson's Honeoye Falls plant is an important part of the local economy. Beyond its direct economic impact, it has indirect effects on employment, local small businesses, and the tax revenues of local municipalities that reach far beyond what it pays to its employees and suppliers.

1.4.3 Creation of Recreational and Visual Resources/Wildlife Habitat

Residential development of the proposed project area would render a valuable, economic source of high-quality construction aggregates unavailable to the local community. Additionally, the parcel would never be available as open space. The project will allow for consumption of the resource and ultimately, create permanent open space and a recreational resource for the community. The Reclamation Plan for the Honeoye Falls Quarry calls for the creation of a lake which will serve as a recreational and visual resource, as well as provide wildlife habitat.

1.4.4 Growth Inducement

A local economic supply of quality construction aggregates positively fosters development and infrastructure maintenance within a community. A healthy industrial base within a community creates opportunities for the area in terms of jobs and financial soundness. Growth associated with the project is not anticipated to be measureable since the main objective of the project is to keep the existing quarry in operation into the future. Most growth associated with the proposed expansion will be realized indirectly from the continued ability to provide a local source of economical, high-quality, DOT-approved aggregate which supports a sound infrastructure and promotes construction. A local supply of high-quality crushed stone aggregates is a continuous need and a positive factor in a community's development. Indirectly, the proposed project would allow for growth within the community by providing the necessary construction aggregates for use in residential, commercial, and industrial development in the region. Additionally, since the source of these aggregates would be kept local, repair and maintenance of area roads and associated transportation costs would be kept to a minimum.

The surrounding communities will receive a financial benefit from the continued operation of the Hanson – Honeoye Falls Quarry, as they provide many goods and services to the quarry.

1.5 ALTERNATIVES CONSIDERED

Alternatives to the proposed project are discussed below. As identified in the final scope document, the alternatives considered are:

1.5.1 No Action

If there is no action taken on this project, the need for high-quality construction aggregates would still remain. There will always be a demand for this commodity. No action with regard to this project would result in a failure to economically satisfy the market demand for NYSDOT-specification crushed stone aggregates. As mentioned in Section 1.3.1, high quality stone that meets today's stringent transportation and building requirements must be mined from deposits of very high quality, located near the surface, and located near a sustainable market to be economically viable. The stone mined at the Honeoye Falls Quarry, as well as that within the proposed additional area, meets these requirements. Economically obtainable deposits do not exist in every town nor do they recognize political boundaries. Therefore, reserves at the Honeoye Falls Quarry are an important resource for the nearby communities. If no action is taken, these high-quality reserves will be wasted and would need to be obtained from somewhere else such as a new quarry where one does not currently exist. As existing resources are depleted, new deposits will be opened. These new areas will be subjected to same environmental impacts associated with the proposed project area; however, the effects may be greater than those associated with the Hanson site since it is likely that a new mine would need to be opened on land where a mine does not currently exist. As previously mentioned, the current site has been home to a quarry for more than one-half century.

Local residents and businesses will have to pay more to obtain construction materials from more distant sources. This will result in greater consumption of fuel, increased wear of highways and roads, and higher aggregate costs. It is likely that in addition to the increased costs due to the need to import aggregates from greater distances, prices for crushed stone and hot-mix asphalt will also increase due to the loss of competition in that there would be one less producer as an option for the local community. This will also cause municipal taxes to rise to cover the costs of increased transportation prices for infrastructure and construction projects. Additionally, the sales tax revenues from non-municipal customers would be lost.

If no action on the proposed project was taken, it would ultimately result in the loss of 30 jobs and also have a financial impact upon the local businesses which the existing quarry operations support (refer to Section 1.4.2, "Local Economic Benefits"). Additionally, Hanson has been paying taxes on the property in anticipation of economic return and would need to continue to pay taxes without realizing anticipated benefits. Hanson could alternatively sell the property to another entity for other uses which could have significant environmental impacts. Eventually, if the existing operation is not permitted to develop the aggregate resources within the proposed project area, all economic activity associated with mining the site would be lost, and Hanson would cease as a business in Honeoye Falls once the current site is depleted.

The current Hanson operation pays nearly $500,000 in sales tax to Livingston and Monroe Counties per year. If the quarry fails to remain in business, the counties would lose this revenue.

1.5.2 Alternative Sites

The current proposed expansion area offers the best opportunity for the stone resources to be mined with the least impact to natural and human resources within the community. The proposed expansion area is the only land that Hanson Aggregates owns that is adjacent or within close proximity to the existing quarry. As shown in Figure 2, Mine Plan Map, the proposed modification area abuts the existing western border of the current life-of-mine boundary. Therefore, the proposed project would merely extend the western boundary of the life-of-mine into property owned by Hanson. Any other alternate site would not be contiguous to the current quarry operation. Thus, an alternate site would be more impactful upon the environment and local community since it would be located in an area where mining is not currently performed. The existing quarry has been operated in its current location since 1959 so the proposed expansion is consistent with the historical land use in the area. It is noted that the current Honeoye Falls Quarry has a valid mining permit. Thus, the proposed project is a logical continuation of this permitted activity.

As stated in Section 1.3.1 (Mining and Aggregate Planning), mines must be located where the quality stone reserves are situated. Such quality stone reserves that are economically accessible do not exist everywhere in the area. The proposed expansion area contains high-friction stone reserves that meet NYSDOT friction standards.

The current mine property is bounded by Honeoye Falls No. 6 Road to the north, and Dalton Road to the east. Any expansion to the north or east would not be contiguous with the current quarry operation. Hanson Aggregates does not own lands to the north or east of the current mine. Therefore, the presence and quality of the stone reserves, if any, to the north and east are unknown by the applicant. Expansion to the north and east would require a separate entrance/exit, would require conveying over the road, or tunneling under the road. The proposed expansion site requires no additional impact upon traffic or roadways.

Hanson Aggregates does not own the adjacent lands to the south of its current mine property. Therefore, the presence and quality of the stone reserves, if any, to the south are unknown. There is an underground gas pipeline, as well as an intermittent tributary, that parallel the site to the south. Expanding into lands to the south, if they were for sale, would require the relocation of both the underground gas line and intermittent tributary, creating many additional environmental impacts.

There are no known inactive or active quarries possessing high-quality limestone reserves within a 50-mile radius of the proposed expansion area are for sale.

1.5.3 Alternative Size

Hanson Aggregates owns approximately 100-acres directly south of the proposed 63.6-acre expansion area. Hanson considered including this land in its proposed expansion area which would have made the project area a 163.6-acre site. Hanson decided to reduce the size of the proposed expansion, however, due to the presence of a wetland, intermittent stream, and underground gas pipeline that are all located on the land to the south of the modification area.

Alternative project size determines the duration at which the mine operates in one location. The larger the area permitted for mining, the longer the quarry can operate. As mentioned above, Hanson Aggregates considered a much larger project area than is currently proposed but, chose to reduce the size of the project by approximately 60-percent due to the potential environmental and infrastructure impacts associated with mining in the adjacent area owned by Hanson to the south of the proposed expansion area.

Decreasing the size of the proposed project any further would not significantly reduce any potential impacts created by the proposed project. Many of the potential environmental impacts associated with the project such as air, noise, and blasting, are not associated with project size. These potential impacts are determined by market demand and will occur regardless of the size of the project. Reducing the project size any further will not significantly reduce any potential impacts and would hinder the applicant's ability to balance the cost of development and production along with the loss of additional saleable reserves.

1.5.4 Alternative Design and Technology

The primary alternative design would be to expand deeper into the floor of the existing quarry. This alternative, however, is not viable since the underlying stone below the Onondaga Formation is of an inferior quality and unacceptable for use as a New York State Department of Transportation approved crushed stone aggregate. Therefore, advancing further into the floor is not an acceptable alternative.

The proposed action is only to be able to access additional stone reserves. No changes to the processing equipment, nor its location, are being proposed. With regard to technology, there are no economically viable alternatives to the conventional drill and blast mining methods currently employed at the quarry. Likewise, there are no substitutes for conventional construction aggregates such as those produced by the Honeoye Falls Quarry.

The proposed design is an advancement of the current mine in a horizontal westerly direction. No new vehicle entrances or exits will be needed. The mine floor within the proposed modification area will be graded to direct stormwater to the existing sump. Therefore, no new water withdrawal points or discharges will be necessary. As proposed, the three boundaries of the project area that are not adjacent to the current quarry boundary will be screened by a vegetated earthen berm. In addition to being a safety barrier, the proposed berm will provide visual and noise mitigation. An alternate to this design (i.e., no berm) create more impacts upon the nearby residents. Given all of these design considerations, the proposed design was developed to have the least amount of impacts upon the natural and community resources.

1.5.5 Alternative Development Schedule

A different development schedule would most likely not be beneficial and may not be realistic. This is because the rate of mining is mainly dependent upon customer demand. Alternative development schedules involve either an increase or decrease in the quarrying rate. Since the rate of mining is almost solely determined by customer demand, the development schedule is also dictated by market demand.

The entire project site will not become an active excavation area all at once. As described in Section 3.3, the project area will be mined progressively, in a north and westerly direction by advancing the existing quarry, in phases, over a period of many years. The projected mining phases are the best possible assumption regarding future conditions and aggregate demand. With regard to accelerating the rate of mining, if the product cannot be sold there is no economic incentive to mine it. Slowing down the development of the project area will not significantly diminish any potential impacts, and could actually prolong the period during which impacts might occur. The proposed phase sequence will allow for the mining operation to be well below the elevation of residential properties that border the project area long before mining operations get within their proximity. Because the mining operations will be behind quarry faces, and will also be below the elevations of the residences as it advances north and west toward these houses, the potential noise and visual impacts will be minimized. Area within the proposed project location that is not actively being used for mining purposes will continue to be used for agricultural and/or open space purposes until customer demand warrants the land to be mined.

1.5.6 Alternative Land Use

The objective of the proposed expansion is to secure a source of high-quality limestone aggregate that meets NYSDOT specifications. As pointed out in Section 1.3.1 (Mining and Aggregate Planning), mines must be located where the quality stone reserves are situated. Such quality stone reserves that are economically accessible do not exist everywhere in the area. The proposed expansion area contains high-friction stone reserves that meet NYSDOT friction standards.

Alternatives to the proposed objective are different land uses such as continued farming or residential development. These alternate land uses would cause millions of tons high-quality limestone reserves to be lost, eventually placing increased financial burden upon the local municipalities, businesses, and residents, since aggregates would need to be imported into the area from further away.

The proposed final reclamation of the site to a lake will provide the opportunity to enhance the region’s natural and recreational resources, which residential development nor farming would provide.

1.5.7 Alternative Reclamation

The proposed action is the continued advancement of the existing quarry westerly into land owned by Hanson Aggregates. Upon cessation of mining, the existing dewatering pump will be removed and the excavation area, including the proposed expansion site, will fill with water, creating a lake as in the existing approved Reclamation Plan. The proposed project will merely increase the size of the lake upon final reclamation. Given the nature of the project and the hydrologic characteristics of the existing quarry, the currently approved reclamation method of creating a lake upon cessation of mining is the only practical reclamation alternative. This lake will ultimately provide a recreational and natural resource where one does not currently exist.

2 EXISTING CONDITIONS

2.1 PAST MINING HISTORY

The Honeoye Falls Site is a consolidated surface mine. Limestones of the Onondaga Formation are quarried and processed for use as construction aggregate at the currently permitted mining operation to the east of the proposed expansion, on the south side of Honeoye Falls No. 6 Road.

Mining in the Honeoye Falls area is reported to have occurred as early as the 1830s. Mining at the Honeoye Falls Quarry site began in 1959, preceding the Mined Land Use Law enacted in 1975. The existing Hanson – Honeoye Falls Quarry has held a NYSDEC mining permit since the phased in mining regulations took effect in 1978. Between 1967 and 1988, the quarry was owned by the Koppers Company under the name General Crushed Stone Company. The General Crushed Stone Company was acquired by Beazer East Corporation in 1988. Hanson Aggregates acquired the site from Beazer in 1991. As stated above, the current quarry has been operated under the authority of a valid New York State Mined Land Reclamation Permit since 1978. Since acquiring the site in 1991, Hanson Aggregates has continually operated in accordance with its mining permits. The area previously reviewed under the State Environmental Quality Review Act and permitted for mining activity is outlined (blue line) on the Mine Plan Map (Figure 2) included in Appendix II.

2.2 PREVIOUS LAND USE

Because mining began at the site more than 50 years ago, it is difficult to know the exact nature of the previous land use for much of the currently permitted site. It is believed that previous land use at the site was similar to that of the proposed expansion area (i.e., agricultural/pasture and/or woodland). It is noted that a US Geological Survey Quadrangle (Rush, NY), dated 1951, does not show the presence of any mining activity at the site.

2.3 VEGETATION

Much of the land within the current life of mine to the south of Honeoye Falls No. 6 Road and west of Dalton Road has been stripped of overburden with at least the top limestone bench mined through. A portion of land near the center of the quarry that has not been stripped consists of shrubs and small-to-medium sized deciduous trees. Unstripped land to the east of the current quarry is mainly used as cropland. Approximately one-half of the unstripped land north of the current quarry consists of relatively dense, mature woodland, with the other half used for pasture/cropland.

As shown on the Mine Plan Map (Figure 2), the majority of the area proposed to be added to the life of mine to the west of the quarry is used for agricultural crops. A relatively small amount of wooded area is located in the northwestern portion of the proposed area. The Full Environmental Assessment Form attached in Appendix III lists the acreages and vegetation types on Hanson-owned and controlled property at the Honeoye Falls site.

The phased mine plan has been designed to limit disturbance to a progressive series of defined areas of the site during the life-of-mine. This pattern will ensure that subsequent areas to be mined are left vegetated and available for wildlife habitat and agricultural land until needed for the mining operation.

2.4 TOPOGRAPHY

The Honeoye Falls Quarry is located near the northern edge of the Allegheny Plateau physiographic province. The Helderberg Escarpment forms the northern and northeastern boundary of the plateau and is formed of erosion-resistant limestones of the Helderberg Group and Onondaga Formation. The quarry site is located on the northernmost edge of this escarpment south of Rochester. The Allegheny Plateau in the vicinity of Honeoye Falls is underlain by sedimentary rocks formed during the Late Silurian to Middle Devonian time (421-340 million years ago).

The site is situated within the Great Lakes Lowland. The project area is within a subdivision of this province that is characterized by end moraines, till plains, and drumlins between the beach ridge of the lake plain proper and the Finger Lakes Hills. The slightly rolling project area has elevations ranging from approximately 700 feet (213 meters) above mean sea level (AMSL) at its western edge along Oak Openings Road, to approximately 720 ft. (219 m) AMSL in the center of the proposed new area.

Topography in the immediate area is relatively flat with gentle rolling hills to the south. Topography of the currently unexcavated areas in the existing quarry slopes gradually to the north-northeast. The land surface in the proposed expansion area is relatively flat, with a slight mound toward its central portion. Topography slopes gently (1-2%) to the southwest and northeast from this topographic divide as shown on the Mine Plan Map (Appendix II).

The quarry is mined in one to three benches dependent on quality designations and market demands. When mined as one lift, the face height is approximately 110-feet. Due to the variation of the chert content in the limestone mined at the quarry, there are times when multiple benches are used. These benches have varying heights but generally are 30-40 feet for the top bench, 15-20 feet for the middle bench and 40-50 feet for the lower bench. The benches are nearly vertical and portrayed on the Mine Plan Map (Figure 2) enclosed in Appendix II. Due to folding and faulting within the quarry, the floor is undulatory with a maximum 30-foot (approx.) change in relief from the quarry floor to top-of-sump in the eastern portion of the quarry. Geology dictates the height of the faces and slope of the floor.

2.5 DRAINAGE

Drainage is dictated by changes of relief within and surrounding the site. Storm water and/or meltwater drains internally within the current quarry area. This water evaporates, percolates into the ground, or flows from north-northwest to east-southeast into low areas, including the existing dewatering sump at the east end of the quarry. Surface water and ground water are pumped from the sump in the eastern part of the quarry to a weir box located in the northeastern portion of the life-of-mine. The discharge from the weir box (Outfall 002, SPDES Permit No. 002992) flows through a small series of settling basins then, across an open field, and then enters an unnamed tributary passing under Dalton Road, flowing easterly toward Spring Creek. A portion of the water from the sump is recirculated via pipe to a fresh-water pond located north of the main aggregate processing plant. Water from this pond is pumped to the wash plant for use in processing during the production season (e.g., late April through mid-November).

Storm water within the main aggregate plant and stockpile area is directed outwards from the plant and stockpile area to collect in a retention basin east of the plant with no potential for discharge via surface water from the site. Water used to rinse aggregate at the wash plant is sent via a pipe (below ground) and a channel north of the welding shop to the settling pond system. Water passing through the settling ponds is clarified by settlement of the particles. Then the water evaporates, percolates into the ground or is discharged to the east of the pond system through SPDES Discharge Point 001. Water for washing is obtained from the dewatering sump within the quarry and the freshwater pond located just east of the maintenance shop.

The area in and surrounding the HMA plants is generally flat with a slight grade to the north. No storm water channels within the industrial area leave the site. Water in this area evaporates and/or infiltrates the ground. Undisturbed areas to the west of the access road are relatively flat with no distinct drainage channels.

An unnamed Class “C” designated stream, and a federally mapped wetland are located in the western most land owned by Hanson Aggregates. The wetland is not designated as a New York State wetland. No mining activity is proposed within the wetland or within 25 feet of the stream. A copy of a portion of New York State Freshwater

Wetlands Map and the U.S. Fish & Wildlife Service National Wetlands Inventory (NWI) map with the approximate location of the proposed expansion area are attached in Appendix V. Additional discussion of these waterbodies is provided in Section 4.3 of this Mined Land Use Plan.

2.5.1 Change in Drainage Due To Expansion

The majority of surface water within the area proposed to be added to the life-of-mine drains by sheet flow to the southwest and northeast. No changes in site drainage patterns are proposed. Drainage within the area to be added will be internal to the mine. As mining progresses into the proposed expansion area, the quarry floor will continue to be pitched to flow southeasterly toward the existing quarry area. Therefore, seepage from the quarry walls and stormwater within the proposed area will continue to be directed south and southeast across the quarry floor. This water will pond against the southwestern wall until the water rises to the elevation needed for gravity flow (approximately 576-feet amsl) toward the current sump (easterly). If needed, a temporary portable pump would be used to transfer water from the expansion area floor that flows into the southwestern portion of the existing quarry toward the current sump in the eastern part of the quarry.

No changes to the current sump are proposed. No new sump is proposed.

2.6 CLIMATE

The climate of Rush, NY area, which is located approximately 4 miles north-northwest of the Honeoye Falls Quarry, is described by the online Weatherbase service (www.weatherbase.com) which compiles weather data from a variety of sources, including the National Climatic Data Center (NCDC) as follows:

This climate zone covers from about 44°N to 50°N latitude mostly east of the 100th meridian in North America. However, it can be found as far north as 54°N, and further west in the Canadian Prairie Provinces and below 40°N in the high Appalachians. In Europe this subtype reaches its most northerly latitude at nearly 61° N. Areas featuring this subtype of the continental climate have an average temperature in the warmest month below 22°C (22°F). Summer high temperatures in this zone typically average between 21-28°C (70-82°F) during the daytime and the average temperatures in the coldest month are generally far below the -3 °C (27°F) mark.

The Köppen Climate Classification subtype for this climate is "Dfb". (Warm Summer Continental Climate).

The average temperature for the year in Rush is 47.6°F (8.7°C). The warmest month, on average, is July with an average temperature of 70.9°F (21.6°C). The coolest month on average is February, with an average temperature of 24.5°F (-4.2°C).

The highest recorded temperature in Rush is 103.0°F (39.4°C), which was recorded in July. The lowest recorded temperature in Rush is -30.0°F (-34.4°C), which was recorded in February.

The average amount of precipitation for the year in Rush is 29.9" (759.5 mm). The month with the most precipitation on average is June with 3.1" (78.7 mm) of precipitation. The month with the least precipitation on average is February with an average of 1.6" (40.6 mm). There are an average of 121.0 days of precipitation, with the most precipitation occurring in January with 11.0 days and the least precipitation occurring in July with 9.0 days.

In Rush, there's an average of 49.7" of snow (0 cm). The month with the most snow is January, with 12.1" of snow (30.7 cm).

Additional characterization of the climate of the Honeoye Falls area, which is located approximately 11 miles south of the City of Rochester, is provided by the National Oceanic and Atmospheric Administration (NOAA):

Rochester and the Genesee valley experience a fairly humid, continental type climate, which is strongly modified by the proximity of the Great Lakes. Precipitation is rather evenly distributed throughout the year in quantity, but frequency is much higher in the cloudy winter months than in the sunny summer ones. Snowfall is heavy, but is highly variable over short distances.

Winters are generally cold, cloudy and snowy across the region...but are changeable and include frequent thaws and rain as well. Snow covers the ground more often than not from Christmas into early March, but periods of bare ground are not uncommon. About half of the annual snowfall comes from the "lake effect" process and is very localized. This feature develops when cold air crosses the warmer lake waters and becomes saturated, creating clouds and precipitation downwind. The exact location of these snowbands is determined by the direction of the wind. Areas east of Rochester receive the most snow from this process, as northwest winds have a longer "fetch" off Lake Ontario, while areas south of the city get somewhat less. Lake Erie can even contribute some snow from this process if a west or southwest wind is strong enough. Since Lake Ontario does not freeze in most winters, this Lake Effect machine can remain active throughout the winter. The Rochester area is also subject to occasional general or "synoptic" snowfalls...but the worst effects usually pass the east. Total season snowfall ranges from 70 inches south of the city to about 90 inches in Rochester to over 120 inches along the lake shore east of the city. About 50 inches of this total results from general snows, the rest is due to the lake effect machine. The Lake does modify the extreme cold, the mercury falls below zero on only about six nights in an average winter, with anything below -l0 quite uncommon.

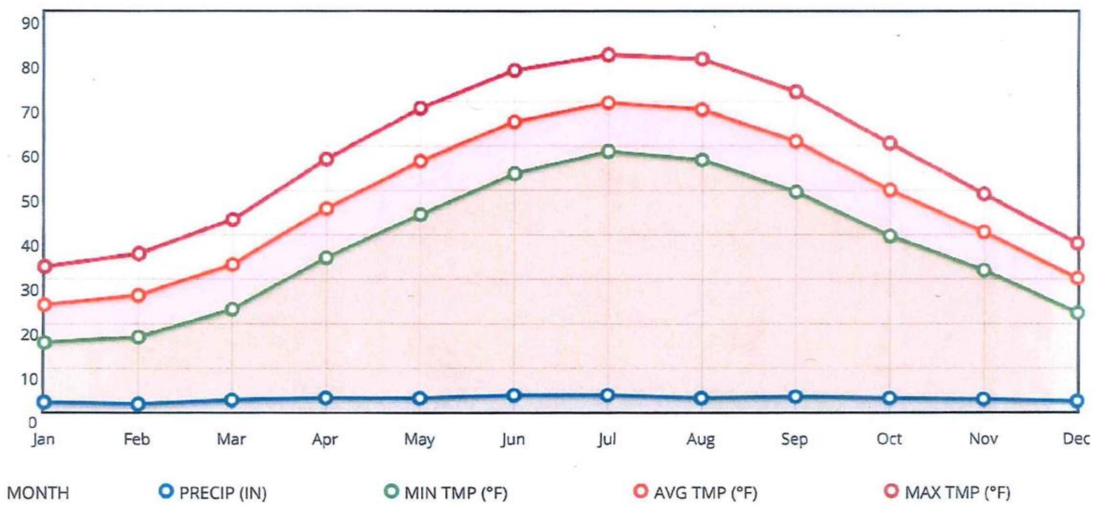
Spring comes slowly to the region. The last frosts usually occur by April 30 near the Lake...but as late as mid-May south of the Thruway. The spring months are actually our driest months statistically, due in part to the stabilizing effect of the Lakes, although soils are wet. Sunshine increases markedly in May.

Summers are warm and sunny across the region. The average temperature is in the 70 to 72 degree range. Rain can be expected every third or fourth day, almost always in the form of showers and thunderstorms. This activity is more common inland than near the lake. Completely overcast days in summer are rare. Severe weather is not common, but a few cases of damaging winds and small tornadoes occur each year. The greatest risk of this type of activity is south of the Thruway. There usually are several periods of uncomfortably warm and muggy weather in an average summer, with nine days reaching the 90-degree mark. Still, the area usually experiences some of the most delightful summer weather in the east.

Autumn is pleasant, but rather brief. Mild and dry conditions predominate through September and much of October, but colder air masses cross the Great Lakes with increasing frequency starting in late October, and result in a drastic increase in cloud cover across the region in late October and early November. Although the first frosts may not occur until late October along the lakeshores, the first lake effect snows of the season follow soon thereafter. ..usually by mid-November. These early snows melt off quickly, with a general snow cover seldom established before mid-December. The growing season is relatively long for the latitude, averaging about 180 days. The long growing season, combined with ample spring moisture and abundant summer sunshine...is beneficial for the many fruit orchards and wineries, especially near the Lake Ontario shore and the Finger Lakes. (Steve McLaughlin, Service Hydrologist)

Figure 1A below provides a graphic summary of the average monthly precipitation, minimum temperature, average temperature, and maximum temperature for Honeoye Falls, NY from 1981-2010. *Source: NCDC, 2010.*

Figure 1A, Honeoye, NY 1981-2010 Climatic Normals



Tables 2-1 through 2-3, below, provide additional detail on the historical rainfall, snowfall, and temperatures for Honeoye, NY from 1981 through 2010. Source: NOAA, 2010.

Table 2-1, Monthly Temperature Data

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Summary of Monthly Normals 1981-2010
Generated on 06/16/2015

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Elev: 800 ft. Lat: 42.792° N Lon: 77.514° W
Station: **HONEOYE, NY US GHCND:USC00303955**

Temperature (°F)																						
Mean							Cooling Degree Days						Heating Degree Days				Mean Number of Days					
							Base (above)						Base (below)									
Month	Daily Max	Daily Min	Mean	Long Term Max Std. Dev.	Long Term Min Std. Dev.	Long Term Avg Std. Dev.	55	57	60	65	70	72	55	57	60	65	Max >= 100	Max >= 90	Max >= 50	Max <= 32	Min <= 32	Min <= 0
1	32.8	15.7	24.2	4.7	6.0	5.3	-7777	0	0	0	0	0	953	1015	1108	1263	0.0	0.0	3.0	15.7	28.5	4.0
2	35.7	16.9	26.3	4.8	4.6	4.5	-7777	-7777	-7777	0	0	0	804	860	944	1084	0.0	0.0	3.0	9.9	25.6	2.3
3	43.4	23.2	33.3	4.0	3.6	3.6	3	2	1	-7777	0	0	676	736	828	983	0.0	0.0	8.2	5.1	25.1	0.6
4	57.0	34.8	45.9	3.7	2.3	2.8	36	25	14	4	1	-7777	309	358	437	577	0.0	0.2	21.6	0.4	12.3	0.0
5	68.4	44.5	56.5	3.4	2.9	3.0	133	102	64	25	7	4	88	119	174	290	0.0	0.5	30.2	0.0	2.1	0.0
6	76.9	53.7	65.3	2.4	2.9	2.4	317	263	190	92	32	19	8	15	31	83	0.0	0.8	30.0	0.0	0.1	0.0
7	80.4	58.7	69.6	2.5	2.1	2.1	451	389	299	165	69	44	-7777	-7777	3	24	0.0	1.9	31.0	0.0	0.0	0.0
8	79.5	56.8	68.1	2.3	1.8	1.9	408	347	259	133	48	28	-7777	1	7	36	0.0	1.3	31.0	0.0	0.0	0.0
9	72.1	49.6	60.9	2.9	1.9	2.1	208	165	109	43	13	7	33	50	84	168	0.0	0.4	29.9	0.0	0.5	0.0
10	60.5	39.6	50.0	2.8	2.4	2.4	49	34	18	6	1	-7777	202	249	327	469	0.0	0.0	25.9	0.0	6.1	0.0
11	49.1	31.9	40.5	3.9	2.1	2.9	6	3	1	-7777	0	-7777	441	498	586	735	0.0	0.0	13.3	1.3	15.9	0.0
12	37.9	22.3	30.1	5.7	4.7	5.1	1	1	-7777	0	0	0	773	834	927	1082	0.0	0.0	4.3	9.2	26.1	0.4
Summary	57.8	37.3	47.6	3.6	3.1	3.2	1612	1331	955	468	171	102	4287	4735	5456	6794	0	5.1	231.4	41.6	142.3	7.3

@ Denotes mean number of days greater than 0 but less than 0.05.
-7777: a non-zero value that would round to zero
Empty or blank cells indicate data is missing or insufficient occurrences to compute value.

Table 2-2, Monthly Rainfall Data

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Summary of Monthly Normals 1981-2010
Generated on 06/16/2015

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Elev: 800 ft. Lat: 42.792° N Lon: 77.514° W
Station: **HONEOYE, NY US GHCND:USC00303955**

Precipitation (in.)								
	Totals	Mean Number of Days				Precipitation Probabilities Probability that precipitation will be equal to or less than the indicated amount		
	Means	Daily Precipitation				Monthly Precipitation vs. Probability Levels		
Month	Mean	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.25	.50	.75
1	2.11	17.3	6.7	1.0	0.2	1.18	1.83	2.70
2	1.68	12.9	4.8	0.8	0.1	1.13	1.57	2.13
3	2.61	13.7	7.5	1.6	0.4	1.87	2.46	3.05
4	3.12	13.5	7.6	1.9	0.3	2.06	2.82	4.33
5	3.03	12.8	7.4	1.7	0.4	1.78	2.57	4.67
6	3.74	13.1	8.3	2.8	0.8	2.77	3.73	4.64
7	3.77	13.1	8.4	2.8	0.6	2.16	3.32	4.94
8	3.08	11.8	7.3	1.9	0.6	2.06	2.86	4.10
9	3.43	11.7	7.1	2.3	0.8	2.69	3.41	4.17
10	3.09	14.5	6.8	1.7	0.6	2.07	2.77	3.91
11	2.84	13.8	6.4	1.8	0.5	2.04	2.49	3.86
12	2.38	15.4	6.8	1.2	0.2	1.63	2.43	2.73
Summary	34.88	163.6	85.1	21.5	5.5	23.44	32.26	45.23

@ Denotes mean number of days greater than 0 but less than 0.05.
-7777: a non-zero value that would round to zero
Empty or blank cells indicate data is missing or insufficient occurrences to compute value.

Table 2-3, Monthly Snowfall Data

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Summary of Monthly Normals 1981-2010
Generated on 06/16/2015

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Elev: 800 ft. Lat: 42.792° N Lon: 77.514° W
Station: **HONEOYE, NY US GHCND:USC00303955**

Snow (in.)														
	Totals	Mean Number of Days									Snow Probabilities Probability that snow will be equal to or less than the indicated amount		
	Means	Snowfall >= Thresholds					Snow Depth >= Thresholds				Monthly Snow vs. Probability Levels Values derived from the incomplete gamma distribution.		
Month	Snowfall Mean	0.1	1.0	3.0	5.0	10.0	1	3	5	10	.25	.50	.75
1	15.8	11.1	6.5	1.8	0.3	0.1	@	@	@	@	8.1	14.5	22.8
2	13.5	8.4	4.8	1.2	0.4	0.0	@	@	@	@	8.9	11.0	19.6
3	14.3	6.2	3.5	1.5	1.0	0.2	@	@	@	@	6.6	11.3	15.4
4	2.0	1.2	0.7	0.2	0.0	0.0	@	@	@	@	0.0	2.3	3.5
5	-7777	0.1	0.0	0.0	0.0	0.0	@	@	@	@	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	@	@	@	@	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	@	@	@	@	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	@	@	@	@	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	@	@	@	@	0.0	0.0	0.0
10	0.2	0.1	0.1	0.1	0.0	0.0	@	@	@	@	0.0	0.0	0.0
11	4.4	2.1	1.4	0.4	0.2	0.0	@	@	@	@	0.5	2.1	5.8
12	9.7	6.9	4.6	1.2	0.5	0.0	@	@	@	@	3.8	10.0	11.5
Summary	59.9	36.1	21.6	6.4	2.4	0.3	0.0	0.0	0.0	0.0	27.9	51.2	78.6

@ Denotes mean number of days greater than 0 but less than 0.05.
-7777: a non-zero value that would round to zero
Empty or blank cells indicate data is missing or insufficient occurrences to compute value.

2.7 AIR QUALITY

2.7.1 Existing Conditions

Mining has occurred in Honeoye Falls since the 1830s, and at the Hanson Aggregates – Honeoye Falls Quarry, since 1959. The proposed action is solely to add acreage so the quarry can continue to stay open for business to serve its customers which include the two townships the proposed expansion site lies within. No changes to the mining method, equipment/plant, rate, or processing of material are proposed. The existing aggregate plants will remain in their current locations. Therefore, no changes to the ambient air quality within the existing mine nor in close proximity to the mine are anticipated. The plant will continue to operate in accordance with applicable NYSDEC air pollution control regulations and its current State Air Facility Permit (#8-9908-00113/00033).

Particulate matter produced during stone quarrying and processing is typically of relatively large particle size. The chemical composition of the dust from stone mining activities is generally homogeneous since its ancestry is the rock formation from which the rock deposit was mined. Since essentially all of the emissions from a stone plant are formed due to the mechanical action of one material ground into another (“attrition”), aggregate plants are generally not significant sources of ultrafine particulate matter.

Fugitive emissions (“fine particulate matter”) from operations within the expansion area represent a continuing condition of the current operation. The proposed project site is active agricultural land used for growing of various crops. As with mining operations, the primary air pollutant created by agricultural activities, is particulate matter (i.e., dust). Unlike mining operations, there are no regulatory requirements to control dust emissions for farming activities such as plowing, disking, or tilling the land proposed to be added to the Hanson Aggregates Quarry. Since there are no proposed changes in the current quarry operation, there will be no changes in the air resources within and in proximity of the proposed expansion area.

There are several residences to the north and west of the proposed modification area, the majority of which are screened by dense woodland vegetation. These residences are currently receptors of the existing agricultural activities that occur within the proposed project site. Historic wind data from 1985-2014, was compiled by the Northeast Regional Climate Center (NRCC) at Cornell University, Ithaca, NY for the Rochester area (Figure 1B). According to this data, the prevailing winds generally originate from the west-southwest and southwest and blow east and northeasterly. Based on this data, the prevailing winds at the proposed project location would primarily blow toward the existing quarry and away from receptors.

Figure 1B, Wind rose Data for Rochester, NY, 1985-2014

NORTHEAST
REGIONAL
CLIMATE
CENTER

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Station: ROCHESTER
Period of record: 1/1/1985-12/31/2014
Months: January-December
Hours: 0:00-23:00
Total number of observations: 261985 (983 missing)

Direction	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	>40	All	Avg Speed
Calm	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0
NNE	0.2	1.6	1.0	0.3	0.1	#	#	#	#	3.3	10.7
NE	0.3	1.8	0.9	0.3	0.1	#	#	#	0.0	3.4	10.3
ENE	0.5	1.8	0.5	0.1	#	#	0.0	0.0	0.0	2.9	8.6
E	0.6	2.0	0.5	#	#	0.0	0.0	0.0	0.0	3.1	7.9
ESE	0.8	2.0	0.4	0.1	#	0.0	0.0	0.0	0.0	3.3	7.6
SE	0.8	1.8	0.4	0.1	#	#	0.0	0.0	0.0	3.1	7.4
SSE	1.0	1.9	0.5	0.2	#	#	#	0.0	0.0	3.6	8.1
S	1.3	3.2	1.1	0.3	0.1	#	#	0.0	0.0	6.0	8.5
SSW	2.1	5.8	1.8	0.4	0.1	#	0.0	0.0	0.0	10.1	8.4
SW	3.1	6.9	1.7	0.8	0.3	#	#	#	#	12.9	8.5
WSW	1.5	5.4	3.3	2.1	1.1	0.3	0.1	#	#	13.7	12.0
W	0.8	4.0	2.8	1.5	0.6	0.1	#	#	#	9.9	11.9
WNW	0.6	2.9	1.9	1.0	0.3	#	#	0.0	0.0	6.8	11.3
NW	0.5	2.3	1.2	0.4	0.1	#	#	0.0	0.0	4.5	10.0
NNW	0.4	1.6	0.6	0.1	#	#	#	0.0	0.0	2.7	9.1
N	0.3	1.5	0.7	0.2	#	#	#	#	#	2.6	9.7
Variable	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	4.8

Values are the percent of time the wind is in the given speed/direction category.

Direction is the direction from which the wind is blowing.

Speeds are in miles/hour.

Values of # indicate some occurrences, but average less than 0.1 percent.

A geographic area that meets or does better than the national ambient air quality standards (NAAQS) is called an "attainment area;" an area that doesn't meet this standard is called a "nonattainment area." A copy of the NAAQS is provided in Appendix VI. The proposed project site is within a designated "attainment area" for fine particulate matter ($PM_{2.5}$).

The NYSDEC has air quality monitoring stations throughout New York State. The closest monitoring station to the proposed project location is Rochester Station #2701-22 (Monroe County). A copy of the most recent NYSDEC air quality annual report for the Rochester Station is also provided in Appendix VI. A review of this most recent annual average $PM_{2.5}$ concentration for the Rochester Station shows that it did not exceed the federal NAAQS.

3 DESCRIPTION OF MINERAL AND MINING METHOD

3.1 TYPE OF DEPOSIT AND MINERAL MINED

The Honeoye Falls Quarry is a surface consolidated mine with limestones from the Onondaga Formation of the Heldeberg Group being excavated using the open pit, bench method. This formation is underlain by the dolomites of the Bertie Group. In general, the vertical extent (bottom) of mining at the site ends at the interface with the underlying Akron Formation.

Bedrock underlying the project area formed in bands oriented east-west during the early stages of the Devonian period (400 to 360 million years ago). The Onondaga limestone is a dense, hard limestone which is dark when freshly broken and weathers to a bluish gray. Black and bluish layers of chert are included in the upper layers, and beds of the limestone may be separated by carbonaceous shale.

3.2 MINING METHOD

Consolidated material (bedrock) is mined using standard industry practices as described below.

3.2.1 Stripping

Area to be stripped is typically limited to only uncover enough area for ease of excavation for one to two years. Trees will be harvested for sale or cut for firewood. Brush and stumps will either be mulched or buried in the quarry and/or within the perimeter berms. Overburden in the form of soils and minor cap rock is removed by front-end loader, excavator or equivalent, and placed in perimeter berms or stockpiles within the mining area. At times a bulldozer will be used to push soils and/or minor cap rock into perimeter berms. Also, a bulldozer or excavator may be used to shape the perimeter berms.

3.2.2 Drilling and Blasting

Standard drill and blast methods will be followed. To optimize blasting at the site, the licensed blaster will pre-design each shot to produce the appropriate fracture of the rock while minimizing vibration. Borehole diameter, burden, spacing, stemming, delays and other facets of the blast design will be determined by the licensed blaster for each planned shot. Holes are advanced in the bedrock using tracked or wheeled drills. A blasting agent, typically ANFO (ammonia nitrate and fuel oil), is loaded into the holes and detonated to break the rock in a predetermined manner as prescribed by the licensed blaster.

A minimum of one seismograph will be used at the nearest residential receptor giving permission in line with the blast location to record the vibration and air blast created by the shot. The information gained from the seismograph readings are used to plan future blasts.

The evaluation set forth in Section 4.9 demonstrates that blasting conducted using current practices and in accordance with U.S. Bureau of Mines guidelines will prevent detrimental effects upon structures in the vicinity of the proposed project area, including the closest residence.

3.2.3 Haulage and Processing

Broken rock is loaded by front-end loaders or equivalent into haul trucks and moved to the primary crusher at the main processing plant, the crusher run plant, and/or portable aggregate processing plant(s). Stone from the crushers is transported via conveyors to the secondary and tertiary sections of the plant for further crushing, screening, washing, and stockpiling. Oversize rocks unable to be dumped into the primary crusher hopper are broken by pneumatic hammer or segregated to be sold as heavy stone fill.

3.2.4 Stockpiles

Various sizes of crushed aggregates are stockpiled using stacking conveyors within the quarry. Stockpiled aggregates are loaded into customer vehicles via pit loader(s) within the stockpile areas. (See Mine Plan Map, Figure 2.)

3.3 CURRENT AND PROPOSED MINING SEQUENCE

The Mine Plan Map (Figure 2) shows the approximate locations of the current quarry faces. Mining is continuing to advance southward and westward to the limits of excavation. Prior to drilling and blasting, vegetation, topsoil, and overburden are removed using a bulldozer, excavator, and/or front-end loader. Overburden is used to construct berms along the limits of mining and/or stockpiled for future reclamation.

3.3.1 Proposed Change to Mining Extent

High-quality stone reserves within the Honeoye Falls Quarry will be exhausted within the current life of mine in the near future. The stone below the Onondaga Formation is of an inferior quality and unacceptable for use as a New York State Department of Transportation approved crushed stone aggregate. Therefore, advancing further into the floor is not an acceptable alternative. The proposed project will allow for a continuation of the existing consolidated surface mining activity at the quarry.

3.3.2 Proposed New Area Mining Sequence

As indicated on Figure 3, Modification Area Phase Plan (Appendix II), a series of five (5) phases are proposed with this modification. A phased approach to mining and a concurrent reclamation plan will be implemented to the maximum extent practicable. It is noted that mining will continue to occur in the currently approved quarry until all resources are depleted. Upon approval of the application, mining activity will commence in Phase 1. An earthen berm will be constructed along the perimeter of Phase 1 starting in the northern end and continuing southward along the western perimeter of the proposed modification area. Starting the berm construction in the north first is intended to establish a sound and visual barrier for residences early on as work in the proposed area commences. It is noted, however, that mining in the proposed new area will begin in the southern portion, away from any residences. The location and height of the berm is indicated on the Modification Area Phase Plan (Figure 3). The typical profile of the berm including tree location and seeding requirements is shown below (Figure 5). Mining will commence in Phase 1 from the southeast and continue northwesterly to the proposed limits as indicated on the Modification Area Phase Plan (Figure 3).

Temporary safety berms will be constructed along the northern boundaries of each mine phase as mining advances from Phase 1 through Phase 5. Once the permanent berm along the western edge of the proposed modification area has been fully constructed, and as mining progresses northward through each phase, construction of the permanent berm along the northern perimeter will commence as overburden becomes available from stripping activities. Prior to commencing construction of the northern berm a written request to add the necessary area to the bonded affected acreage will be submitted to NYSDEC. Although it is uncertain at this time, construction of the northerly perimeter berm is anticipated to be completed as part of mining in Phase 3, including a portion of the berm within the previously approved life-of-mine (Figure 3). It is noted that the area along the western border of the proposed modification area has been included in the affected acreage for the upcoming permit term.

Stripping within Phase 1, along with the construction of a permanent earthen berm along the western border of the modification area will occur concurrently while the limestone within the currently approved area is being depleted. The mining sequence for continued excavation of the quarry will be initiated by stripping and stockpiling topsoil and overburden in on-site stockpiles and construction of berms. Soil material stored will eventually be used as needed for reclamation purposes. It is anticipated that removal of unconsolidated overburden will be sequenced in advance of active mining faces. Area to be stripped is typically limited to only uncover enough area for ease of excavation for one to two years.

A drop cut will be advanced in the southeastern corner of Phase 1. Mining will proceed to the north and west towards Phase 2. Mining will continue to proceed to the north and west behind the mine faces. Upon near depletion of limestone in Phase 1, mining will advance into Phase 2 (upon receipt of NYSDEC approval), and then the subsequent Phases 3 through Phase 5. The rate at which Hanson will advance from one phase to the next is dependent upon market demand. However, in general, the phase areas have been delineated to coincide with each 5-year permit term. Hanson will not progress into subsequent phases without prior approval from NYSDEC.

Perimeter berms will be constructed, both permanent and temporary, as stripping commences in each associated phase.

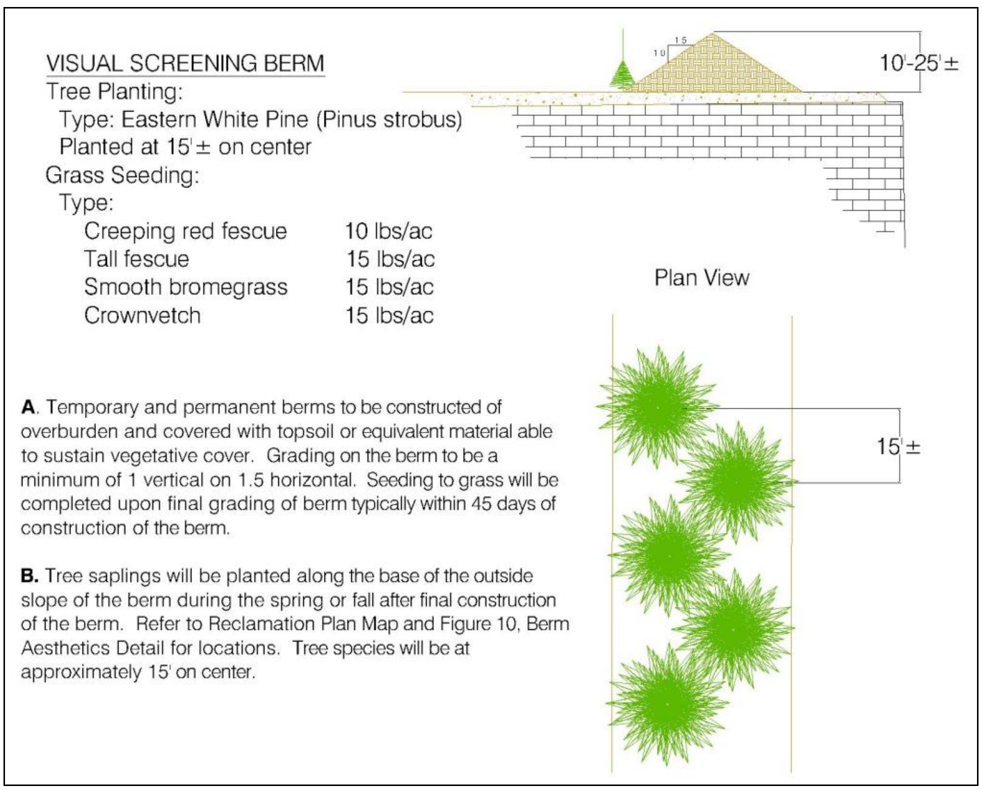

FIGURE 5. Typical Perimeter Berm

3.4 SETBACKS

No changes to the existing setbacks within the currently permitted life-of-mine are proposed with this modification. In the area of proposed expansion, no mining activity will take place within 25 feet of the property line. The crest of the vertical quarry walls will remain a minimum of 1.25 times the face height plus 25 feet from the property lines as proscribed by the NYSDEC setback requirements. This setback ("excavation limit") will vary in width due to the changing topography along the perimeter of the site and on the floor of the quarry as portrayed by the final crest locations on the Reclamation Plan Map. Figure 6 portrays the general orientation of the benches dictated by the geology of the site and as allowed by the setback regulations.

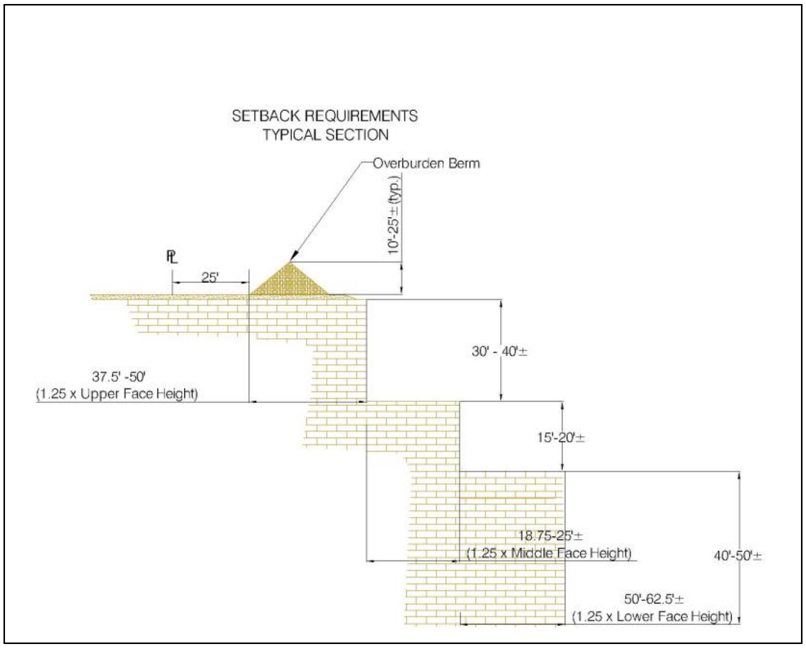

FIGURE 6. Typical Setback Requirements and Benching Scheme

3.5 INTERIM AND FINAL GRADES AND ELEVATIONS

Mining of consolidated material will continue to advance towards the perimeter of the quarry behind a series of three (3) vertical faces as indicated in Figure 6. The faces will be advanced to the limits as detailed above (Section 3.4). The current quarry floor has a lowest elevation of approximately 565 feet above mean sea level (amsl) in the southeastern portion of the quarry, rising to approximately 600 feet amsl in the north; and approximately 665 feet amsl in the western portion.

As shown on the updated Reclamation Plan Map (Appendix II), the final floor elevation in the southeastern corner of the current life-of-mine will be approximately 550 feet amsl. From here, the final floor elevations will gradually rise as the floor progresses north and northwesterly to a high-point of approximately 625 feet amsl in the northernmost portion of the site. This final grade is a function of the geology in this portion of the mine. The depth of DOT-quality limestone generally decreases from east to west within the life-of-mine. Therefore, the final floor elevation will gradually increase from west to east and south to north as shown on the updated Reclamation Plan Map. Grading the final floor in this manner, as mining occurs, will also facilitate the continued easterly stormwater drainage toward the existing sump.

3.6 PROCESSING

Currently shot rock is moved by haul truck to the main aggregate processing plant in the central portion of the quarry for crushing, sizing and stockpiling. Sized aggregate is loaded into commercial trucks and removed from the site for use as construction material, or used for the production of hot-mix asphalt (HMA) concrete (blacktop) on site. Oversized rocks, unable to be dumped into the crusher hoppers, are broken by pneumatic hammer or segregated to be sold as heavy stone fill. Periodically a portable processing plant with an associated generator set is brought in to augment the processing equipment at the facility. As needed, a portable plant has been intermittently located on the top of the lowest lift in the southeastern portion of the quarry in order to re-crush stone into certain sizes based on customer demand and product inventory. This practice will continue. Hot mix asphalt concrete is produced within the Honeoye Falls facility at two plants (drum and batch) located to the west of the aggregate processing plant (see Mine Plan Map).

Washing of the aggregate takes place at the main aggregate processing plant. A settling pond system is used to clarify the process ("wash") water prior to discharge to the pond system just north of the processing plant. Sediment-laden wash water flows through the settling pond system via gravity. Clarified process water either evaporates, infiltrates, and/or is discharged via gravity flow at SPDES Outfall 001.

No changes to the current processing and production methods, rates, or equipment locations are proposed with this modification.

3.7 HAULAGEWAYS

Haulageways have been constructed within the quarry and plant area as well as a perimeter road gaining access to the top of the high wall as shown on the Mine Plan Map (Figure 2). Principle haulage is the transport of shot rock from the working face and muck pile to the primary crusher. Haulageways are composed of crushed stone or are over bedrock. Primary access to the site from Honeoye Falls No. 6 Road will remain as is. No new site entrances/exists are proposed.

An existing auxiliary access driveway off of Oak Openings Road will be maintained in the area to be added to the life-of-mine. Refer to the Mine Plan Map (Figure 2). This access-way will continue to only be used by plant vehicles intermittently as needed to enter the new area for various operational functions. This route will not be used for customer vehicles, nor as a main access for quarry equipment. This access-way currently exists in the form of a "farm road" over the grass. Due to the infrequent traffic, this grassed surface is to be kept as is, unless future conditions warrant the surfacing with crushed stone over some or all portions of the access-way.

3.8 DISPOSITION OF STOCKPILES AND WASTE MATERIALS

3.8.1 Refuse/Solid Waste

Full development of the Honeoye Falls mine site will not generate significant waste. Refuse and solid waste will continue be removed from the site and disposed of in accordance with applicable rules and regulations relative to solid waste management.

3.8.2 Trees and Stumps

Most of the area within the life of mine had been fields with minimum forestation. A portion of the new area proposed to be mined will have harvestable trees removed from the site. Consistent with approved industry practices, stripped materials such as brush, shrubs, and trees will be chipped for reclamation purposes, will be chipped, buried with other vegetation and overburden in the center of perimeter berms or piles within the life of mine, or removed to an approved landfill. Stumps will be stockpiled within the mine or perimeter for later burial during reclamation.

3.8.3 Overburden Stripping

Prior to mining of previously undisturbed areas, topsoil and overburden will be stripped, stockpiled separately, and/or used to construct perimeter berms around the mine site. All overburden stripped from the site will be saved and used for the construction of perimeter berms and/or stockpiled for later use during reclamation. Perimeter berms will be graded to the angle of repose of the material (typically 1.5 horizontal : 1 vertical) and seeded within 30 days of final construction or as soon as practicable following their construction.

3.8.4 Aggregate

Finished product aggregate stockpiles will be constructed within the life of mine, typically within the processing area and mined area, added to, and removed from, on a regular basis. Stockpiles will be removed or graded into the floor during reclamation upon depletion of the reserves.

4 POLLUTION CONTROL AND PREVENTION OF ENVIRONMENTAL DAMAGE

4.1 AIR RESOURCES & FINE PARTICULATE MATTER

No changes to the mining method, rate, or processing of material are proposed. Therefore, no changes to the ambient air quality are anticipated. Fugitive emissions ("fine particulate matter") from operations within the expansion area represent a continuing condition of the current operation. The existing processing equipment is permitted by the NYSDEC and will continue to operate in accordance with applicable federal and state air pollution control laws.

The NYSDEC regulates air emissions sources under Article 19 of the Environmental Conservation Law. Owners and operators of applicable air contamination sources are required to obtain either a registration or permit, depending on their potential to emit set quantities of certain pollutants. Aggregate processing plants are regulated under the NYSDEC air pollution regulations. Additionally, stone processing plants are further regulated under the Federal New Source Performance Standard (40 CFR Part 60, Subpart OOO), which require that no emission source emit particulate matter greater than 10-percent opacity. The current Hanson Aggregates – Honeoye Falls Plant is in compliance with applicable State and Federal air permitting regulations.

In addition to maintaining compliance with applicable air pollution control regulations, the following best management practices (BMPs) and engineering controls are currently used and will continue to be used to prevent dust pollution. They are summarized below.

Best Management Practices

- Dust from haulage-ways and stockpile areas are controlled by water spray;
- Vehicular speed is reduced with limits posted;
- Shut down idle and unloaded equipment;
- Careful loading of trucks;
- Maintain equipment through daily inspections and repairs as needed;
- Extents of stripping ahead of production are carefully controlled and kept to a minimum in advance of working faces;

Engineered Controls

- Dust from the equipment at the aggregate processing plants and haul roads is controlled by water spray;
- Operations are largely confined below grade and much of the operation is surrounded by perimeter berms;
- Overburden berms around the quarry perimeter are vegetated to prevent wind erosion and help trap fugitive dust within the property boundaries;
- The main customer access road is paved with bituminous concrete to minimize the tracking of material onto the public road;
- Hanson requires all trucks to comply with the NYS Tarp Law, and has signage in place to notify all independent or non-Hanson trucks visiting the site to comply as well.

Current practices employed to maintain the air quality at the facility such as those listed above will be continued, resulting in no significant impacts to areas outside the facility.

Temporary dust emissions from blasting of the stone will continue to be controlled by the following practices:

- removing excess stone and cuttings to greatest extent practical on the burden,

- wetting the stone in front of the shot as necessary, and
- wetting the stone on top of the burden to greatest extent practical taking safety measures into consideration.

4.1.1 NSA Stone Crushing Plant Particulate Study

The National Stone Association (NSA) sponsored an ambient air test program to compile data concerning the formation, composition, and deposition of fine particulate matter ($PM_{2.5}$) a typical stone crushing plant. The report from this study is provided in Appendix VII of this DEIS.

The test program was conducted by Air Control Technologies, P.C. at a hard rock quarry located in Greensboro, NC with a production capacity of approximately 700,000 tons per year. For comparison, the Honeoye Falls Quarry typically averages approximately 400,000 tons per year. The stone plant was selected based on many criteria including: size of the property, production capacity, representative processing equipment, prevailing wind patterns, and the absence of significant sources of particulate matter nearby. The plant in the study operated 4 days per week, approximately 10 hours per day. All testing was performed pursuant to all EPA requirements pertinent to particulate air monitoring.

Monitors were installed upwind and downwind at 1000-foot intervals in areas of grass and scrub brush. The ambient monitoring network was operated for 14 days when ambient winds were forecasted to be passing over the plant area toward the downwind monitoring locations. The results of the study showed that the differences between the upwind and downwind $PM_{2.5}$ ambient concentrations, as previous NSA-sponsored studies strongly indicated, that stone crushing plants have negligible $PM_{2.5}$ emissions. The NSA test results showed that the upwind and downwind $PM_{2.5}$ concentrations were nearly identical, regardless of wind direction; and that the stone processing plant was not a significant source of $PM_{2.5}$ emissions. (Refer to Appendix VII.)

The plant conducted blasting at a frequency of 1-3 times per week during the study period. The potential effects of blasting on $PM_{2.5}$ levels were evaluated during the NSA study. The upwind and downwind ambient air monitoring results showed no relationship between ambient $PM_{2.5}$ levels and blasting events. Most particulate material displaced by blasting immediately falls out of the atmosphere by gravity as the shot energy dissipates, within a few hundred feet of the blast. The finer material (<10 micrometers), only remains airborne for a short time. The infrequent rate of blasting, combined with the fact that very little dust remains airborne away from the blast site, creates very little potential for impacts to off-site receptors. This is especially true of the proposed project site given that the direction of the prevailing winds blow from the expansion area into the existing quarry. (Refer to Section 2.7.1).

4.1.2 Fugitive Dust Emissions Inventory

The DEIS Scope document, dated November 4, 2014 (Appendix VIII), calls for an assessment of the potential impacts "associated with the proposed mine operation." Hanson Aggregates is not proposing any new mine operation, merely a continuation of a long-standing quarry. There will be no changes to the current emissions sources and associated operations at the Honeoye Falls Quarry as a result of the proposed expansion. The DEIS Scope also calls for an evaluation of "potential sources of particulate matter emissions which could result from the proposed expansion." There will be no additional equipment or crushing plants that would be considered new emission sources as a result of the proposed expansion. Therefore, there is no new potential for air emissions that can be attributed to the proposed project. It is the same as those for the existing quarry operation.

Although no changes to the existing air emission sources are proposed with this action, the following is a quantitative inventory and analysis of the potential sources of particulate matter associated with the long-standing, permitted mine operation. This assessment was prepared in accordance with the Department's "Policy CP-33: Assessing and Mitigating Impacts of Fine Particulate Matter Emissions" (December 29, 2003).

Policy CP-33 states that "[i]f the operation of the proposed project will result in the emission of fine particulate matter above certain *de minimus* thresholds, Department staff shall require an air quality impact assessment of those emissions in accordance with the terms of this policy." (It is noted that the proposed project, quarry expansion, in and of itself, will not result in the emission of any new quantities, types, or frequencies of fine particulate matter generation.) The policy allows for the assessment using the $PM_{2.5}$ fraction when there is a reasonably accurate measure of the $PM_{2.5}$ available. The policy also states that all PM_{10} emissions from a proposed project be quantified and that all measured or estimated PM_{10} emissions are $PM_{2.5}$. According to CP-33, if primary PM_{10} emissions from the project do not equal or exceed 15 tons per year, the $PM_{2.5}$ impacts from the project shall be deemed insignificant and no further assessment is required.

Below is an inventory and quantification of the potential impacts of the existing, permitted quarry which includes the mining equipment within the current quarry, as well as the traffic on the existing haul roads, existing stockpiles, and areas of exposed soils. Also, included is an estimate of PM_{10} from the existing aggregate plants based on actual production totals at the Honeoye Falls Quarry from the previous 5 years. The existing emissions controls were previously listed in Section 4.1 of this DEIS. The formulas and emission factors used in the inventory were obtained from the USEPA's AP-42, which is the standard air emission reference used by regulatory agencies and regulated entities throughout America. A summary table which quantifies the estimated fine particulate matter generated by the existing operation is provided at the end of this section.

<u>A) Haul Road Emission Calculations</u>

Calculations are based on AP-42, Section 13.2.2 Unpaved Roads, dated 11/2006.

$$\mathbf{E = k\,(s/12)^a\,(W/3)^b}$$

Where:

- E = Emission factor (lbs/VMT)
- VMT = Vehicle mile traveled
- k = Constant (lbs/VMT) = 1.5 for PM_{10} and 4.9 for TSP
- s = Surface Material Silt Content (%) = 8.3%
- W = Haul Truck Vehicle Weight = 46 tons empty and 110 tons loaded
- a = Constant = 0.9 for PM_{10}
- b = Constant = 0.45 for PM_{10}

$$E_{ext} = E\,[(365 - P)/365]$$

Where:

- E_{ext} = Emission factor extrapolated for natural mitigation (rainfall) (lb/VMT)
- P = Number of days in a year with at least 0.01 inches of precipitation *(obtained from NOAA, National Climatic Data Center for Rochester Station #14768, for 2012).*
- P = 160 days

<u>For the Honeoye Falls Proposed Quarry Expansion Area:</u>

Average Haul Road Distance (one-way) from mining area to primary crusher:
3,100 feet, or 0.6 mile
Rock Truck Capacity = 64 tons aggregate
Processing Plant 5-Year Average Production = 280 ton/hour

Water Truck efficiency = 98.6% *(based on formula obtained from EPA 450/3-88-008)*

V = Vehicle trips = 280 ton/hr / 64 ton aggregate / vehicle ~ 4.4 vehicles/hour

VMT/hr = 4.4 vehicles/hour x 0.55 miles = 2.41 VMT/hr

PM_{10} Emissions:

Loaded Rock Truck:

$E = 1.5 (8.3/12)^{0.9} (101/3)^{0.45} = 5.87$ lb/VMT

Adjustment for rainfall

$E_{ext} = 5.24 [(365 – 160)/365] = 3.30$ lb/VMT

PM_{10} Emissions for Loaded Rock Truck (Uncontrolled)

3.30 lb/VMT x 2.41 VMT/hr = 7.93 lb PM_{10}/hr

Control Efficiency due to watering of the haul roads at 99.4% efficient

E = 3.30 x .06 = 0.02 lb/VMT

PM_{10} Emissions for Loaded Rock Truck (Controlled)

0.02 lb/VMT x 2.41 VMT/hr = 0.05 lb PM_{10} /hr

Empty Rock Truck:

$E = 1.5 (8.3/12)^{0.9} (46/3)^{0.45} = 3.68$ lb/VMT

Adjustment for rainfall

$E_{ext} = 3.68 [(365 – 160)/365] = 2.07$ lb/VMT

PM_{10} Emissions for Empty Rock Truck (Uncontrolled)

2.07 lb/VMT x 3.68 VMT/hr = 4.97 lb PM_{10}/hr

Control Efficiency due to watering of the haul roads at 99.4% efficient

E = 2.07 x .06 = 0.01 lb/VMT

PM_{10} Emissions for Empty Rock Truck (Controlled)

0.01 lb/VMT x 2.41 VMT/hr = 0.03 lb PM_{10}/hr

Total PM_{10} Emissions from Haul Road (Controlled)

0.05 lb PM_{10}/hr + 0.03 lb PM_{10}/hr = 0.08 PM_{10}/hr

PM_{10} Emissions at Potential to Emit (Controlled)

0.08 lb PM_{10}/hr x 1,500 hr/yr / 2,000 = 0.34 tons PM_{10}/yr

B) Aggregate Stockpiling Emission Calculations

Calculations are based on AP-42, Section 13.2.4 Aggregate Handling and Storage Piles, dated 11/2006.

$$E = k (0.0032) [(U/5)^{1.3} / (M/2)^{1.4}]$$

Where:

E = Emission factor (lb / ton of aggregate)
k = Particle size multiplier (dimensionless) = 0.35 (*factor for particles <10 µm)*
U = Mean wind speed = 10 miles/hr
M = Material moisture content = 2.5%

$E = (0.35) (0.0032) [(10/5)^{1.3} / (2.5/2)^{1.4}] = 0.00082$ lb TSP / ton aggregate

The 5-year average production is: 280 ton/hr.

Control Efficiency due to moisture content of the aggregate and watering (if needed) at 80% efficient.

Emissions from Stockpiling (Controlled)

0.42 tons PM_{10}/yr x 0.20 = 0.08 tons PM_{10}/yr

C) Wind Erosion of Stockpiles Calculations (PM_{10}):

E_{PM10} = 0.85 (s/1.5) (f/15) lb/day/acre of surface

20 stockpiles of various sizes of crushed stone
s = 1.6 silt content (weight %) from AP-42, Table 13.2.4-1
f = 15 (Based on 2012 NOAA data, 55 days average speed above 12 mph)

E_{PM10} = 0.85 x 1.07 x 1
= 0.907 lb/day/acre

Approximate height of storage pile (typical) = 25 feet
Approximate base radius of pile (typical) = 33.5 feet
Total Surface Area (1 pile) = 7,920.8 sq. ft.
= 0.181837 acres of surface

EPM10 = 0.165 lbs/day or 60.18 lbs/year

TOTAL E_{PM10} = 20 piles x 60.18 lbs/year

= 1,203.52 lbs/year or, 0.602 tons/year

D) Total Mobile Equipment Exhaust Emissions Calculations (PM):

Typical scenario:

# Pit Loaders:	2
# Haul Trucks:	4
# Hrs. Per Year:	1,500

Loader Highest Manufacturer's Stated Emissions Certification (CAT 988H):
0.16 g/kw-hr; kw = 414

Haul Truck Highest Manufacturer's Stated Emissions Certification (CAT 773D):
0.11 g/hp-hr; HP = 650

Loaders (2)	PM=	132.48	grams per hr			
	0.292	lbs/hr	or 437.71 lbs/yr	=	0.22 tons per yr	
Haul Trucks (4)	PM=	286	grams per hr			
	0.630	lbs/hr	944.93 lbs/yr	=	0.47 tons per yr	

Total Mobile Equipment Engine Exhaust Emissions: 0.69 tons per year

E) Overburden Stripping Emissions Calculations:

Emission Factor (PM_{10} lbs/hr.) = $\frac{1.0\ (s)^{1.5}}{(M)^{1.4}} \times 0.75$ *(based on Table 11.9-1, AP-42)*

Where, "s" is material silt content (%) *(Table 11.9-3, AP-42)*
"M" is material moisture content (%) *(Table 11.9-3, AP-42)*
"0.75" is scaling factor for particles < 10 µm
Hrs. per year stripping = 320

$PM_{10} = [(1.0 \times (6.9)^{1.5} / 7.9^{1.4}) \times 0.75] \times 320 = 240.88$ lbs/yr

240.88/2,000 = 0.120 tons/year

Total Overburden Stripping Particulate Emissions: 0.120 tons/year

SUMMARY

The table below summarizes all of the significant sources of fine particulate matter and their associated calculated emission quantities.

Total of All Fine Particulate (PM_{10}) Sources (controlled)	
Source	**Tons Per Year**
Haul Road	0.06
Stockpile Stacking	0.08
Stockpile Wind Erosion	0.60
Mobile Equipment Exhaust Emissions	0.69
Overburden Stripping Particulate Emissions	0.12
Aggregate Plant Emissions (based on past 5-yrs. production)	4.71
TOTAL:	**6.27**

As the above calculations demonstrate, the total fine particulate emissions generated by the existing quarry operation (no changes are proposed) are less than one-half of the 15 tons per year threshold set in NYSDEC's Policy CP-33. Pursuant to this policy, no further impact assessment of fine particulate matter emissions is required.

4.1.3 Greenhouse Gas Emissions

Greenhouse gases (GHGs) believed to have an effect on global warming include: carbon dioxide (CO_2), nitrous oxide (N_2O), methane, ozone (O_3), and water vapor. These gases are naturally occurring but are believed to contribute to "global warming." Other GHGs include several classes of halogenated substances such as, hydro fluorocarbons, perfluorocarbons, and sulfur hexafluoride; and are solely a product of industrial manufacturing activities. [4]

Emissions of CO_2 account for an estimated 89% of the total annual GHG emissions in New York State.[5] Nationally, electricity generation is the single largest source of CO_2.[6] With respect to methane, natural gas systems, agricultural sources, and landfills are the three primary sources according to the U.S. Environmental Protection Agency. N_2O (approximately 68% in the U.S.) is produced by biological processes that occur in soil and water by a variety of human activities in the agricultural, energy-related, industrial, and waste management fields.[7] According to the U.S. EPA, mobile fuel combustion sources (i.e., vehicles) account for about 9% of all N_2O emissions in the U.S. Mining operations such as the Honeoye Falls quarry are not considered to be major sources of GHGs.

As previously stated, the proposed expansion will not create any new or increased traffic. The area to be added will allow the quarry to remain in business. Given this fact, the proposed project will not increase the GHGs attributed to the mine operation. In fact, by remaining open, the quarry operation will have a positive

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[4] U.S. Environmental Protection Agency, "2011 Draft Greenhouse Gas Inventory Report," February 2011.
[5] Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements, NYSDEC, Program Policy, July 15, 2009.
[6] U.S. Environmental Protection Agency, "2011 Draft Greenhouse Gas Inventory Report," February 2011.
[7] U.S. Environmental Protection Agency, "2011 Draft Greenhouse Gas Inventory Report," February 2011.

effect on minimizing GHG emissions by allowing transportation distances to remain relatively short, thereby reducing the amount of fossil fuel combustion.

In general, a significant part of the total cost of the aggregate mined is for transportation-related projects. This application is solely for the continued operation of an existing facility. Closure of mines has the effect of increasing the final delivered cost as the material will necessarily be transported a greater distance. In turn, this would increase the amount of GHGs since delivery vehicles (e.g., dump trucks, tractor-trailers) would need to drive longer distances. The proposed new area to be added will generate no increase in emissions since there will be no increase in equipment usage or production activity as a result of the proposed modification.

4.2 NOISE POLLUTION

Noise currently generated during mining activity originates from drilling and blasting; the use of equipment to remove material atop the bedrock and from the active face(s); haul trucks transporting materials; and the processing facilities. The following methods are currently used and will continue to be used to attenuate noise levels at the mine site:

- Motor driven equipment is muffled to meet MSHA standards,
- Processing equipment (e.g., crushers, screens, etc.) is significantly removed from residential structures limiting noise emanation to potentially sensitive residential receptors. No new processing equipment is proposed for the existing quarry or area to be added to the life of mine.
- Quarry operations are confined largely below grade which reduces noise transmitted off-site.
- Additional barrier attenuation from vegetated berms surrounding the mining site.
- Noise is attenuated by vegetative cover that is retained outside the areas that are not actively being mined or being prepared for mining.
- Equipment is routinely maintained.
- Vehicle speeds are controlled to reduce engine noise during interior transport of material. Speed limits are posted within the quarry.

A Sound Level and Attenuation Analysis was conducted by Hanson with the results attached in Appendix IX. The analysis was conducted to determine the current ambient noise levels around the expansion area and the sound levels[8] of typical equipment to be used in the expansion area. Attenuation (noise reduction) of the equipment sound levels due to mitigation methods such as berms, distance, and vegetation to receptors was calculated. It is noted that the most conservative (lowest) vegetative attenuation of 3 dB was used in the calculations. Attenuation from atmospheric distortion, humidity, and other environmental factors were not included and will further diminish the noise levels from the quarry.

Ambient sound levels were measured at several points around the proposed area to be added. The ambient levels ranged from 49.4 to 54.9 dB during the typical operating time of the quarry. Noise levels generated by quarry equipment were measured. For the study, the loudest apparatus, a mobile drill rig, was used to determine anticipated maximum noise levels at the receptors. Every adjacent property with a residence along the perimeter of the proposed expansion area was selected as a receptor. The anticipated sound levels at each residence (receptor) attributed to the proposed expansion were calculated and were included in the analysis.

[8] Equipment currently used at the quarry is identical or very similar to equipment that will be used in the future within the expansion areas.

As shown in the assessment report in Appendix IX, the noise generated by the proposed expansion will have no appreciable effect on the receptors, with the majority of receptor sound levels having an inaudible increase of less than 1.0 dB. The highest calculated sound level at a residence adjacent to the proposed expansion area due to the loudest equipment used at the quarry (drill rig) at its very closest location will be approximately 53.4 dBA, a ±2.6 dBA increase over the ambient sound for this area which is the greatest net sound level increase at a receptor. As a noise mitigation measure, the proposed excavation area boundary to this receptor will be set back 30-feet (approx.) further to the south in the northwestern portion of the proposed area to provide sufficient noise attenuation at the residence. Additionally, the berm height will be highest at approximately 28-feet, in this location to provide further noise attenuation.

For the sound level and attenuation analysis, a worse-case scenario of the drill rig operating at the upper-most elevation directly at the site boundary, not behind any quarry face, was assumed. It is noted that, in actuality, the mining operations inherently will create sound barriers since the expansion area will be opened in the east-southeastern portion, and progress north-northwesterly toward the Receptors. This progression will create additional sound attenuation (not factored into the noise study as a conservative approach) by keeping the drill rig behind the quarry faces as mining progresses for almost the entire life-of-mine. Drilling will only need to occur intermittently at the perimeter of the expansion area for a relatively brief period as the mine in the expansion area approaches full build-out. Thus, the worse-case noise scenario used in the analysis would not be a permanent or long-term situation.

The ±2.6 dBA (max.) increase at the closet receptor (6R) is less than 3-6 dBA, which the New York State Department of Environmental Conservation has determined to have no appreciable effect on Receptors (Reference: NYSDEC Program Policy, "Assessing and Mitigating Noise Impacts," February 2, 2001.)

The calculated sound level increases at all Receptors were all less than 3 dBA, with the majority being around ±1 dBA. Additionally, the calculated sound levels at all receptor locations were approximately 53.4 dBA or less. According to the NYSDEC Program Policy, ambient noise levels at ≤55 dBA are protective of public health and welfare.

As stated in the NYSDEC's "Assessing and Mitigating Noise Impacts" Program Policy (2001), increases ranging between 0-3 dBA above ambient sound levels should have no appreciable effect on receptors since they are within the range in which most humans can not notice a change. Therefore, the minimal 2.6 (max.) dBA increase to the ambient sound level at one (closest) Receptor near the expansion area for a brief time, near the end of mining, is not considered to be a significant impact.

4.3 WATER RESOURCES

4.3.1 Surface Water

No NYSDEC regulated wetlands are within or immediately adjacent to the areas proposed to be added to the current life of mine. There is one federally mapped wetland and one unnamed, NYSDEC classified stream adjacent to the southern portion of the proposed area to be added (refer to Section 4.3.2.1). No mining activity is proposed within a minimum of 25-feet of these two waterbodies.

Quarry activities will continue to have a minimal effect on natural surface drainage. As mining continues to progress westerly into the proposed expansion area, surface water in the form of sheet flow will continue to flow in an easterly direction. Precipitation falling on the quarry floor will continue to evaporate, percolate into fractures in the quarry floor, or accumulate on the floor to eventually flow towards and into the existing sump at the far eastern end of the quarry. Accumulation of precipitation on the quarry floor typically happens only during the winter and spring months.

Surface water flow within the plant area will not change and will continue to be channeled to the pond system for clarification prior to discharge as described in Section 2.5. Discharges from the settling pond system (outfall 001) and sump (outfall 002) are covered under SPDES Permit No. 002992. The proposed project will not have any impact on the facility's existing SPDES permit since no changes to the operation or nor any modifications water drainage and discharge systems will be necessary. No new stormwater or process water discharge points will be created as a result of the proposed action.

Stormwater runoff and internal drainage will continue to be directed to the quarry sump. No changes to current stormwater management practices will be required in conjunction with the proposed project. Stormwater and process water will continue to be managed as stated in the facility's "Best Management Practices (BMPs)/Stormwater Pollution Prevention Plan (SWPPP)."

Temporary and permanent berms will be seeded as soon as practical upon completion. Any silt laden water is directed to low areas in the southern portion of the quarry. These low areas within the quarry, as well as the sump, act as settling ponds to clarify any potential turbid conditions prior to discharge from the site. Upon depletion of the reserves the site will be reclaimed to a lake as described in Section 5.0. The reclaimed site will be internally draining and will be allowed to naturally fill with water.

4.3.1.1 Wetland Avoidance

There is one federally mapped wetland adjacent to the southern portion of the proposed area to be added. The federal designation of this wetland is "PEM1A," which is designated as a palustrine emergent, persistent, temporarily flooded wetland. In preparation for the proposed expansion, Hanson Aggregates contracted with The Environmental Collaborative (TEC) to complete a wetland delineation to identify the northern most extent of the wetland. The Environmental Collaborative performed the delineation on July 1, 2010. A copy of the TEC's summary report is included in Appendix X.

The wetland boundary markers set by TEC were surveyed shortly after the wetland delineation and are shown on the Mine Plan Map (Figure 2). The U.S. Army Corps of Engineers has jurisdiction over the federal (PEM1A) wetland. Even though the Army Corps does not require a setback distance, a minimum 25-foot off-set from the delineated northern wetland boundary, adjacent to the proposed expansion, has been scaled off from these surveyed markers on the updated Mine Plan Map.

4.3.1.2 Stream Avoidance

An unnamed tributary flows northwesterly to the south of the proposed expansion area. This tributary flows through the above-referenced federal wetland, and is designated by NYSDEC as "Class C." As shown on the Mine Plan Map, the proposed life-of-mine boundary to be added does not include this stream. No disturbance to the unnamed tributary is proposed as part of the expansion. Along most of the southern border of the proposed expansion boundary, this stream is approximately 500-600 feet away. In some locations, toward the southernmost extent of the proposed area to be added, the new life of mine boundary would be within 100-feet of the stream. Vegetated berms will be constructed around the perimeter of the proposed expansion. These berms, combined with the quarry faces, will contain stormwater and direct it away from the stream toward the internal portions of the quarry.

During berm construction, silt fence will be placed down-gradient in between the berm and/or wetland to prevent sediment runoff anywhere the berm is within 100-feet of these waters. The silt fence will be installed as stripping/excavation progresses into undisturbed areas adjacent to the wetland and stream, ahead of these earth-moving activities. The silt fence will remain in place until the vegetation on the berm has stabilized. Figure 7 is a standard silt fence installation detail that will be followed according to the New York State Standards for Sediment and Erosion Control Manual (August, 2005). The locations of silt fence are shown on the Mine Plan Map.

By avoiding the stream that feeds the wetland, there will not be any significant impact to the wetland (Refer to Section 4.3.3.2).

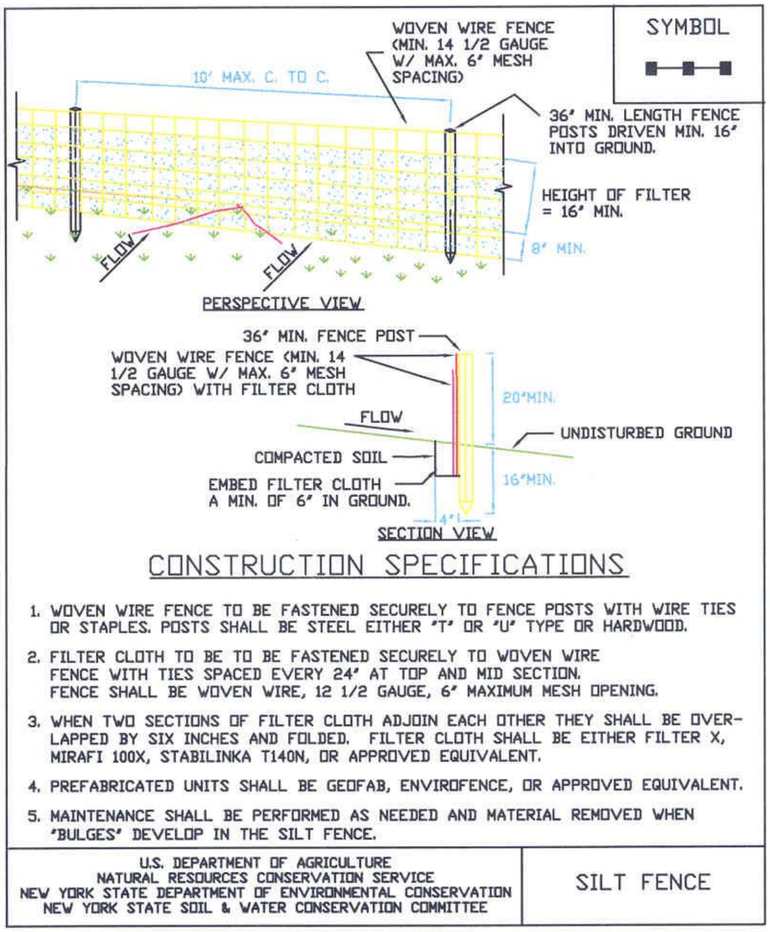


FIGURE 7: Typical Silt Fence Installation Detail

A second unnamed “Class C” tributary flows northerly across the eastern portion of the existing life of mine. This area of the current mine site is far removed from the proposed expansion area.

4.3.2 Petroleum and Chemical Storage

There will be no new petroleum or chemical tanks as a result of the proposed expansion. No modifications to existing petroleum tanks will be necessary. All current petroleum tanks are registered pursuant to the NYSDEC Petroleum Bulk Storage regulations as required. There are no regulated chemical bulk storage tanks at the facility.

As required under its industrial SPDES permit, Hanson maintains and implements a Stormwater Pollution Prevention / Best Management Practices Plan to prevent or reduce the potential for release of pollutants to waters of the State. The facility also follows an oil Spill Prevention, Control and Countermeasure (SPCC) plan as required under U.S. Environmental Protection Agency (EPA) regulations.

The potential for petroleum spills is controlled by the following methods:

- Petroleum tanks at the site are double-walled, in secondary containment, and/or located indoors.

- Bulk petroleum tanks are equipped with high-level alarms, level gauges, and/or automatic shut-off valves.
- Bulk petroleum tanks are visually inspected at least monthly.
- Personnel are trained and refreshed yearly on procedures to limit petroleum spills, as well as containment and clean-up of spills.
- Spill kits are maintained throughout the site and on many of the plant vehicles such as loaders and pickup trucks.
- When not in use, mobile equipment is parked near the garage on flat areas removed from any surface water drainage channels.

4.3.3 Ground Water

4.3.3.1 Site Hydrogeology

Since 2005, Hanson has regularly monitored water levels in eleven (11) piezometers located within its current quarry property. In preparation of conducting an assessment of the Honeoye Falls site's hydrogeology, an additional five (5) new monitoring wells were installed in and around the proposed project area in 2009 and 2010. Additionally, Hanson began monitoring the water levels in two (2) adjacent residents' wells plus the office supply well in 2009. At the request of NYSDEC, additional piezometers and staff gauges were installed in 2014. Piezometer locations are shown on the Mine Plan Map (Figure 2).

As directed by Hanson Aggregates New York LLC, Alpha Geoscience prepared a Hydrogeologic Analysis Report of the Proposed Expansion of the Hanson Honeoye Falls Quarry (located in Appendix XI). The NYSDEC requested additional hydrogeologic analyses of the proposed expansion. An addendum to the initial report by Alpha Geoscience is provided in Appendix XI.

The report and addendum present a hydrogeologic analysis of the proposed expansion area for the Honeoye Falls limestone aggregate rock quarry. The objectives of the hydrogeologic evaluation were:

- To provide information about the physical characteristics of the ground water system within and around the expansion area,
- Describe the anticipated changes that will occur to that ground water system when the mine is at its currently proposed maximum extent,
- Evaluate the potential impacts to neighboring residential wells and an adjacent wetland, and
- Evaluate the adequacy of the present sump location to continue to serve the mine as expansion progresses.

The evaluation objectives were met through a series of tasks that included:

- Literature review
- Site inspection
- Rock core and drill cuttings inspection
- Shallow piezometer installation
- Water level measurements
- Hydrogeologic analysis.

4.3.3.1 Impact Assessment of Proposed Expansion

The hydrogeologic analysis of the proposed expansion of the Honeoye Falls quarry was conducted by Alpha Geoscience. This detailed hydrogeologic evaluation was performed principally by reviewing existing information from literature, Hanson's records, NYSDEC logs, and publically available water level data; conducting inspections of the site; rock core and drill cuttings; installing several wetland piezometers and staff gauges; and analyzing water level and related hydrogeologic data.

The following are the primary conclusions derived from the hydrogeologic investigation:

- The site hydrology is comprised of a localized, shallow, perched ground water system and a water table aquifer. The perched system is primarily comprised of the wetland southwest of the expansion area. The water table aquifer occurs within the fractured limestone bedrock of the Onondaga Formation (Fm) and extends down into the contact with the underlying Akron Fm of the Bertie Group.
- Regional ground water flow is northward, while local ground water flow is influenced by local ground water recharge and discharge areas. Ground water in the vicinity of the existing quarry flows toward the quarry from all directions.
- A local ground water divide exists within the expansion area. Water east of this divide flows toward the quarry, while water on the opposite side of the divide flows toward the north and west.
- Most of the residential wells in the vicinity of the active mine and the expansion area extend through the Onondaga Fm and into the underlying Bertie Group over one hundred feet below the surface.
- The two (2) closest residential wells, Campier and Knab, to the west and northwest of the proposed modification area are 147-feet and 180-feet deep, respectively. Both of these wells are deeper than the seasonal low water table levels observed in routine monitoring of the Campier Well and MW #09-002. Refer to Appendix XI, Hydrogeologic Evaluation Analysis Report - Hanson Honeoye Falls Quarry."
- Water level data collected at the site wells and nearby residential wells since 2009 indicate that the seasonal low water table conditions, subsequent to installation of the 2010 monitoring wells, occurred on or about August 23, 2010. The water table generally rises from December through March, then begins to fall throughout the summer.
- Quarry expansion and pump out will have the greatest potential for impacting nearby residential wells during seasonal low water table conditions.
- The seasonal low water table is already at or below the future quarry floor in the northern half of the expansion area; consequently, there will be no further drawdown of the water table beyond what normally occurs during the dry season.
- The seasonal high water table, as with the low water table, is already below a portion of the proposed quarry floor.
- Residential wells along Honeoye Falls No. 6 Road north and west of the quarry entrance will not be impacted during seasonal low water table conditions when the potential for impact is the greatest; likewise,

the Campier well directly west of the expansion area will not be impacted at that time. These residences are all on the opposite side of the ground water divide that runs through the expansion area.

- Seepage faces are predicted for the quarry walls on the southern portion of the expansion area during the seasonal low water table conditions; consequently, there will be some drawdown of the water table south and southwest of the mine during that time. The drawdown impacts in these areas extend outward from the mine less than 700 feet and occur only within Hanson property, where there are no residential or public supply wells.

- The wetland to the southwest of the proposed expansion area will experience negligible impact from excavation of the expansion area. The wetland is perched above bedrock and does not receive recharge from the water table aquifer (bedrock) in the expansion area.

- The removal of the unconsolidated material within the expansion area will remove approximately 2% of the drainage system that contributes to the stream flow at the wetland outlet. The stream presently is ephemeral and will remain so after quarry expansion.

- The present sump location can continue to serve the quarry throughout the excavation of the expansion area. Seepage and precipitation will flow southward across the quarry floor, form a small pool against the southern wall of the mine until an elevation of approximately 575 ft. amsl is reached, after which the water will begin to drain eastward toward the present sump via gravity.

4.3.3.2 Groundwater and Surface Water Monitoring Program

Hanson currently monitors groundwater elevations quarterly at existing wells, and the quarry sump, as listed in the December 31, 2000 “Long-Term Monitoring Plan.” As described in Section 4.3.3.1 above, Hanson installed five (5) new wells in 2009 and 2010 and several wetland piezometers and staff gauges, within the vicinity of the proposed modification area. These wells (and piezometers) have been added to the quarterly well elevation monitoring program, and will continue to be monitored on a quarterly basis with the original wells listed in the December 31, 2000 “Long-Term Monitoring Plan.” Several additional wells within the quarry have also been incorporated into the monitoring program. Below is an updated list of the twenty-nine (29) groundwater (and surface water) elevation monitoring locations included in the quarterly monitoring program. The approximate well locations are shown on Figure 2 (Mine Plan Map).

- Oak Openings Road Culverts (2)
- Honeoye Falls No.6 Rd Culverts (2)
- Sump
- Well 1-99
- Well 1A-99
- Well 2-99
- Well 3-99
- Well 4-99
- Well 5-99
- Campier Well
  Dalton Road Silo Well
- Office Well
- Quarry Wash Plant Well (Well #17)
- Quarry Garage Well (Well #18)
- Quarry Crusher Run Plant Well (Well #20)
- Quarry Primary Crusher Well (Well #21)
- Well 09-001
- Well 09-002
- Well 09-003
- Well 10-001
- Well 10-002
- Wetland Piezometers (P1-P3)
- Stream staff gauges (SG1-SG3)

4.3.4 Uncontaminated Ground Water and Surface Water Discharge

Current operations allow the pumping of ground water and surface water from the sump located in the eastern portion of the existing quarry to a weir located beyond the high-wall in the northeastern portion of the life-of-mine. Water from the weir passes through a rip-rap lined channel and small filtering pond system prior to flowing northwesterly overland via surface channels to an unnamed tributary of Spring Creek. This discharge is currently identified as Outfall 002 under SPDES Permit #NY-0002992. There is no limitation on discharge flow rate in the SPDES permit. A portion of the water from the sump is recirculated via an overland pipe to a fresh-water pond located north of the main aggregate processing plant (Mine Plan Map, Figure 2). Water from this pond is pumped to the wash plant for use in processing during the production season (e.g., late April through mid-November).

Washing of the aggregate takes place at the main aggregate processing plant. Water used to rinse aggregate at the wash plant is sent via a pipe (below ground) and a channel north of the welding shop to the settling pond system (Mine Plan Map, Figure 2). A settling pond system is used to clarify the process ("wash") water prior to discharge in the pond system just north of the processing plant. Sediment-laden wash water flows through the settling pond system via gravity. Water passing through the settling ponds is clarified by settlement of the particles. Then the water evaporates, percolates into the ground or is discharged from the pond system through a culvert pipe to the north of the existing quarry via SPDES Discharge Point 001. Discharged water then flows overland via surface channels to an unnamed tributary of Spring Creek.

No changes to the current water discharges are being proposed as part of this project.

4.4 ASSESSMENT OF HISTORIC AND ARCHAEOLOGICAL SITES

As required, Hanson Aggregates made a written request on April 30, 2010 for a cultural resources consultation to the New York State Office of Parks, Recreation and Historic Preservation (OPRHP). The OPRHP sent a letter dated May 7, 2010 recommending a Phase I archaeological survey of all portions of the project that will involve ground disturbance. Due to the potential sensitivity of the project area for historic period "Seneca sites," OPRHP requested that Phase IA background research and a Phase IB testing strategy be available for Native American Consultation and OPRHP review prior to field investigation. Copies of the correspondence between Hanson and OPRHP are provided in Appendix XII.

A comprehensive Phase IAB Cultural Resources Investigation of the proposed expansion area was completed by Panamerican Consultants, Inc. in spring 2011. A copy of the associated report is included with this application as Appendix XII of this Amended Mined Land Use Plan. The study area for the cultural resources investigation included the entire proposed 63.6 acre expansion area.

The purpose of the Phase IAB Cultural Resources investigation was to determine the presence or absence of archaeological sites or other cultural resources in the project's areas of potential effect. The Phase IB field investigation resulted in discovering multiple stray finds and a concentration of prehistoric artifacts considered to be an archaeological site and designated as "PCI/Hanson Honeoye Falls-1." According to the cultural resources investigation report, no inter-site activity areas were inferred from the Phase I assemblage due to the effects of plowing. As described in the cultural resources investigation report (Appendix XII), the PCI/Hanson Honeoye Falls-1 site appears to be the remains of a small prehistoric camp where activities included stone tool production and resource processing. No artifacts were found that were characteristic of a Contact Period site or cemetery location (e.g., exotic or elaborately crafted grave goods).

Based on its investigation, Panamerican concluded that the one prehistoric site (PCI/Hanson Honeoye Falls-1) was *potentially* eligible for inclusion in the National Register of Historic Places (NRHP) under Criteria D: An archaeological site that has yielded, or may be likely to yield, information important in prehistory or history" (U.S. Department of the Interior 1995:2).

No further investigation was recommended by Panamerican for the isolated prehistoric finds scattered throughout the agricultural fields covering the remainder of the proposed project area. Panamerican concluded that due to the low artifact density outside of Site PCI/Honeoye Falls-1, no other areas merited additional investigation. The artifacts over the rest of the site were broadly scattered and not considered to be associated due to the great time span between cultural periods represented by diagnostic artifacts. Panamerican concluded that further investigations (e.g., Phase II) of the areas outside of PCI/Hanson Honeoye Falls-1, would likely produce similar results of widely scattered artifacts with no definitive association and low research potential due to the likely result of redundant data. OPRHP, however, recommended an additional Phase II Site Evaluation of Site PCI/Honeoye Falls-1, including all of the precontact artifact find spots identified in the Phase I study.

At the request of OPRHP, a Phase II cultural resources investigation was completed by Panamerican Consultants in August 2012. The purpose of the Phase II investigation was to assess the eligibility of Site PCI/Honeoye Falls-1 for inclusion in the National and State Registers of Historic Places (i.e., to determine whether it possesses integrity and if it is likely to yield information important in prehistory), as well as to refine what was known about its boundaries. With regard to artifact assemblage, the Phase II surface finds had the same general distribution as those found in the Phase I investigation. The Phase II results did not change the original conclusion from the Phase I study that Site PCI/Honeoye Falls-1 is the remains of a small Late Woodland era camp. Based on the Phase II investigation, Panamerican Consultants concluded that Site PCI/Honeoye Falls-1 did not meet eligibility for listing in the State/National Registers of Historic Places and that further investigation was not required. Following its review, OPRHP also concluded that the site was not eligible and that there would be "No Impact" upon cultural resources from Hanson's proposed mine expansion.

Copies of the Phase I and Phase II Cultural Resources Investigations, as well as the associated review letters from OPRHP are included as Appendix XII.

4.5 VISUAL RESOURCES ASSESSMENT

4.5.1 Nearby Visual Receptors

The proposed project is not expected to change the visual character of the area, since the vicinity of the project site is bordered by the existing quarry. As previously mentioned, the existing quarry has been in its current location for more than 50 years. As such, the quarry is inherent to the local landscape and the visual character of the area. Land uses in the vicinity of the project area consist mainly of the existing quarry, agriculture, undeveloped woodland, and rural residential. Figure 8, Visual Impact Assessment Plan Map, shows potential visual receptors relative to the proposed project area.

The proposed project area is mainly flat with slightly rolling elevations ranging from approximately 700 feet above mean sea level (AMSL) at its western edge, along Oak Openings Road, to approximately 720 feet AMSL in the center of the proposed area. The region around the site is characterized by generally gently rolling terrain with south-southeasterly trending drumlins. The land surfaces within 1-mile of the project site are generally the same elevation as the project area, typically ranging between 700-750 feet AMSL; and are rural in nature.

The land to the north gradually dips below the elevation of the project site, thereby blocking views of the existing quarry and the proposed project area from as far as 5-miles away. The land to the west of the proposed project area is relatively flat with the exception of a drumlin approximately 1-mile away, which rises in elevation to approximately 730-feet along Gilbert-Wilkinson Mill Road. Continuing west from Gilbert Wilkinson Mill Road, the surface elevation gradually declines west of the NYS Route 390 corridor to approximately 600-feet AMSL, about 5-miles from the project site. To the east, the land surfaces, including the Village of Honeoye Falls, are predominantly at the same elevation or lower than the project site for approximately 3-miles, then begin to gradually increase to approximately 850-feet about 5-miles east of the project location. The land to the south gradually increases in elevation, then sharply rises atop several drumlins located approximately one-half mile away to an elevation of about 920-feet AMSL, just south of North Avon Road. Land surfaces south of North Avon Road are rolling and range in elevation typically between 800-1,000 feet approximately 5-miles from the proposed project location.

The project will not involve the installation or construction of any structures or equipment. Therefore, there will not be any new elevated or protruding objects (e.g., conveyors, towers, stacks, etc.) located within the proposed project site that could be visible from surrounding areas.

The majority of mining activity (i.e. loading and hauling) will take place below grade, behind a 36- to 101-foot face. Mining activity, except for intermittent berm construction, will continue to take place behind a vegetated permanent berm a *minimum* of 10-feet high that will ultimately surround the three sides of the proposed modification area. As previously mentioned in Section 3.3.2, additional visual screening will be provided by the temporary safety berms along the northern edges of each mining phase. The continuation of perimeter berms and the high face behind which the equipment will shield views into the operating areas of the quarry from outside locations. It is noted that Hanson owns (or controls) all of the adjacent land to the east (existing quarry). A forested area to the south of the proposed expansion area, will provide visual screening. In addition to the vegetated berms to be constructed around the perimeter of the proposed expansion area, the quarry is visually screened from residences on adjacent properties to the north by mature woodland vegetation. Given the visual screening provided by the newly constructed vegetated berms and existing woodland vegetation, views into the quarry from Oak Openings Road (west), Honeoye Falls No. 6 Road (north) , and North Avon Road (south); and nearby residences will be shielded.

Since much of the land within 5-miles of the project location is at or near the same elevation as the site, the proposed area is blocked from view by vegetation (e.g., mature woodland), terrain, and/or buildings (e.g., barns, houses) at almost all surrounding receptors. There are currently views into the existing quarry from the south along Heath

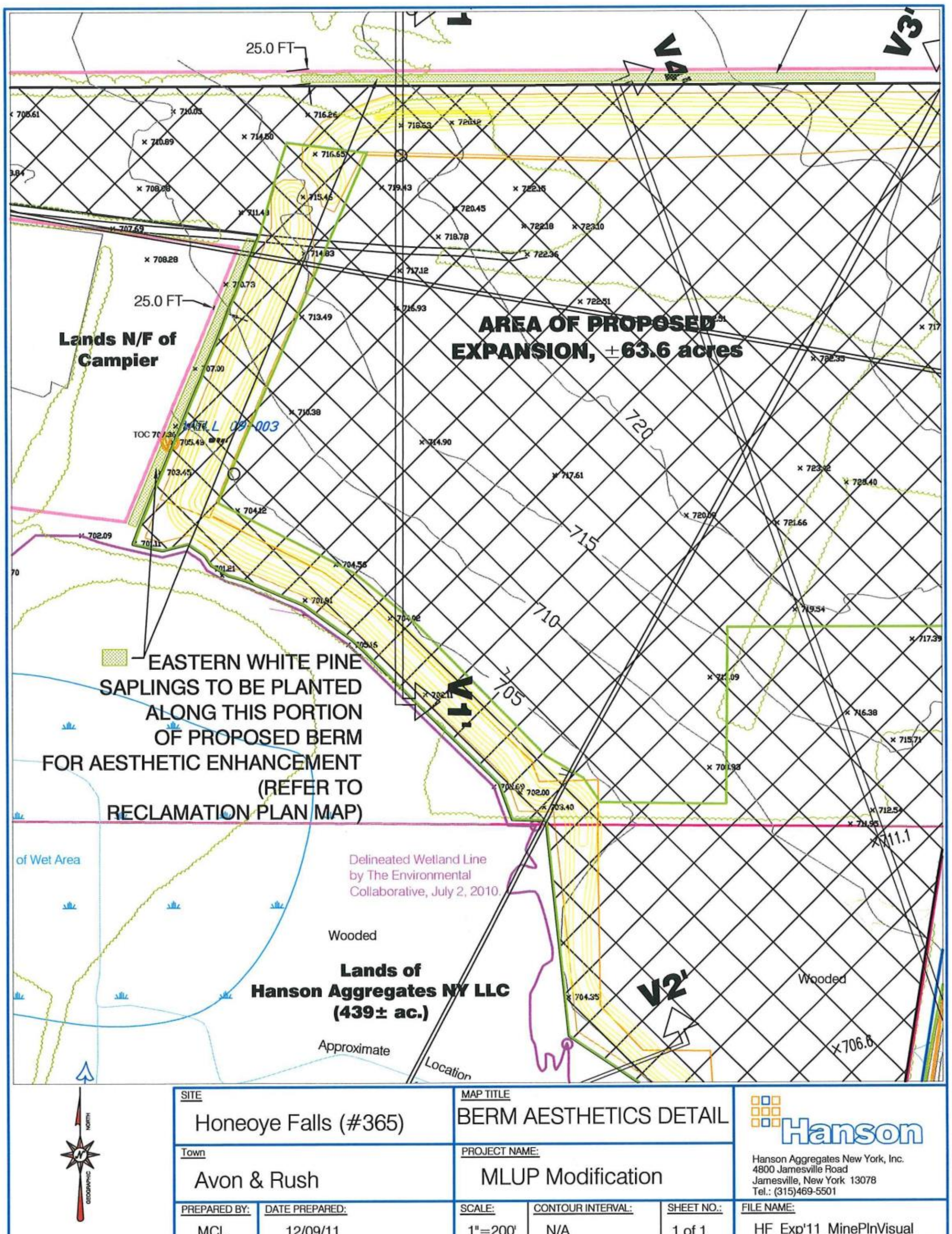


FIGURE 10: Berm Aesthetics Detail

Markham Road (e.g., Markham Cobblestone Farmhouse) and atop a drumlin on North Avon Road. These receptors are approximately 0.65 mile and 1.1-miles away, respectfully, from the proposed project. Visual Assessment Profiles (Figure 9) indicating the line-of-sight from a typical receptor along Heath Markham Road (V4-V4', Markham Cobblestone Farmhouse) and North Avon Road (V3-V3', Residence), to the proposed project area, are provided in Appendix XIII. Line-of-site profiles for several nearby residential receptors are also presented in Appendix XIII.

As shown in the line-of-site diagrams, views into the proposed project area will be shielded from the majority of nearby receptors by the perimeter berms to be constructed, mature trees, and existing terrain. Visual Cross Sections V1-V1', V2-V2', and V5-V5' show how nearby receptors will be screened from views into the proposed project area. The visual impact of the proposed expansion upon local receptors will be negligible, if any, since it will not substantially change the character of existing views from receptor locations. Receptors that will have views into the proposed additional area, have had views into the existing quarry for many years. The visual impact at the above-referenced receptors is further reduced by distance, as they are more than 0.65 mile and 1.1 miles away. Additionally, the proposed expansion area is slightly farther away from the existing quarry with respect to these potential visual receptors.

4.5.1.1 Mitigation

Upon completion of the perimeter berm, Eastern White Pine (*Pinus strobus)* tree saplings will be planted in single rows on the outer side of the proposed berms near several adjacent residences to the north and west of the proposed project area, as shown on the Reclamation Plan Map. Eastern White Pine trees have been found to grow well in the northeast and will provide an aesthetic improvement to the constructed berm. The proposed locations of the tree plantings are shown in Figure 10, "Berm Aesthetics Detail."

4.5.2 Inventory of Visual Resources of Statewide Significance

NYSDEC Program Policy (DEP-00-2) – "Assessing and Mitigating Visual Impacts," requires that all aesthetic resources of statewide significance be identified along with any potential adverse effects on those resources resulting from a proposed project. Aesthetic resources of statewide significance may be derived from one or more of the following categories:

- A property on or eligible for inclusion in the National or State Register of Historic Places [16 U.S.C. § 470a et seq., Parks, Recreation, and Historic Preservation Law Section 14.07];
- State Parks [Parks, Recreation, and Historic Preservation Law Section 3.09];
- Urban Cultural Parks [Parks, Recreation, and Historic Preservation Law Section 35.15];
- The State Forest Preserve [NYS Constitution Article XIV], Adirondack and Catskill Parks;
- National Wildlife Refuges [16 U.S.C. 668dd], State Game Refuges, and State Wildlife Management Areas [ECL 11-2105];
- National Natural Landmarks [36 CFR Part 62];
- The National Park System, Recreation Areas, Seashores, and Forests [16 U.S.C. 1c];
- Rivers designated as National or State Wild, Scenic, or Recreational [16 U.S.C. Chapter 28, ECL 15-2701 et seq.];
- A site, area, lake, reservoir, or highway designated or eligible for designation as scenic [ECL Article 49 or NYDOT equivalent and Adirondack Park Agency], designated State Highway Roadside;
- Scenic Areas of Statewide Significance [of Article 42 of Executive Law];
- A State or federally designated trail, or one proposed for designation [16 U.S.C. Chapter 27 or equivalent];
- Adirondack Park Scenic Vistas [Adirondack Park Land Use and Development Map];
- State Nature and Historic Preserve Areas [Section 4 of Article XIV of the State Constitution];
- Palisades Park [Palisades Interstate Park Commission]; and
- Bond Act Properties purchased under Exceptional Scenic Beauty or Open Space category.

Table 4-1, Inventory and Assessment of Aesthetic Visual Resources

The applicable state and federal databases and literature sources were reviewed in the preparation of this application. Table 4-1, below summarizes the aesthetic resources of statewide significance within 5-miles of the proposed project location. With one exception noted in the table, there are no significant aesthetic resources nearby.

Aesthetic Resource	Listed Resource within 5-miles? (Y / N)	Description	Assessment
National/State Register Historic Place	Y	Markham Cobblestone Farmhouse and Barn Complex (6857 Heath-Markham Road); approximately 0.65 miles southeast. Site is a private residence.	The Markham Cobblestone Farmhouse site is currently a residence occupied by the York family. The existing quarry can currently be viewed from this residence. The owner of the residence (York) also owns part of the quarry that Hanson leases for mining purposes. The visual impact of the proposed expansion upon this residence will be negligible, if any, since it will not substantially change the existing views from the listed site. The existing quarry is already viewable from this residence. A visual cross section, profile No. V4-V4' (Figures 8 and 9), shows that the proposed project area will be mostly shielded by vegetation at the Markham site.
State Park	N		
Urban Cultural Park	N		
State Forest Preserve	N		
National Wildlife Refuge	N		
National Natural Landmark	N		
National Park System	N		
National/State Wild, Scenic, Recreational River	N		
Scenic Highway/Byway	N		
Scenic Area of Statewide Significance	N		
State/Federal Trail	N		
Adirondack Park Scenic Vista	N		
State Nature and Historic Preserve Area	N		
Palisades Park	N		
Bond Act Property (Exceptional Scenic Beauty or Open Space)	N		

4.5.3 Local Visually Sensitive Areas

The zoning ordinances of the four (4) towns in which the existing quarry and/or proposed project area were reviewed to determine if there were any special zones designated for sensitive visual areas identified by the surrounding townships. The surrounding towns are: Avon, Lima, Mendon, and Rush. The zoning maps and ordinances of the four towns do not designate any areas as having any special visual sensitivity.

4.6 AGRICULTURAL DISTRICTS AND SOILS

The proposed expansion area is located within agricultural districts designated Monroe County. Refer to Figure 11, Agricultural District Map. According to the New York Agricultural Land Classification database, approximately 50 acres contain soils in NYS Land Classification System groups 1 through 4. The predominant soil type within the area to be added is the Honeoye Silt Loam, with slopes ranging between 0-8 percent.

The majority of the area to be added (approximately 53.6 acres) has been designated by the Town of Rush as a Residential (R-30) District. Mining is allowed in an R-30 district with a special use permit. Permitted uses in an R-30 zone include (but are not limited to) one-family dwellings, public buildings, schools, hospitals, nursing homes, and public utility installations, in addition to farming. Given this residential zoning designation, the project area is not considered by the Town to be prime agricultural land.

Prior to mining in previously undisturbed areas, overburden and top soil will be stripped, segregated, and saved as described in Section 3.8.3. It is recognized that since the final reclamation after full mine build-out will be primarily water-based, much of these soils would not be used for agricultural purposes at the reclaimed site. This is consistent with the local residential (R-30) zoning, in that the expansion area has not been designated by the Town of Rush as an agricultural zone.

As described in Section 1.3, high-quality stone that meets today's stringent transportation and building requirements is mined from deposits that must be of very high quality, located near the surface, and located near a sustainable market to be economically viable. The stone to be mined in the proposed expansion area at the Honeoye Falls Quarry meets these requirements. Economically obtainable deposits do not exist in every Town nor do they recognize political boundaries. Mines must therefore be located where the natural deposits exist.

Although approximately 50 acres of agricultural soils will be stripped as excavation advances into the new area, these soils will remain at the site in the form of perimeter berms and stockpiles on which vegetation will be planted. According to Monroe County data, the County's agricultural district covers approximately 138,095 acres of which the greatest percentage (34%) is located within Eastern Agricultural District #6 (47,673 acres), in which approximately 53.6 acres of the expansion area is located.

The remaining 10.0 acres of land within the expansion area are located in the Town of Avon within Livingston County and, not within a designated agricultural district. This has been confirmed in writing by the Livingston County Planning Department. Refer to Appendix XIV.

There are approximately 17 million tons of high-quality limestone reserves within the proposed expansion area. Mining these resources will ensure that adequate supplies of construction aggregates can continue to be provided to the local community members, municipalities, and business at competitive prices for many years.

There currently are no other permitted limestone quarries within approximately 30 miles of the Honeoye Falls Quarry. The area within 30 miles of the existing quarry is predominantly within the agricultural districts of Livingston and Monroe Counties as show on the respective agricultural district maps in Appendix XIV. As described in Sections 1.3 and 1.4, a significant portion of the cost of construction aggregates is in the transportation. The majority of customers supplied by the Honeoye Falls Quarry are within about a 20 mile radius. As indicated these previous sections, costs of aggregates typically double and triple as the transportation distance doubles. Increased transportation distance leads to more fuel use and exhaust of greenhouse gases.

4.6.1 Local Requirements

To inquire as to any special notification or filing requirements associated with the portion of the proposed project within applicable agricultural districts, Hanson Aggregates contacted the Planning Departments of Monroe County and Livingston County.

According to a letter dated December 12, 2014 (Appendix XIV), from the Monroe County Department of Planning and Development office, the proposed project does not trigger any special requirements to file a notice or obtain a permit from Monroe County. When Hanson Aggregates applies to the Town of Rush for site plan approval, an Agricultural Data Statement will be required. Below is an excerpt obtained from the county's website that specifies this requirement.

According to 305-a.2 of the NYS Ag. Districts law, an agricultural data statement is required to be submitted with "any application for a special use permit, site plan approval, use variance or subdivision approval requiring municipal review and approval by a planning board, zoning board of appeals, town board or village board of trustee… that would occur on property within an agricultural district containing a farm operation or on property with boundaries within 500 feet of a farm operation located in an agricultural district shall include an agricultural data statement."

This statement is informational in nature and not subject to any approval requirements. A copy of the Agricultural Data Statement is also included in Appendix XIV.

Since no portion of the proposed action is within an agricultural district of Livingston County (see correspondence in Appendix XIV), there are no special requirements.

4.7 SENSITIVE PLANTS, ANIMALS, AND HABITATS

In anticipation of the proposed mining permit modification Hanson requested a review by the NYSDEC Natural Heritage Program for any records of rare, threatened, or endangered species, or significant natural communities at or near the project area. According to the April 12, 2013 letter, as well as the April 27, 2010 letter received from the NYSDEC Natural Heritage Program, there are no records of sensitive or protected plants, animals, or habitats within the proposed expansion area. Copies of the letters from the Natural Heritage Program are in Appendix XV.

There are two Natural Program Database records for the James' Sedge and Limestone Woodland, however, both locations are more than one-half mile to the north of the proposed area. (See Appendix XV.) During the wetland delineation performed by The Environmental Collaborative, neither the James Sedge or Limestone Woodland were noted (Appendix X).

4.8 VEHICLE TRAFFIC

The proposed expansion is necessary to allow the facility to remain in business and continue to meet the local demands for construction aggregates. The project will have no effect on existing customer truck traffic. Truck traffic to and from the site will not be increased by continued operation of the mine. The amount of material shipped from the site is dictated by market demands and specific contracts, not by the size of the quarry. Continued development of the quarry as proposed with this modification, will not create an increase in market demand and has no bearing on truck traffic.

No changes to the method of mining or increase in production capacity are proposed in this modification. Hanson will continue to use the entrance to the facility from Honeoye Falls No. 6 Road which has existed since the facility opened for mining in 1959.

No increase in customer truck traffic will result since this modification is solely to ensure that the current operation can continue its business. The number of daily truck trips will continue to vary depending upon individual contracts and local customer needs, but will not increase as a result of the proposed modification.

4.9 GROUND VIBRATION FROM BLASTING

Blasting is currently the only cost-effective method available at the Honeoye Falls Quarry to fragment consolidated rock to a size small enough to crush through the aggregate processing plants. During a blast, the energy released during the expansion of gases produced by the detonation of the blasting agent breaks or fragments the consolidated material in the immediate vicinity of the charge. Energy introduced to the rock medium that is not permanently deformed travels as kinetic energy of particle motion and potential energy of particle displacement in the wave motion. For blast vibration analysis, particle velocity rather than wave velocity is directly applicable.

The former United States Bureau of Mines (USBM) was the lead agency in studying blast effects on low-rise, residential type structures from 1910 until its closure in 1996. One of the principle objectives of the agency was to obtain a wide spectrum damage criterion that could be adopted by civil regulatory agencies in fashioning blasting regulations that would prevent threshold damage. Threshold damage refers to the most superficial, marginally visible, hairline cracking of interior wallboard such as that which develops in all homes independent of blasting (Siskind, 2000). Threshold damage is *not readily visible* to the homeowner and often requires the use of special lighting and magnifying lenses to be seen by researchers.

The USBM prepared three comprehensive reports over a period of 40 years that culminated in the publication of USBM Report of Investigation (RI) 8507 in 1980. This study involved new measurements and inspections that were combined with results of nine previous studies. In total, results of 718 blasts involving 150 structures were included. RI 8507 presents a criterion (Figure 11) that delineates safe blasting limits to prevent threshold vibration damage to low-rise, residential type structures for a wide-spectrum of frequencies.

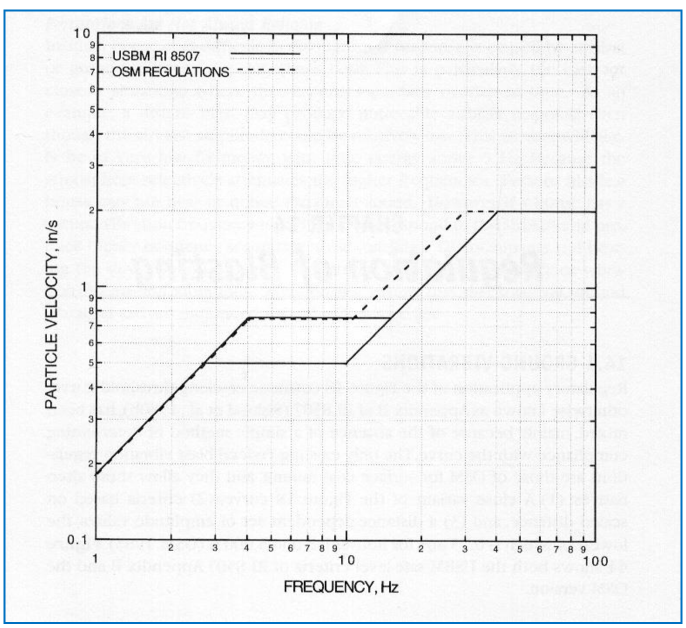


Figure 11: RI 8507 Threshold Damage Criterion

The limits imposed by this criterion are very conservative and contain a large margin of safety for the protection of the structure. For example, this publication concludes that high frequency ground vibration of 3.2 ips will cause threshold damage to only five out of 100 homes, i.e. a five percent statistical probability of threshold damage (USBM RI 8507, p.59). This damage would consist of marginally visible, hairline cracking of plaster or sheetrock wallboard. The lowest cracking value for crack extension in sheetrock from thousands of observations made by the USBM is 0.79 ips. No observations of threshold cracking have been observed or documented by either the USBM or other studies below 0.5 ips. "The USBM's inability to obtain positive cracking observations below 0.50 in/s was recognized during the preparation of the RI in 1980 (pp. 58 and 68). However, the cause and significance of this fact was only suspected at that time. The reason is now believed to be the universal existence of natural and cultural stresses affecting homes corresponding to vibrations of about 0.50 in/s and in some cases over 1.2 in/s" (Siskind, 2000, p. 41).

Cracks in construction components such as interior wallboard and plaster walls are not static but undergo hourly and seasonal cyclical changes in response to fluctuations in temperature, humidity, wind and other factors. For example, Dowding (2000) obtained data from full-time monitoring of a crack at the joint of two sheets of drywall in a test house (see Figure 12). Crack movement due to changes in weather was 3.5 times larger than those produced by blasting with a maximum vibration level of 0.75 inches per second (ips). It would require a vibration intensity of about 5.7 ips to have the same total effect on the change in dimension as a complete weather cycle (Dowding, 2000).

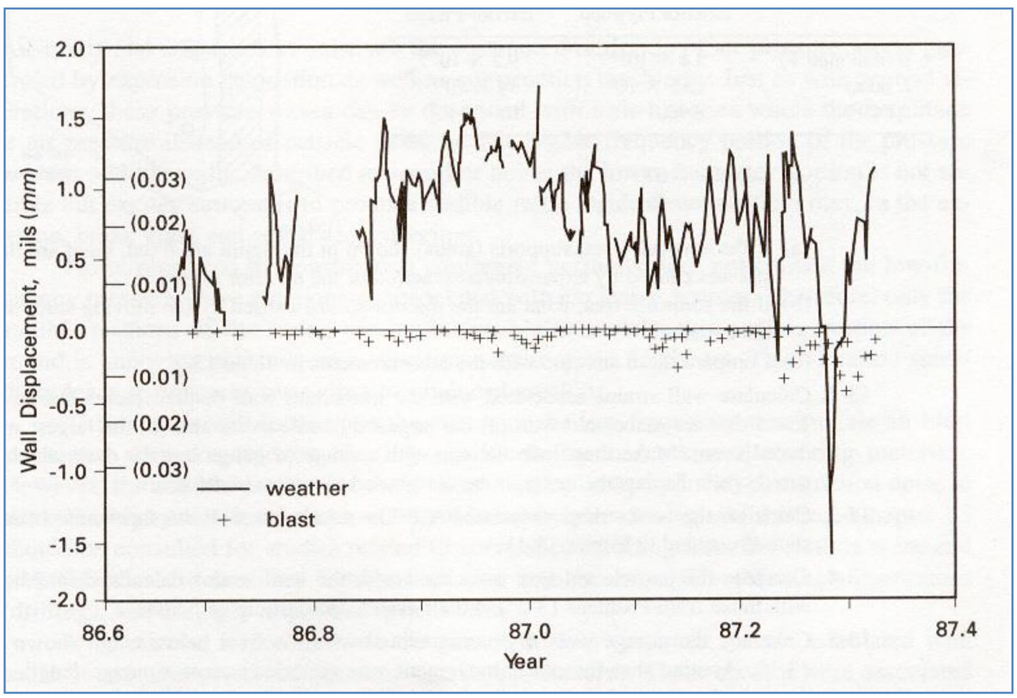


Figure 12: Comparison of Crack Displacements produced by weather changes (continuous line) and blasting vibrations with maximum particle velocity of 0.75 ips

Research by the USBM and others has concluded through years of study that a residential structure's level of response to a blast induced ground vibration is dependent on both the peak particle velocity and the frequency of the waveform produced by the blast. Time and frequency properties of mining blasts as reported in RI 8507 are as follows (Morehard, 1987):

1) The amplitude, frequencies, and durations of ground vibrations change as they propagate, because of:
   (a) interactions of various geologic media and structural interfaces,
   (b) spreading out the wave train through dispersion, and / or
   (c) absorption that is greater for the higher frequencies.
2) Close to the blast, the vibration character is affected by factors of blast design, mine geometry, charge weight per delay, delay interval, direction of initiation, burden, and spacing.
3) At large distances from the blast, the factors of blast design become less critical and the transmitting medium of rock and soil overburden dominates the wave characteristics.
4) Particle velocity amplitudes are approximately maintained as the seismic energy travels from one material into another (i.e., rock to soil).
5) Vibration frequency, displacement, and acceleration amplitudes depend strongly on the propagating media.
6) Thick soil overburden and large distances create long-duration, low-frequency wave trains. This increases the response and damage potential of nearby structures.
7) Coal mine shots are characterized by a trailing large-amplitude, low-frequency wave because of larger overburden layers.
8) The combined effect of large shots, thick overburdens, good confinement, and long-range propagation make coal mine blast vibrations potentially more serious than quarry and construction blasts because of their lower frequencies (Figure 11.11) Morehard, 1987.
9) Natural frequencies of mid-walls are somewhat higher than for the structure corners (Figure 11.12).
10) Damping for mid-walls was generally lower than that for structure corners (Figure 11.13). Damping controls the decay of oscillation, so that when a structure is critically damped (B = 1.0), it will return to its equilibrium position without oscillating.
11) Maximum amplifications for a one-story and two-story structure occurred when ground motions between 5 and 12 Hz were recorded. Corner motion amplification factors for all of the homes studied were as high as 4, and for mid-walls the factors were as high as 8.
12) Normally, ground motion measurements above 45 Hz produce little or no amplification in corner structure and / or mid-walls.

The main conclusions drawn from the latest USBM, RI 8507 are:

1) Particle velocity is still the best single ground descriptor.
2) Particle velocity is the most practical descriptor for regulating the damage potential for a class of structures with well-defined response characteristics (e.g., single-family residences).
3) Where the operator wants to be relieved of the responsibility of instrumenting all shots, he or she could design for a conservative square root scale distance of 70ft / $lb^{1/2}$. The typical vibration levels at this scaled distance would be 0.08-0.15 in. / sec.
4) Damage potentials for low-frequency blasts (<40 Hz) are considerably higher than those for high-frequency blasts (>40 Hz), with the latter often produced by close-in construction and excavation blasts.
5) Home construction is also a factor in the minimum expected damage levels. Gypsum board (drywall) interior walls are more damage resistant than older, plaster-on-wood-lath construction.
6) Practical safe criteria for blasts that generate low-frequency ground vibrations are 0.75in. / sec for modern gypsum board houses and 0.50 in. / sec for plaster-on-lath interiors. For frequencies above 40 Hz, a safe particle velocity maximum of 2.0 in. / sec is recommended for all houses.
7) All homes eventually crack because of a variety of environmental stresses, including humidity and temperature changes, settlement from consolidation, and variations in ground moisture, wind, and even water absorption

from tree roots. Consequently, there may be no absolute minimum vibration damage threshold when the vibration (from any cause, for instance slamming a door) could in some cases precipitate a crack about to occur.

8) The chance of damage from a blast generating peak particle velocities below 0.5in. / sec is not only small (5% for worst cases) but decreases more rapidly than the mean prediction for the entire range of vibration levels (almost asymptotically below about 0.5in. / sec).

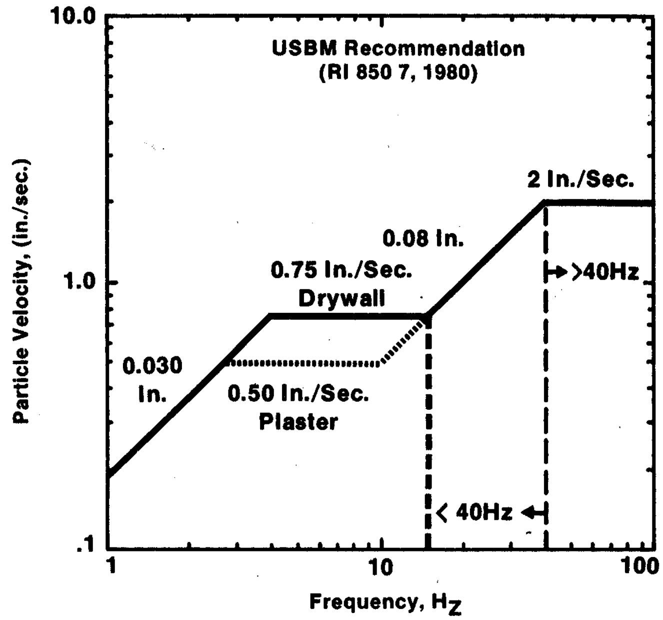


Figure 13: Frequency versus particle velocity graph developed by the U.S. Bureau of Mines to protect houses from vibration damage.

Figure 13 indicates the safe levels of blasting vibrations for houses as determined in USBM report RI 8507. Hanson Aggregates New York LLC has and will continue to design the blasts at the Honeoye Falls Quarry to maintain peak particle velocities below the limits as shown in Figure 13.

4.9.1 BLASTING PLAN

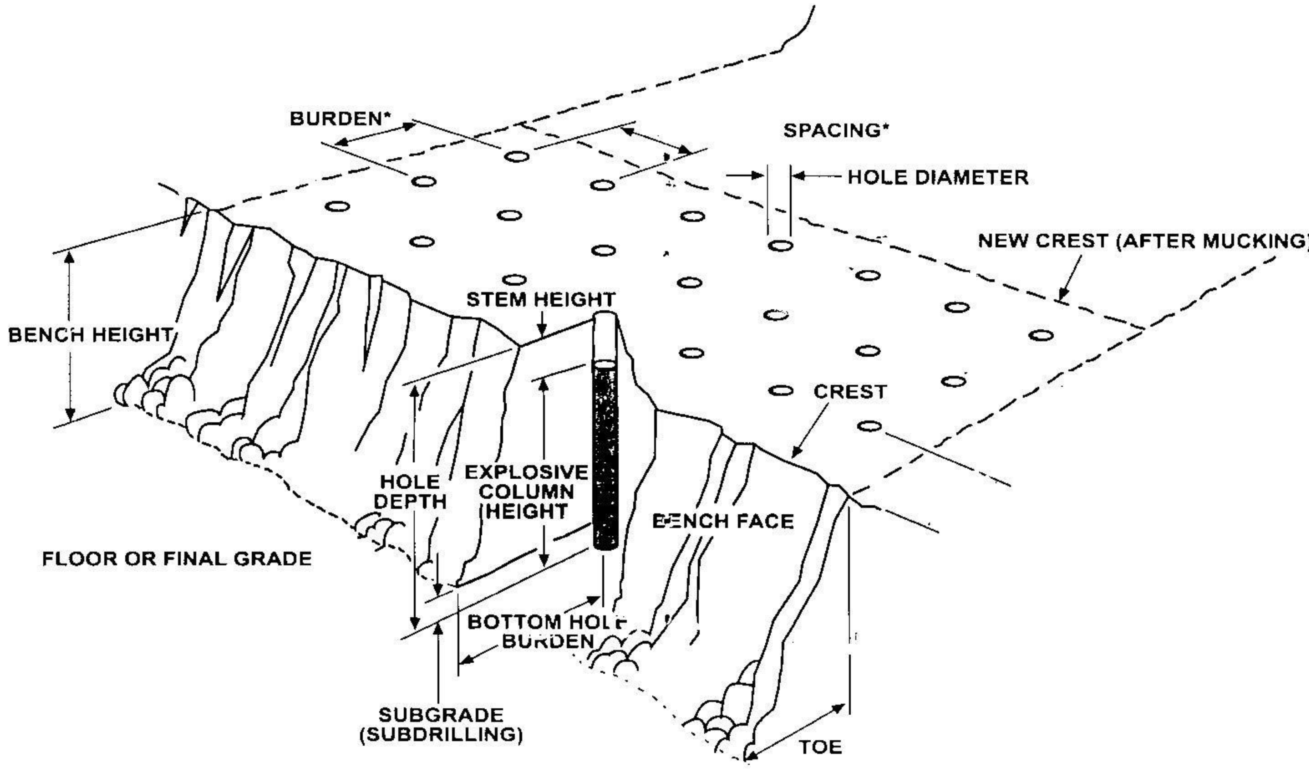
As stated in Section 3.2.2 of this report, seismographs will be used to record the frequency and peak particle velocity measurements between the blast and closest residence to the blast during each occurrence at the Honeoye Falls Quarry. The results are compared with the chart in Figure 13 by the licensed blaster to help design the next blast. Since no two shots are identical, the design of the shot may change from the last dependent on location, amount of burden, height of face, and distance to receptors. Information such as borehole size, burden, borehole spacing and delay vary from shot to shot. Using this method of blast design with seismograph evaluation after each shot, there has been and will continue to be no significant impact to structures outside the mining limit as mining continues into the expansion area and within closer proximity to residences.

As required under New York State regulations, only licensed blasters perform blasting and blast designs at the Honeoye Falls Quarry. As described above, each blast is designed separately and as blasting conditions change with respect to vibration and air-blast measurements. Appendix XVI contains information on standard protocols, pre-blast vibration prediction calculations, and a sample risk assessment form used by the contracted blasting companies when preparing a blast design. It is noted that the expansion will not approach nearby residences for many years and therefore, the blasting company will have much data upon which to base its blast designs when, ultimately, blasts are conducted near the outer reaches of the proposed new area.

Hanson Aggregates employed the professional consulting services of Continental Placer, Inc., to provide a blast design to assess and minimize the potential impacts associated with blasting at the Honeoye Falls Quarry. The following is the blasting design as prepared by Continental Placer, Inc.:

> A blast design has been preliminarily planned for the site and presented on the following pages. Due to the hundreds of variables for which only the blaster has control, Continental Placer Inc. cannot and will not assume responsibility for the results of the blasting. The proposed design is only a recommendation based on historical records. All aspects of the blast design, including burden, spacing, geometry and delays, as well as consideration for geological variations, are the responsibility of the blaster in charge. The potential impacts from fly-rock, dust and gases will be contained in the quarry and, more specifically, in the blast zone. Blast zone means the area beyond the blast area that may be influenced by blasting operations.
>
> Hilltop Energy has been routinely blasting in the quarry (16 times in 2014) with a drill hole diameter of 6.25 inches; with a face burden of 17 feet and spacing between drill holes of 16 feet. This pattern will continue to be used in the expansion area as long as the blaster-in-charge deems it appropriate. Depending on the depth of the hole, each hole may have up to four explosive decks with approximately four to five feet of stemming separating the decks. The number of explosive decks will determine the pounds of explosives detonated in any one delay period; the greater the number of decks the fewer pounds of explosives detonated per delay period. The nearest residence to the expansion area will be approximately 250 feet and this will not be until Phase 5, which is many tens of years into the future. The calculations presented below are based on the quarry high-wall being 250 feet from that residence.
>
> DuPont's attenuation calculation was used for the analyses and to plot the graph shown in Figure 13 using the proposed blasting design. The graphs show the effect of distance upon peak particle velocity using the 200 pounds per delay in blasting. The closest any blast will be is approximately 250 feet. The graphs show that at 250 feet using 200 pounds of explosives per delay the vibration is 1.62 inches per second. This vibration intensity is well within the USBM guidelines of 2.0 inches per second at frequencies higher than 40 hertz.

Blast Design
Bench Height = 52 feet
Drill Hole Diameter = 6.25 inches
Burden = 17 feet
Spacing = 16 feet
Explosive Column Height = 44 feet
Stem Height = 8 feet



The weight of explosives in each delay will be approximately 200 pounds (average density 1.20 grams/cubic centimeter).

For Phase 5 of the proposed modification, closest structure not under the control of the quarry will be no closer than 250 feet. The Scaled Distance to this structure is 17.68. Scaled distance (D_s) is a factor relating similar blast effects from various size charges of the same explosive at various distances. Scaled distance, referring to blasting effects, is obtained by dividing the distance of concern *(D)* by a fractional power of the weight of the explosive materials *(W).*

$$\textit{Scaled Distance } D_s = D/W^{1/2}$$

We used the following formula to calculate the expected Peak Particle Velocity (PPV):

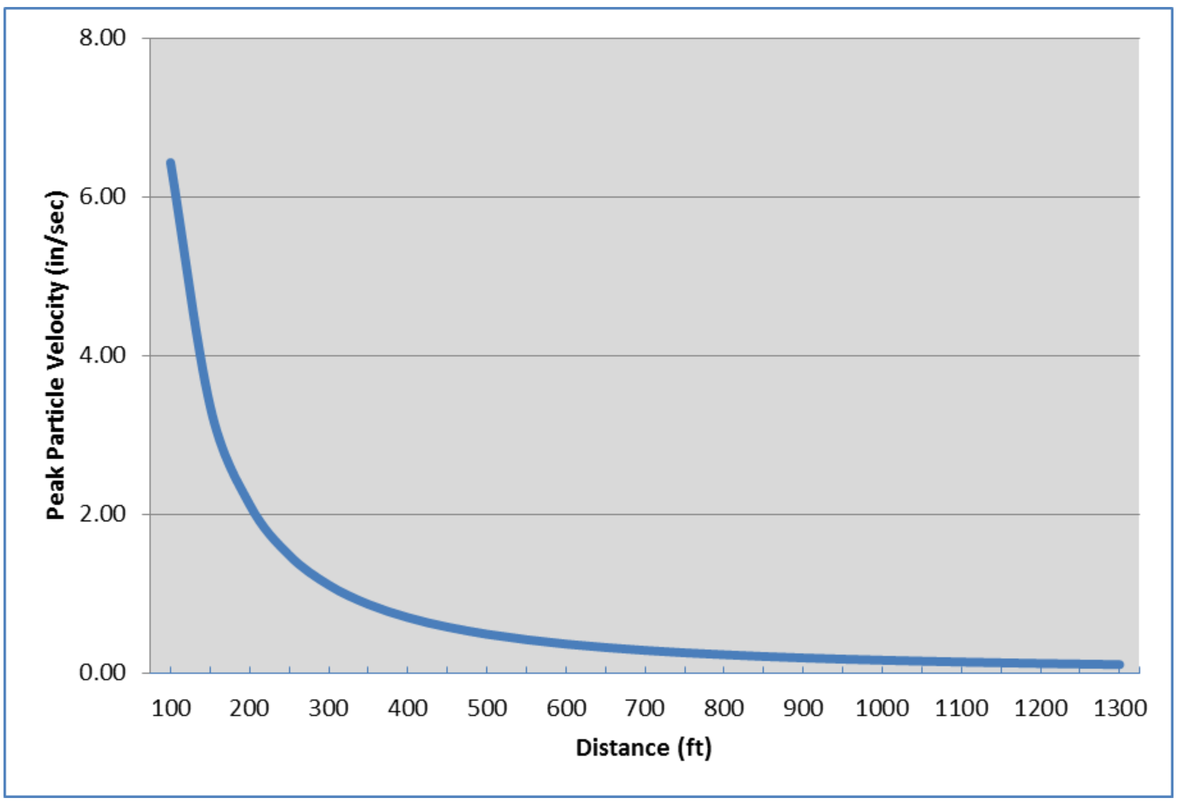
$$PPV = 160\ (\textit{Scaled Distance})^{-1.6}$$

The following table shows the results of our calculation at various distances. PPVs are expressed in inches per second. Figure 14 shows how quickly blast induced ground vibrations attenuate.

Table 4-2: Predicted Peak Particle Velocities

Distance to Structure	Pounds Per Delay	Scaled Distance	Peak Particle Velocity
100	200	7.07	7.00
150	200	10.61	3.66
200	200	14.14	2.31
250	200	17.68	1.62
300	200	21.21	1.21
350	200	24.75	0.94
400	200	28.28	0.76
450	200	31.82	0.63
500	200	35.36	0.53

Figure 14: Peak Particle Velocity Attenuation



Most structures contain cracks caused by strong environmental and cultural forces regardless of the presence of blasting. Strains in construction components are produced by the gravitational loads carried by bearing walls, the shrinking and swelling of construction materials as they cure or in response to changes in the weather, differential foundation settlement caused primarily by changes in soil moisture, sub-standard construction practices and/or materials and household activities such as door slamming, nail pounding, jumping etc. A summary of peak particle equivalent strains from non-blasting forces, extracted from Siskind (2000, p. 59) is presented in Table 4-3.

Table 4-3: Particle Velocity Equivalent Strains Produced by Household Activities and Environmental Changes

Vibration or response source	Magnitude	Equivalent ground vibration velocity, in/s	References
Temperature, outside	Δ10°F	1.0 - 3.2	Stagg (1984)
	Δ10°F	0.5 - 1.7	Siskind (1996)
	Δ18°F	>0.34	White (1993)
Temperature and humidity cycles	not specified	1.75 - 5.0	Fang (1976)
		0.75-2.6	Dowding (1996)
Humidity	10 pct	1.0 - 2.4	Stagg (1984)
Wind	20 mph	0.6 - 2.6	Stagg (1984)
	50 mph	1.1 - 6.7	Sutherland (1968)
Traffic	4-t truck driving over a 1-in plank at 63 ft	≈0.24	Thoenen (1942)
	not specified	0.04 - 0.20	Fang (1976)
Human activity:	slamming front door	0.15 - 1.9	Stagg (1984)
	closing door	0.35 - 0.50	Aimone (1987)
	walking	0.1	Aimone (1987)
	pushing on wall	0.025 - 0.36	Fang (1976)
	pushing on wall	0.6 - 2.4	White (1993)
	jumping & walking	0.10 - 0.50	Stagg (1984)
	jumping	0.15 - 0.9	White (1993)
	walking (long span floor response)	0.16 - 0.74	Dowding (1996)

Air Overpressure

In typical blasting applications, explosives are inserted into holes drilled into the bedrock. When the explosives are detonated they immediately create rapidly expanding, high pressure gases. These gases create stress waves that are transmitted through the bedrock. The blast gases are confined and the energy produced will break the rock. As the gases continue to expand, the result is a release of energy into the atmosphere referred to as air-blast or air overpressure. Air-blast is also created by the outward movement of the blasted rock. This energy is measured in decibels (dB) or pounds per square inch (psi) and is simply pressure in excess of the ambient air pressure.

Air overpressure consists of air transmitted sound pressure waves that move outward from an exploding charge. A well confined explosive charge creates pressure waves with frequencies that are predominantly less than 20 hertz (Hz), with a relatively small amount of energy having frequencies above 20 Hz. The portion of air blast that falls below 20 Hz is typically about 70% and the portion that is above 20 Hz is typically about 30%. However, air blast is influenced by many different things, the most common are the pounds of explosives detonated per delay period, distance from blast site to the area of concern, quarry high-wall height and orientation, blast hole stemming, burden and spacing of blast holes and weather conditions. These influences could alter the typical percentages above and below 20 Hz. The human ear responds to frequencies above 20 Hz, but filters out frequencies below 20 Hz. Buildings respond predominantly to frequencies in the range 2 to 20 Hz. Because air overpressure from blasting consists of frequencies that are substantially below 20 Hz, air over-pressure levels are measured with a meter that measures frequencies in the range 2 to 250 Hz on a decibel (linear) (or dBL) scale.

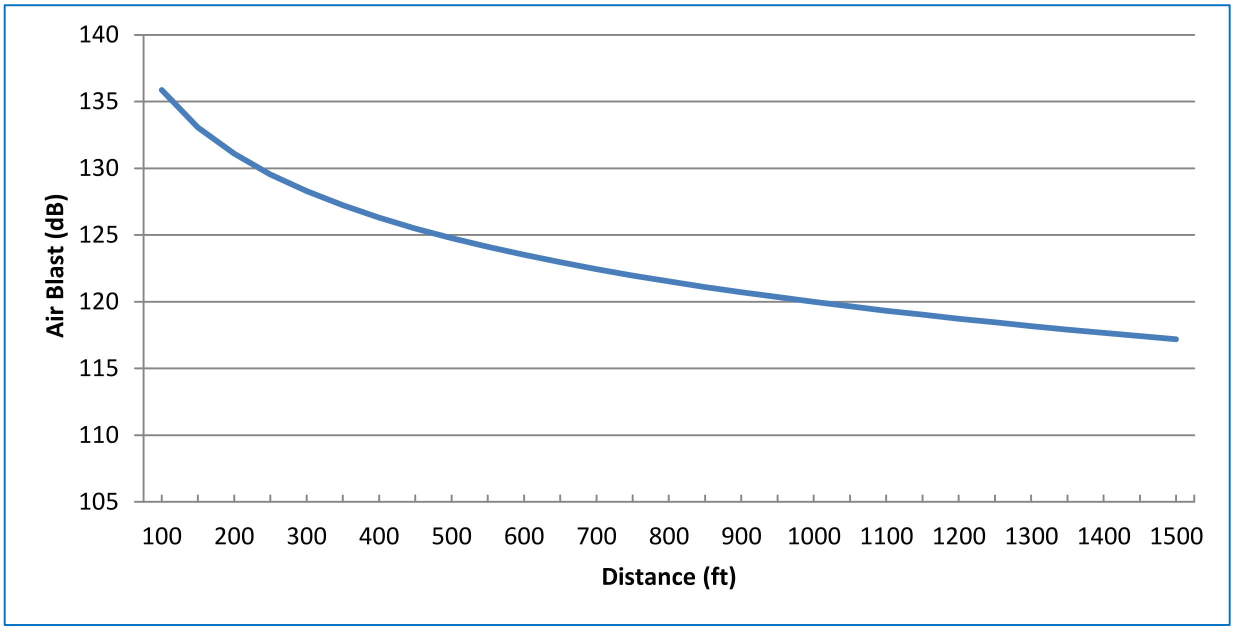
USBM RI 8485 (Siskind et al., 1980) presents results of new analyses as well as a summary of 18 older studies of air-blast damage risks. Although a few observations of very minor damage were found at overpressures equivalent to 134 dB, most of the studies concluded that 140 dB represents a reasonable, i.e., conservative, threshold for glass and plaster damage. Most regulatory agencies follow the more recent Office of Surface Mining (OSM) recommended limit of 134 dB that contains a very large safety factor equivalent to fifty percent of the historical limit. Overpressure criteria currently used in the blasting industry are presented in Table 4-4.

Table 4-4: Typical Overpressure Criteria

3.0 psi	(180 dB)	-	possible structure damage
1.0 psi	(171 dB)	-	general window breakage
0.1 psi	(151 dB)	-	occasional window breakage
0.029 psi	(140 dB)	-	long-term history of application as a safe project specification
0.0145 psi	(134 dB)	-	Office of Surface Mining recommendation

The OSM recommendation of 134 decibels for blasts equates to approximately a 28 mile per hour gust of wind. The air overpressure attenuation curve presented below (Figure 15), developed from the proposed blast design, shows how the blast induced air overpressure decreases at greater distances from the source. At 250 feet from the shot the air overpressure is calculated to be 129.5 dB, which is significantly under the OSM recommendation and equates to approximately a 22 mile per hour gust of wind.

Figure 15: Attenuation of Air Overpressure with Distance from Blast



Summary

In summary, Hanson, with Hilltop Energy, has been implementing best management practices in the existing operation and will continue to do so in the proposed mine expansion area. The best management practices have and will continue to include compliance with the performance standards outlined in United States Bureau of Mines (USBM) Report of Investigation (RI) 8507 and USBM RI 8485. The blasting plan for the expansion area will emulate the ongoing plan and it has considered the environmental effects of blasting, geologic considerations, blast design, drilling operations, explosive loading, and blast confinement.

The potential impacts associated with blasting have been identified and discussed, specifically; ground vibrations, air blast, fly-rock, dust and, gas, and blasting within 250 feet of any dwelling. We have also discussed the blasting area, the anticipated peak particle velocity at the nearest residential receptor (less than OSM recommendation), a description of an average production shot which includes, but is not limited to: the blast layout, the expected spacing and burden, and the average number of pounds per delay.

4.9.2 ADDITIONAL MEASURES AS BLASTING APPROACHES MINING LIMITS

It will be many years before the active mine will require blasting at the closest proximity to neighboring residential structures. All conditions that will be encountered cannot be currently anticipated as mining approaches the newly proposed mine limits. There are nearly limitless components of blasting design that can be altered in efforts to control off site impacts. It is anticipated that a combination of the current technology available (some of which may not exist today) regarding the components of blast design will be utilized as the mining operation advances within the closest proximity to nearby residences. An attempt to further define a blasting plan that will be used many years in the future based on the current technology may inhibit a potentially better design from being implemented as future advances in blasting technologies are developed.

In addition to reviewing and implementing the latest blasting technologies applicable and available for use at the site, the following measures will be implemented as mining approaches the outer limits of the proposed modification area:

- A record of continuous monitoring of ground vibrations will be maintained and used to identify any modifications to the blasting practice being used over time.
- Prior to blasting within 500-feet from a residential structure, a summary of the last twelve (12) months of shot reports will be submitted to the NYSDEC along with the blast design to be used for shots within 500-feet of a residential structure.
- As blasting is performed within 500-feet from residential structures each shot report will be submitted to the Department within 72 hours, continuing until blasting has reached its closest distance of approximately 250-feet from the residential structure.
- As the blasting location approaches 250-feet from the closest residential structure, a specific blasting plan will be designed, with the applicable components of blast design and current technology that can be altered in efforts to control off-site impact upon the closest receptor(s). These include, but are not limited to the following:
    - hole diameter,
    - number of holes,
    - hole depth,
    - hole pattern,
    - delays and pounds of explosives per delay,
    - pre-splitting,
    - other current technologies and techniques as applicable and available.
- A pre-blast survey performed by a qualified third-party will be offered free-of-charge to the owners of all structures within 1,500-feet of the blasting location, prior to commencement of blasting within 1,500-feet of those structures. Copies of the pre-blast surveys will be made available to the landowners and to the NYSDEC – Division of Mineral Resources.

5 RECLAMATION PLAN

5.1 LAND USE OBJECTIVE

Hanson Aggregates is in the business of removing stone for use in construction. Due to the longevity of the project it is not feasible to state an exact end use for the property when all reserves have been depleted. The end use will be determined by the needs of local community and/or the future owner. There are various possible end uses for mined out quarries, some of which are:

- Public water reservoirs
- Recreational and resort areas
- Industrial parks
- Protection and enhancement of wildlife
- Housing developments

The probable end use for which the quarry will be prepared for is industrial, commercial, recreational, or residential with a water impoundment. As a producer of crushed stone, Hanson would most likely sell this land and the end use would be determined by the buyer.

5.2 RECLAMATION METHOD

5.2.1 Grading and Slope Treatment, Final Grades

5.2.1.1 Water Based Reclamation Areas

As shown on the currently approved Reclamation Plan Map, as well as the updated Reclamation Plan Map (Appendix III), the reclamation of nearly the entire quarry area will be water-based (i.e., lake). No significant changes to the reclamation plan are proposed other than the extension of the reclaimed area into the proposed modification area.

It is anticipated that the excavation area will replenish with water upon cessation of mining and associated dewatering activities. Based on the site historical data from piezometers around the perimeter (these are less likely to be influenced by the excavation area, quarry sump and associated pumping) of the quarry and geologic profiles, it is anticipated that the water elevation within the quarry will gradually rise from the southeastern portion to the northwestern portion. Water in the quarry is anticipated to reach an equilibrium level at approximately 625-635-feet amsl depending upon seasonal and annual precipitation amounts. This level is based on the average historical level found in wells in the eastern portion of the site, outside the current excavation area, west of the groundwater divide with the sump pump running. These wells are indicative of the natural groundwater conditions that will exist when the sump pump is no longer running and the quarry fills in with groundwater, creating a lake. Due to the topography at the site no discharge from the quarry is anticipated.

The water level within the northwestern part of the quarry will fluctuate with the natural variations found throughout the seasons but should not reach a dry level unless an atypical drought occurs. The lake will eventually range in depth from approximately 5-feet to 85-feet, getting more shallow from east to west. Seasonal fluctuation in groundwater levels in a limestone aquifer can often be 10-feet or more. Seasonal fluctuation in the water level of an open water body, however, are different than a limestone aquifer. Only minor (2-3 feet) fluctuations in the surface water elevation of the lake will result from seasonal dry periods.

The resulting lake will provide habitat for a variety of aquatic resources such as plants, fish, and amphibians, as well as providing temporary habitat for a variety of animals and birds. The property itself will remain private property upon completion of mining and will be posted as such.

Final grades on the floor of the quarry are approximately 2 percent to the south-southeast following the general dip of the bedrock as shown on the Reclamation Plan Map enclosed in Appendix V. Areas that are anticipated to be below water upon cessation of pumping will not be covered with overburden.

5.2.1.2 Above Water Level Reclamation

Quarry walls are currently mined in three faces: a 30- to 40-foot high upper limestone bench, a 15- to 20-foot high middle limestone bench, and a 40- to 50-foot high lower limestone bench. As shown on the Reclamation Plan Map enclosed in Appendix V, the mine faces will be mined back to the setback requirements required by the New York State Department of Environmental Conservation Mined Land Reclamation Law: 1.25 X Face Height plus 25 feet from the adjacent property line. Bedrock high-walls will be scaled, blasted, or pre-split and backfilled with rock, excess fine material (baghouse fines, settling pond fines, etc.), and overburden. Backfilled slopes will be graded to a 1 vertical on 1.5 horizontal. The "Final Bench Reclamation Typical Detail" provided on the updated Reclamation Plan Map shows the typical section of the final bench configuration.

Areas anticipated to remain above the natural water level will be covered with a minimum of 6" of overburden (material able to sustain vegetative cover) where needed and graded so as to blend areas of sharply contrasting slopes. Some areas will be left as is (areas not shaded on the Reclamation Plan Map) to provide access to the quarry.

5.2.1.3 Wetland Development Area

To enhance wildlife diversity within the reclaimed quarry, a portion of the upland area in the northwest corner of the proposed expansion area will be reclaimed as wetland. This area is identified as "Wetland/Upland Transition Zone" on the updated Reclamation Map (Figure, 4 Appendix II). This wetland will provide transitional habitat for a variety of plants and animals. Planting areas or areas that will naturally establish wetland vegetation will be developed after water levels have been monitored for a period of 2-3 years after final grading has been completed. A list of "Suggested Plants, Planting Depths, and Wildlife Benefits" is found at the end of Appendix XVII and will be used as a reference when determining what wetland plants will be planted and where. Plants that occur in the existing wetland to the south of the quarry will be given preference when acquiring plants for transplant[9] and or purchase. It is anticipated that wetland plants will spread and establish naturally with time.

5.2.1.4 Upland Areas

Quarry benches and upland areas will be covered with a minimum of 6-inches of overburden and vegetated to grass. Upland areas (e.g., settling ponds) will be covered with a minimum of 6-inches of overburden and vegetated with grasses. The following seed mix will be used:

Tall fescue	15 lbs./acre
Red Top	2 lbs./acre
Perennial Ryegrass	5 lbs./acre
Birdsfoot Trefoil	4 lbs./acre
Switchgrass	4 lbs./acre
Annual Ryegrass	10 lbs./acre

[9] If material is transplanted from existing wetlands, all necessary permits will be obtained prior to removing vegetation from regulated wetlands.

Soils will be tested for pH and the local Soil and Conservation District Office will be consulted for the proper lime, mulch, and fertilizer quantities. The seed mixture above has been proven to work well in the northeast when covering soils high in pond fines. Perimeter berms will be planted with scattered eastern white pine trees as shown on the updated Reclamation Plan Map.

5.3 MINING & RECLAMATION SCHEDULE

The chart below summarizes the general activities anticipated to take place at the quarry upon approval of the permit modification.

MINING	
Mining of current third bench to the western limits	Present – Fall 2017.
Excavation of lower lift	Present thru cessation of mining.
Stripping and mining in Phase I (Modification Area)	Upon NYSDEC approval through end of permit term (and possibly the following permit term)
RECLAMATION	
Placing and grading overburden throughout upland areas that have been disturbed, including settling ponds.	Concurrent with mining as space allows. To be completed 1 year after mining ceases.
Removal of aggregate processing plant, HMA plant, garage, ancillary buildings, and mining equipment.	Within 2 years of cessation of mining.
Cessation of pumping	When grading of overburden is complete.
Water levels will be monitored for 2-3 years after pumping ceases	
Upland vegetation planting	Concurrent with grading of overburden as noted above. To be completed within 2 years of cessation of mining.
Wetland vegetation planting	To be completed within 1 year after water level monitoring is complete.

5.3.1 Disposition of Waste, Residual Material, Junk Trash, and Personal Property

No material, either waste, junk, or personal property will remain upon reclamation within the mining area. The aggregate processing equipment and accessory equipment will be removed upon reclamation of the Plant and Stockpile Area.

5.3.2 Treatment of Haulageways

Ingress and egress to the reclaimed quarry will be retained as indicated on the updated Reclamation Plan Map. The unpaved access road around the perimeter of the quarry will be left as is to provide access to future users of the reclaimed site. All other interior haul roads will be mined through and/or inundated by water after cessation of pumping from the sump.

5.3.3 Water Impoundment Treatment

Upon exhaustion of the reserves the pumps draining the quarry will be removed and the water level will rise to the natural water table level as discussed in Section 5.2.1.1. The settling ponds will be filled in with fine material removing the ponded water. The settling ponds will then be graded and seeded to grass as described in Section 5.2.6.

5.3.4 Final Drainage

Final drainage within the quarry will continue to be internal as indicated on the Reclamation Plan Map.

6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

6.1 GEOLOGIC RESOURCES

The quarrying of stone is a consumptive use. According the NSSGA, every American will consume approximately 1.18 million tons of aggregates in his or her lifetime. Approximately 17 million tons of crushed stone aggregate, a non-renewable resource, will be permanently removed as mining advances within the proposed project area. While this impact is irreversible, such mineral resources are necessary to meet the region's construction needs, and can only be obtained from where they naturally occur. Stone is found everywhere around the globe. High quality stone that meets today's stringent transportation and building requirements, however, is mined from deposits that must be of very high quality, located near the surface, and located near a sustainable market to be economically viable. The stone mined at the Honeoye Falls Quarry, as well as that within the proposed additional area, meets these requirements. Although similar material may be present elsewhere, the right to mine a new location generally presents insurmountable permitting problems, whereas this site is a continuance of a permitted mine. Economically obtainable deposits do not exist in every Town nor do they recognize political boundaries. Therefore, reserves at the Honeoye Falls Quarry are an important resource for the nearby communities. Unlike other businesses in New York, including agriculture, the demand for these products remains consistent.

The aggregate material mined at the facility is needed for road construction and maintenance, new and existing infrastructure, as well as commercial, industrial, and residential development. The use of aggregate material is so connected to the success of the economy and quality of life of New Yorkers that, it is the declared policy of the State of New York to foster and develop an economically sound and stable aggregates industry *(New York State Mined Land Reclamation Law, Title 27).* The State has further declared that it is the policy of New York State to provide for the management and planning for the use of these non-renewable resources. The demand for aggregate resources never ceases to exist. If these necessary construction aggregates are not taken from the project site, they will still need to come from another nearby location. Permitting a new mine in an alternate location, rather than extend the life of the existing mine at the project site, would result in greater impacts to the natural and community resources that could not be mitigated. Furthermore, if construction aggregates are not produced locally, they will be imported from further away at higher economic and environmental costs.

6.2 AGRICULTURAL DISTRICTS AND LAND

Approximately 53 acres of the 63.6-acre proposed expansion area is located within Eastern Agricultural District #6 as designated by Monroe County. As required under Section 310 of the Agricultural and Markets Law, a notice to buyers stating that a property is within an agricultural district and that farming activities may cause noise, dust, and odors, must be included in all purchase contracts. Unlike farming operations, mining activities are strictly regulated by the NYSDEC and federal agencies to minimize or eliminate noise, dust, and odors.

The project site is currently leased by Hanson Aggregates to a farmer who uses the land for agricultural purposes (e.g., row crops). Phasing of the mine within the proposed expansion area will allow the land not affected by mining to continue to be farmed. Upon final reclamation, however, the proposed expansion area will be part of a large lake that will be created, providing a visual and recreational resource, as well as wildlife habitat.

Prior to mining in previously undisturbed areas, overburden and top soil will be stripped, segregated, and saved as described in Section 3.8.3. It is recognized that since the final reclamation after full mine build-out will be primarily water-based, much of these soils would not be used for agricultural purposes at the reclaimed site.

As described in Section 1.3, high-quality stone that meets today's stringent transportation and building requirements is mined from deposits that must be of very high quality, located near the surface, and located near a sustainable market to be economically viable. The stone to be mined in the proposed expansion area at the Honeoye Falls Quarry meets these requirements. Economically obtainable deposits do not exist in every town nor do they recognize political boundaries. Mines must therefore be located where the natural deposits exist.

Although approximately 50 acres of agricultural soils will be stripped as excavation advances into the new area, these soils will remain at the site in the form of perimeter berms and stockpiles on which vegetation will be planted. According to Monroe County data, the County's agricultural district covers approximately 138,095 acres of which the greatest percentage (34%) is located within Eastern Agricultural District #6. In comparison, there are approximately 17 million tons of high-quality limestone reserves within the proposed expansion area. Mining these resources will ensure that adequate supplies of construction aggregates can continue to be provided to the local community members, municipalities, and business at competitive prices for many years.

There currently are no other permitted limestone quarries within approximately 30 miles of the Honeoye Falls Quarry. As described in Sections 1.3 and 1.4, a significant portion of the cost of construction aggregates is in the transportation. The majority of customers supplied by the Honeoye Falls Quarry are within about a 20 mile radius. As indicated these previous sections, costs of aggregates typically double and triple as the transportation distance doubles. Increased transportation distance leads to more fuel use and exhaust of greenhouse gases.

7 EFFECTS ON USE AND CONSERVATION OF ENERGY RESOURCES

Since the proposed action is to allow for the continued operation of the existing quarry, there will be no increase in production. Therefore, there will be no net increase in energy usage. Keeping the existing quarry open to provide a local source of construction aggregates will eliminate the need to import these materials from further distances, thereby, conserving energy (e.g., diesel fuel). The applicant will continue to conduct business in a practical, responsible manner to conserve energy.

8 CONSISTENCY WITH STATE AND LOCAL SOLID WASTE MANAGEMENT PLANS

As previously stated, the proposed action will not involve any new or increased production activities. The proposed project is solely to ensure the continuation of the existing mining operation. The proposed action itself will not generate solid waste. Limestone reserves will be drilled, blasted, and processed then, sold. There will be no increase in solid waste generated at the existing facility as a result of the proposed expansion. Therefore, the proposed project is consistent with applicable state and locally adopted solid waste management plans.

9 REFERENCES

Morhard, Robert C., 1987, Explosives and Rock Blasting, Atlas Powder Company, pp. 321-347.

New York State Department of Environmental Conservation, 2001, "Assessing and Mitigating Noise Impacts," NYSDEC Program Policy DEP-00-3.

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Rau, John G. and Wooten, David C., 1980, Environmental Impact Analysis Handbook, McGraw-Hill, Inc., pp. 4.14-4.32.

Richards, John, Ph.D., P.E., and Brozell, P.E., February 2000, "$PM_{2.5}$, PM_{10}, and TSP Formation, Composition, and Deposition at a Stone Crushing Plant – Volume 1 Report."

Appendix I

Copy of Mining Permit Application, Organizational Report, and DEC Mine File Numbers List

Appendix II

Mining and Reclamation Plan Maps

Appendix III

Full Environmental Assessment Form

Appendix IV

Trinity University Economic Report & CGR Report - "The Economic Impact of New York State Mining and Construction Materials Industry"

Appendix V

NYSDEC Freshwater Wetlands

And

USF&WS NWI Maps

Appendix VI

National Ambient Air Quality Standards

For PM 2.5

Appendix VII

National Stone Association PM 2.5 Study

Appendix VIII

DEIS Final Scope Document

Appendix IX

Sound Level and Attenuation Analysis

Appendix X

Wetland Delineation Report

Appendix XI

Hydrogeologic Analysis Report and Addendum Of Proposed Expansion of Honeoye Falls Quarry

Appendix XII

Phase IAB and Phase II Cultural Resources Investigation Reports

Appendix XIII

Visual Impact Assessment Profiles and Map

Appendix XIV

Agricultural District Maps and Correspondence

Appendix XV

Natural Heritage Program Correspondence

Appendix XVI

Typical Blasting Risk Assessment and Blasting Plan

Appendix XVII

List of "Suggested Plants, Planting Depths, and Wildlife Benefits"