



CONTINENTAL PLACER INC.

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Albany, NY 12205
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March 13, 2006

Mr. Steven Army
New York State Dept. of Environmental Conservation
6274 East Avon-Lima Road
Avon, New York 14414-9519

RE: Frontier Stone, LLC Mine Permit Application

Dear Steve:

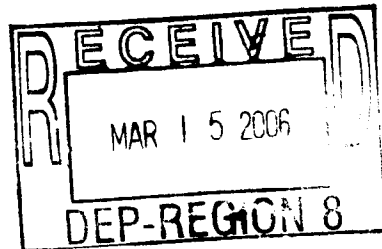
Here is a new mining permit application (3 copies) for a proposed stone quarry south of Medina. We have drilled the site and from an environmental technical standpoint all looks good. As we move through the SEQR process thank you in advance for your cooperation and timeliness as you have always done.

Best regards,

John R. Hellert
Senior Geologist

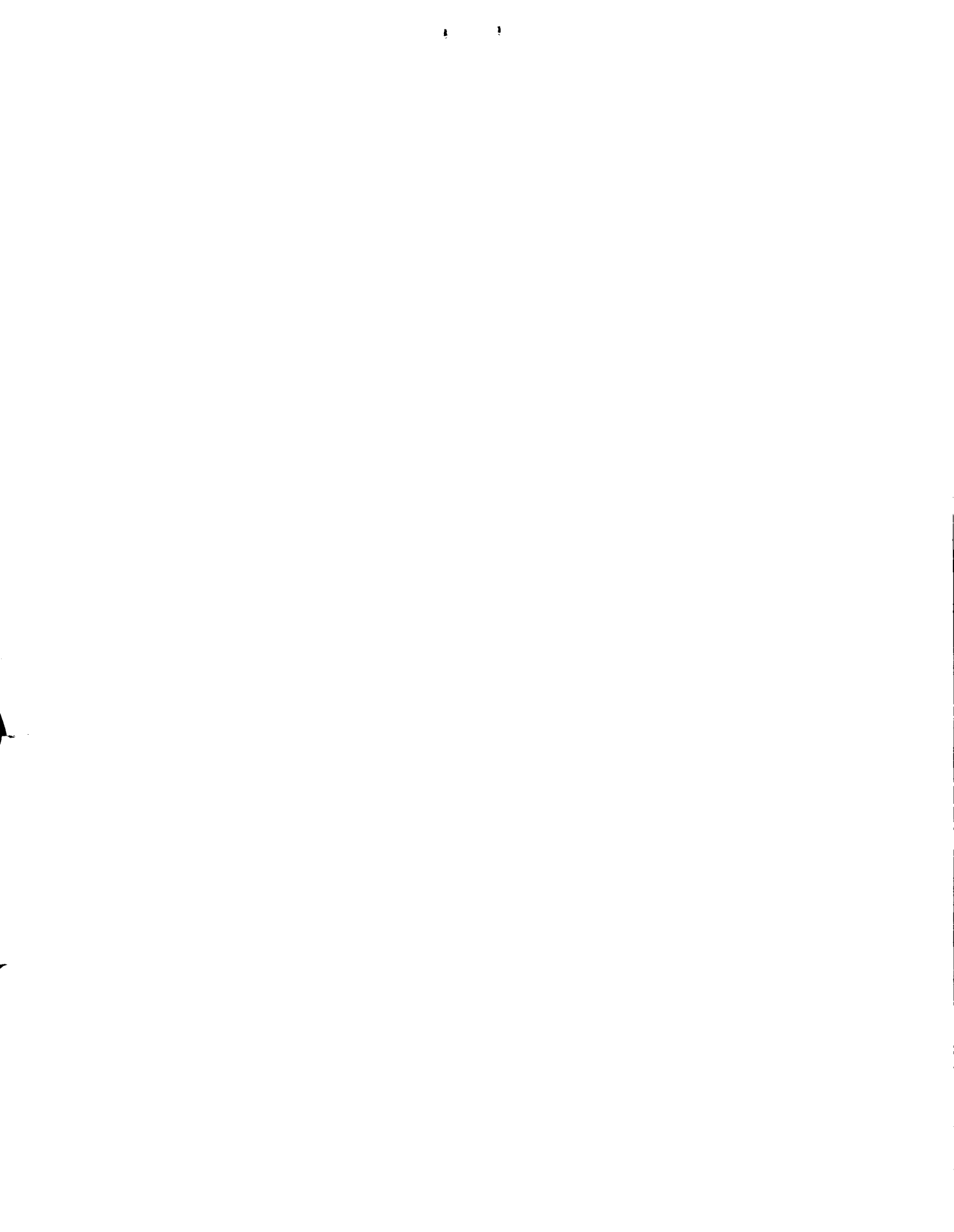
Enclosures

JRH/acf



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MAR 14 2006



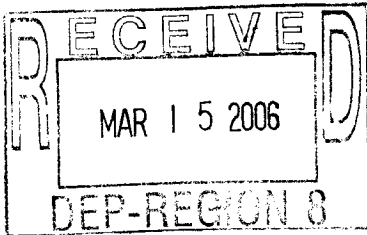


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**MINED LAND USE PLAN
(ORIGINAL SUBMITTAL)
FOR
FRONTIER STONE, LLC
PROPOSED FRONTIER STONE QUARRY**

Prepared for
Charles J. Loiacano
Frontier Stone, LLC



Prepared by
Continental Placer Inc.

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By
Continental Placer Inc.

March 7, 2006

RECEIVED

MAR 14 2006

DIVISION OF
MINERAL RESOURCES

GEOLOGIC AND ENVIRONMENTAL SERVICES



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1.0 INTRODUCTION

- 1.1 This report sets forth the operational, mining and reclamation plans of Frontier Stone, LLC (Frontier) to mine bedrock in the Town of Shelby, Orleans County, New York (to be known as the Frontier Stone Quarry). 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 and known as the Mined Land Reclamation Law.

This report was prepared by Continental Placer Inc. in February 2006. Information was provided by Frontier personnel and from site inspections.

- 1.2 The text and appended maps follow the general sequence presented in New York State Department of Environmental Conservation (NYSDEC) Regulations and Mined Land Reclamation Law. Appended are a Mining Permit Application, an Organizational Report and an Environmental Assessment Form (Part 1), a Mining Plan Map and a Reclamation Plan Map.

2.0 MINING PLAN

2.1 Location

The proposed mining operation is located in the Town of Shelby, Orleans County about 3.7± miles south of Medina, New York. The property principally fronts along Fletcher Chapel Road. Figure 1 is a location map of the site.

2.2 Current Land Use of the Area

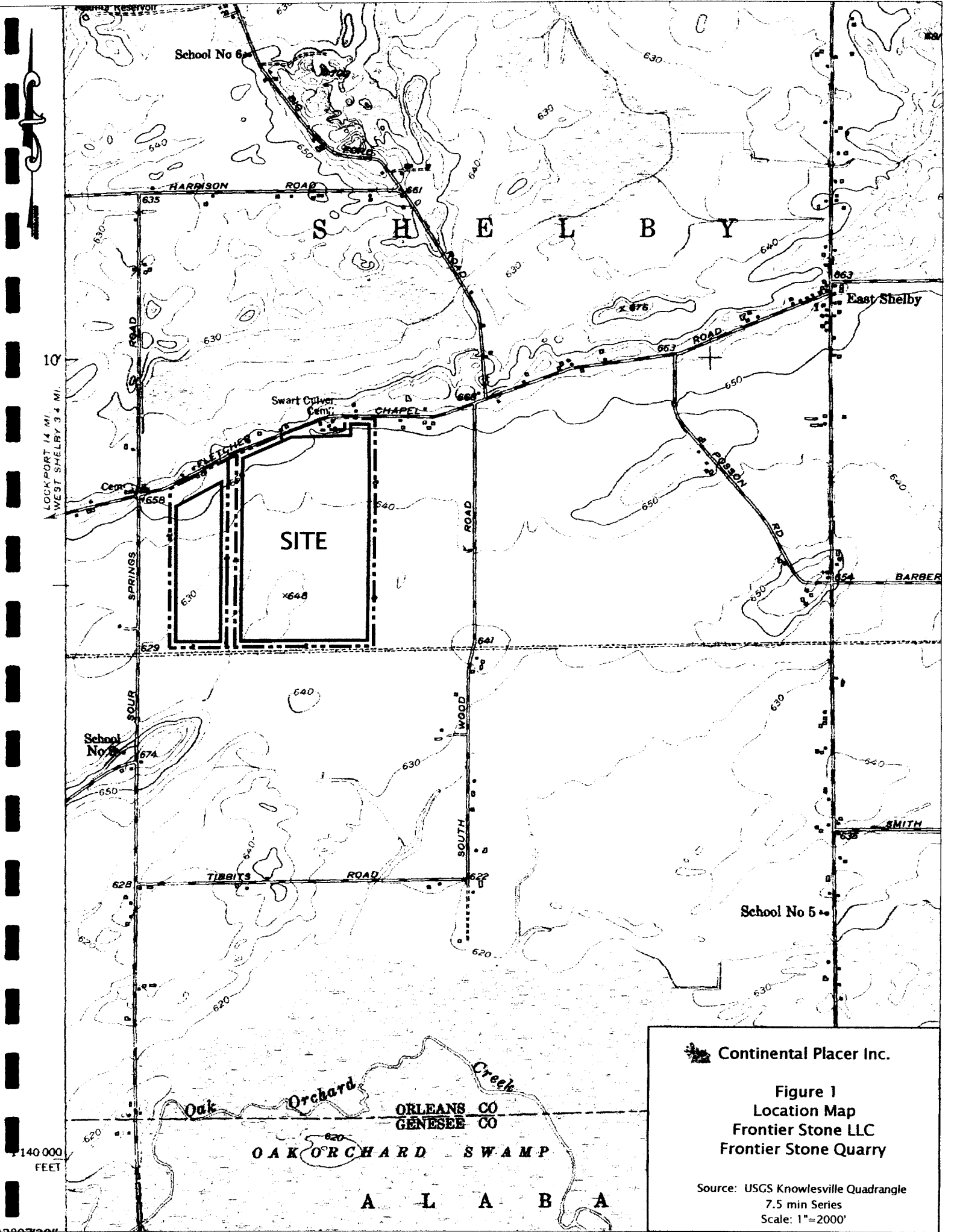
The area is characterized by scattered residences and large farms. Bordering the property along its southern border (separated by a Niagara Mohawk power line easement) is the large Iroquois National Wildlife Refuge. The area is rural with the closest population center, Shelby, about 2.6± miles to the northwest. The region is typically a patchwork of open fields and woodlots north, east and west of the site whereas, to the south, it is predominantly wetland forest.

2.3 Existing Conditions of the Land

2.3.1 Mining History and Land Use

Currently, the proposed mine site is active farmland used for agricultural crops such as oats, corn, beans, etc. There has been no mining on this property. The land is being leased by Frontier from the land owners, Chester and Dorothy Zelazny. Access to the site from Sour Springs Road is over property (2± acres) currently being purchased by Frontier. The property contains one structure, a barn. A utility line, Niagara Mohawk, bisects the property near its western margin. A power utility sub-station is also located along the southern property boundary.





LOCKPORT 14 MI
WEST SHELBY 3.4 MI.

10'

140 000
FEET

 Continental Placer Inc.

Figure 1
Location Map
Frontier Stone LLC
Frontier Stone Quarry

Source: USGS Knowlesville Quadrangle
7.5 min Series
Scale: 1"=2000'

A L A B A



2.3.2 Soils

The predominant soils of the site are Odessa silt loam, Bombay fine sandy loam, Churchville silt loam and Cayuga silt loam. A complete description of the soil types is appended (4) and Figure 2 shows the soil type distribution.

The soils are formed on glacial lake or till plains and are predominantly silty and clayey with scattered sand areas. In general they are not well drained.

2.3.3 Vegetation

The farm fields on site are used for hay and row crops. One interior fence line is present comprised of assorted hardwoods and scrub shrub vegetation.

2.3.4 Topography

The project area slopes north to south. Elevations along the northern portion (along Fletcher Chapel Road) are about 650 to 655 feet in elevation. The lowest elevation is in the southwest corner near drill hole 5-05, which was surveyed at elevation 626 feet. The appended Mining Plan Map details topography of the site.

2.3.5 Drainage

Drainage off the site is to the south in response to topography and a man-made agricultural drainage ditch at mid-property which is shown on the Mining Plan Map.

2.3.6 Wetlands

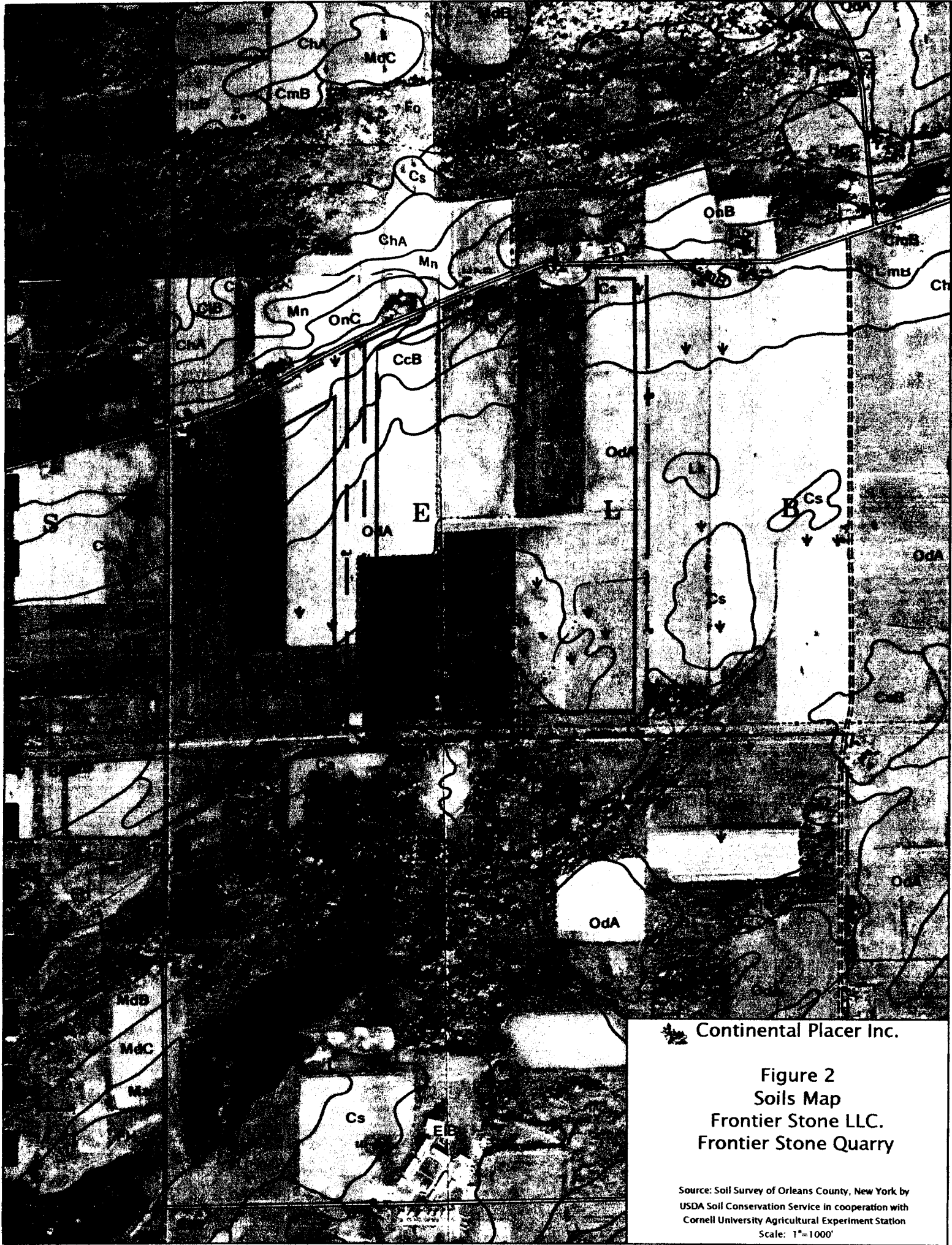
There are no State or Federal wetlands on the project site. The entire site is active farmland. The New York State wetlands map is shown in Figure 3.

2.3.7 Groundwater

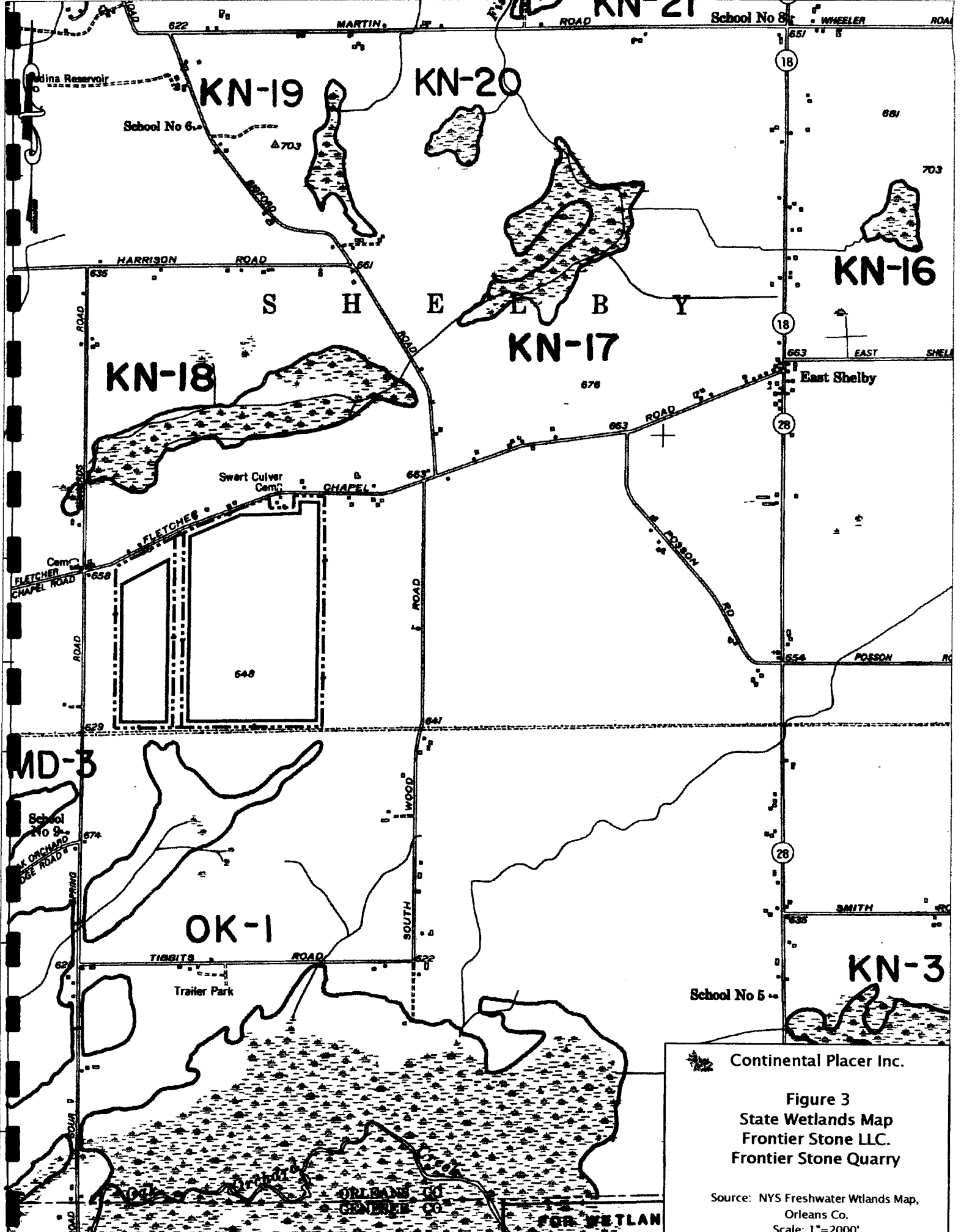
Three observation wells were installed in rock core exploration holes drilled on site. The locations of the holes are shown on the Mining Plan Map. A groundwater table reading on September 7, 2005, showed the following.

<u>Hole</u>	<u>Water Table Elevation (feet)</u>
1-05	620.5
4-05	619.9
5-05	623.2









Continental Placer Inc.

Figure 3
 State Wetlands Map
 Frontier Stone LLC.
 Frontier Stone Quarry

Source: NYS Freshwater Wtlands Map,
 Orleans Co.
 Scale: 1"=2000'



As indicated by the elevations, the water table dips (gradient) to the north. This is expected since regional drainage, Oak Orchard Creek (about one mile to the northwest), flows northward to Lake Ontario.

2.3.8 Man-Made Features

The agricultural drainage ditch is a man-made feature on the project site. There is also an airplane grass landing strip on the site. The landing strip is inactive.

2.3.9 Wildlife

The site affords habitat for typical upland species such as deer, fox, raccoon, turkeys and the like; an inventory has not been made. At this time it is assumed that no threatened or endangered species occur on site since the habitat is similar to that of most of the region and it is active farmland which is constantly disturbed by farming activity.

2.4 Description of Mineral and Mining Method

2.4.1 Type

Frontier will mine bedrock for production of stone aggregate; the operation will be a surface consolidated quarry. The rock type is dolomite and the geologic formation to be mined is the Lockport. Five core holes were drilled to verify the occurrence of the stone and to obtain data for mine planning.

2.4.2 Mining Sequence and Method

The Mining Plan Map details the areas to be mined and the various elements of activity. The excavation area totals $174.1 \pm$ acres and it is divided into 4 phases. Mining will begin in the southwest corner. Quarrying will be done by standard drill and blast methods with front-end loaders feeding an in-pit primary crusher with shot rock from the muck pile. The rock will be conveyed to the processing plant at the land surface by field conveyor for further processing. The quarry will operate three lifts; initial plans are for two, 50-55 foot lifts and a lower 10-15 foot third lift. These benches will effectively remove the Lockport Formation. Subsequent to mining phase 1, the progression of phases will be sequentially done. The last phase to be mined will be phase 4 which includes the plant and stockpile area.

2.4.3 Grading and Setbacks

General DEC setback requirements will be met and exceeded during mining. There will be no project related activity within 25 feet of property lines and mine floor perimeters will be at least 25 feet plus one and one-quarter the face height in distance from property lines or easements.

The Town of Shelby has requirements for setbacks in regard to Special Permits which must be used. The standards have been reproduced below.



"G. Standards for issuance of Special Permits for Quarrying and Mining Operations

1. Setback

- a. **Excavation, structures and appurtenant activities shall stay a minimum distance of one-hundred (100) feet from any public right-of-way or adjoining property line and two-hundred (200) feet from any building including applicants.**
- b. **This setback area may be used to contain one (1) sign identifying the operation, fencing and buffers subject to regulations as specified in the Town of Shelby Zoning Ordinance."**

In regard to placing an access road across the Niagara Mohawk land, in a Warranty Deed dated September 24, 1971 in Liber 353 of Deeds at page 514, the landowner (Zelazny), retained the right and privilege to maintain six road crossings across the power line property.

2.4.4 Processing

A portable crushing and screening plant will be used on site to produce aggregate. There will be an in-pit portable primary crusher following the advancing face. Initially there will be no washing of stone on site, but the applicant wishes to have that option. The wash water would be on a closed circuit with no discharge off-site. Wash water would be from groundwater and surface water accumulated in the pit or perhaps from a well. Settling ponds would be located in the plant area.

2.4.5 Access

Access to the mine site will be from Sour Springs Road as shown on the Mining Plan Map. Frontier has an agreement to purchase this 2± acre access parcel.

2.4.6 Disposition and Storage of Materials

Vegetation

Stripped vegetation to be disposed of consists of grasses, farm crop remnants and very limited scrub shrubs/trees. The grasses and crop remnants will be incorporated with overburden and stockpiled. The trees (occurring only along one fence line) will be cut for firewood with the limbs and stumps buried on-site at the toe of faces by at least two feet of overburden.

Overburden

Initially as the site is developed, overburden will be stripped and temporarily stockpiled in the Phase 4 excavation area. Topsoil will be stockpiled separately from subsoil. There is a high volume of overburden on-site, more than is needed for reclamation, varying in thickness from 18 to 38 feet. The Applicant proposes to sell some of this overburden. Overburden may also be placed adjacent to the quarry in perimeter berms.



Refuse

Trash, etc. will be removed from the site and landfilled pursuant to DEC regulations.

2.5 Dust, Noise, Erosion and Visual Control

Dust (air resources)

The primary impact affecting air resources is the generation of dust created by mining activities. The EPA and DEC recognize that non-point source, or fugitive dust emissions may be generated from activities such as overburden stripping, materials handling, haul trucks and blasting. Dust is also potentially generated by the processing of the stone.

This issue has been similarly raised concerning the hundreds of stone operations throughout New York. Studies have found that particulate matter rapidly decreases by normal atmospheric dispersion and due to gravity settling. Taking into account a prevailing west to east wind direction, there is virtually no receptors downwind of the project for several thousand feet. Notwithstanding this, the impact of dust will be attenuated by following a dust control plan for the operation of the quarry. A proper dust control plan will maintain the facility in compliance with State and Federal regulations as well as mitigate any potential impacts to the air resources.

A good dust control plan will involve a combination of good operating practices and engineered control devices on equipment and on the land. The proposed operation will employ a number of these techniques to control dust, which are listed as follows:

Good Operating Practice

- Careful loading of trucks.
- Shut down idle and unloaded equipment.
- Monitor travel speed of vehicles on any unpaved haulways and access roads.
- Maintain equipment through daily inspections and repairs when needed.
- Clean-up spillage.



Engineered Controls

- Using water to reduce dust on any unpaved travel surfaces.
- Using water to reduce dust generated on dry days.
- Using berms and vegetation where possible to reduce wind erosion.
- Trucks leaving the site will be required to comply with the State Tarp Laws (New York State Vehicle & Traffic Law § 380-a).
- Every effort to remove loose debris from trucks will be made before they leave the mining operation.

Noise Control

Noise will mainly be generated by drilling and blasting, loading and processing of the stone. Mitigation measures which should effectively reduce noise impacts to the surrounding receptors are:

- Normal hours of operation will primarily occur during regular business hours.
- Sound mufflers on engine drive equipment.
- Mining equipment operating within the pit depression.
- Distance to receptors.
- Retention of perimeter vegetation.
- Compliance with U.S. Bureau of Mines guidelines for air overpressure and vibration safe limits.
- Perimeter berms in selected areas.

Erosion

The likelihood of a surficial flow of water creating sedimentation and erosion is low. This is due to the very low relief of the site.

The quarry will be developed below grade, i.e. creating internal drainage. In addition, large undisturbed buffer areas will be retained between mining activity and property lines. Erosion control devices such as hay bales and silt fences will be used as necessary, if conditions develop which pose an environmental impact off site.

Visual

The proposed action is not anticipated to be visually significant, primarily because general activity will be confined within the mine depression. Secondly, the mine site will have visual overburden berms constructed to attenuate impacts as needed.



3.0 RECLAMATION PLAN

3.1 Land Use Objectives

The site will be reclaimed by grading and revegetation and the creation of lakes. The lakes, separated by the utility line, are 38.9± and 161.2± acres in size. The projected lake elevation is 620±. The reclamation objective will be to create a recreational lake/wildlife habitat.

The land is currently zoned Residential/Agricultural (RA), mining is allowed by a zoning permit for a special use.

3.2 Reclamation Method

3.2.1 Grading and Slopes

The quarry perimeters will be smooth graded to blend with surrounding topography and the active rock faces will be retained in a stabilized vertical position. Overburden stockpiled in berms or concurrently being stripped will be used to slope the lake perimeters to a 2:1 (horizontal to vertical) slope. The first 50 feet of shore below the water surface will be less than 5 feet deep. The appended Reclamation Plan Map illustrates the post mining topographic character of the site.

3.2.2 Disposition of Material

Upon termination of mining, the processing plant and any miscellaneous aggregate stockpiles will be removed, and refuse (if any) will be taken to a landfill pursuant to DEC regulations. Stockpiled overburden will be redistributed over areas to be revegetated and for creation of slopes along the lake edge.

3.2.3 Treatment of Access Road

The access road leading into the site will be retained.

3.2.4 Revegetation

At least six inches of soil will be used for revegetation on disturbed areas above the water table.

The following seed mix will be used.

- Perennial rye grass (20 pounds per acre)
- Creeping red fescue (10 pounds per acre)
- Alfalfa (8 pounds per acre)
- Birdsfoot Trefoil (5 pounds per acre)
- Sweet clover (10 pounds per acre)
- Oats (30 pounds per acre)

Fertilizer will be applied with a broadcast spreader at a rate of 400 pounds of 20-20-20 per acre.



3.3 Reclamation Schedule

The estimated life of the operation is 75± years based upon production and market assumptions. This is obviously speculative at this time. Due to the water based nature of reclamation (i.e. creation of a lake), reclamation will be precluded during much of the life-of-mine. All reclamation will be concluded within 2 years of cessation of all mining.



APPENDIX

- 1. Mining Permit Application**
- 2. Organizational Report**
- 3. EAF**
- 4. Soils Description**
- 5. Mining Plan Map**
- 6. Reclamation Plan Map**



Mining Permit Application





NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF MINERAL RESOURCES
MINED LAND RECLAMATION PROGRAM

MINING PERMIT APPLICATION

FOR OFFICIAL DEC USE ONLY

DEC# _____

7. MINED LAND PROJECT

	Yes	No
a. Will the total acreage by mining for the entire mining site exceed 5 acres?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Will the vertical depth from the top of the mine face to the floor exceed 20 feet?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Will there be on-site processing of mining products (eg. crushing, screening, washing)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Will mining occur within 100 feet of a surface water body (eg. stream, lake) or wetland area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Will any consolidated materials be mined (eg. limestone, trap rock, sandstone)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Will mining occur within 500' of any dwelling?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Will mining ever occur at or below the mean high water table?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

9. APPLICATION TYPE
 New Renewal Modification

11. COMMON GEOLOGIC NAME OF MINERAL TO BE MINED
 Dolomite/Limestone

12. LOCAL ORDINANCES

a. Is mining prohibited at this location? Yes No

b. Does the local government require any type of permit for mining at this location? Yes No

13. a. ARE ANY OTHER STATE MINING PERMITS CURRENTLY HELD BY THE APPLICANT? Yes No

b. If YES, give DEC mine file number(s)

14. Has any owner, partner, corporate officer or corporate director of your organization ever held any of these positions in another organization that has had a New York State mining permit SUSPENDED OR REVOKED or has had a New York State mined land reclamation bond FORFEITED?
 Yes No If YES, identify the person(s)

15. ACREAGE SUMMARY (To be filled in by applicant)

a. Total acreage controlled by owner at this location.	269.45	acres		
b. Total acreage permitted by DEC prior to this application.	0	acres		
c. Total acreage affected since April 1, 1975	0	acres		
d. Total acreage approved by DEC as reclaimed since April 1, 1975	0	acres		
e. Current affected acreage (c minus d).	0	acres		
f. Acreage included in this application, but not previously approved	215.5	acres		
g. New acreage to be affected during the coming permit term.	32.5	acres		
h. Number of acres to be reclaimed during coming permit term	0	acres		

FOR OFFICIAL DEC USE ONLY

16. NAME OF MINING SITE
 Frontier Stone Quarry

17. MINE LOCATION

Road Sour Spring Road

Nearest Road Intersection Fletcher Chapel Road

Town Shelby

County Orleans

18. MAP LOCATION

a. Quadrangle Name Knowlesville

b. 15 minute 7 1/2 minute

NYTMS FOR DEC OFFICIAL USE ONLY

E. 4 N

19. NAME AND ADDRESS OF SURFACE LANDOWNER
Chester Zelazny and Dorothy Zelazny
 11763 Fletcher Chapel Road, Medina, New York 14103

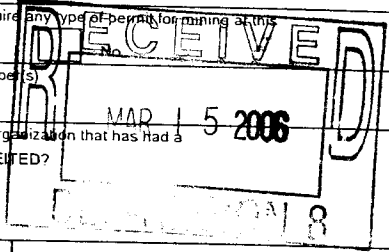
20. NAME AND ADDRESS OF MINERAL OWNER (if different)
 Same As Above

21. I am the owner in fee, of the mineral rights of the property that is to be mined by the above applicant. I have read the contents of the Mined Land Use Plan, which sets forth the applicant's mining and reclamation plan for the property to be mined, and I hereby irrevocably consent and agree to the performance of the Mined Land Use Plan by the applicant, his surety or insurer or the NYS Department of Environmental Conservation. I further agree to allow access to the property to department personnel for the purpose of conducting inspections or investigations in the regular course or their duties.

SIGNATURE OF OWNER
Chester Zelazny Dorothy Zelazny DATE 3/10/06

22. I hereby affirm, under penalty of perjury that information provided on this form is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

NAME, TITLE AND SIGNATURE OF APPLICANT OR AUTHORIZED REPRESENTATIVE
Charles J. Loiacano Charles J. Loiacano, Secretary/Treasurer DATE 3/2/06





Organizational Report Form





NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF MINERAL RESOURCES

50 WOLF ROAD, ALBANY, NEW YORK 12233-6500

ORGANIZATIONAL REPORT

INCOMPLETE FORMS NOT ACCEPTABLE AND WILL BE RETURNED FOR COMPLETION

<p>1. FULL NAME AND COMPLETE MAILING ADDRESS OF THE ENTITY. INCLUDE NAME AND TITLE TO WHOM ALL CORRESPONDENCE SHOULD BE SENT.</p> <p>FRONTIER STONE, LLC c/o 7250 Lea Lane Lockport, NY 14094</p> <p>TELEPHONE NUMBER: FAX NUMBER:</p>	<p>2. FULL NAME AND COMPLETE MAILING ADDRESS OF AGENT IN NEW YORK WHO CAN BE SERVED ORDERS, NOTICES AND PROCESSES OF THE DEPARTMENT OR OF ANY COURT OF LAW. POST OFFICE BOX ADDRESSES ARE NOT ACCEPTABLE.</p> <p>Charles J. Loiacano 7250 Lea Lane Lockport, NY 14094</p> <p>TELEPHONE NUMBER:</p>												
<p>3. TYPE OF ACTIVITY (Check Those That Apply)</p> <table border="0"> <tr> <td><input type="checkbox"/> PRODUCTION-Oil, Gas, Injection or Geothermal Well(s)</td> <td><input type="checkbox"/> SOLUTION MINING-Own/Operate Facility</td> </tr> <tr> <td><input type="checkbox"/> STORAGE-Underground Gas or LPG Facility</td> <td><input type="checkbox"/> BRINE DISPOSAL-Own/Operate Facility</td> </tr> <tr> <td><input type="checkbox"/> PURCHASING-Of Oil or Gas From Others</td> <td><input type="checkbox"/> STRATIGRAPHIC-Own Well or Hole</td> </tr> <tr> <td><input type="checkbox"/> TRANSPORTATION-By Truck or Pipeline for Others</td> <td><input checked="" type="checkbox"/> SURFACE MINING-Own/Operate Facility</td> </tr> <tr> <td><input type="checkbox"/> SALVAGE-Plug and Abandon Wells for Others</td> <td><input type="checkbox"/> UNDERGROUND MINING-Own/Operate Facility</td> </tr> <tr> <td><input type="checkbox"/> DRILLING-Drill Wells for Others</td> <td></td> </tr> </table>		<input type="checkbox"/> PRODUCTION-Oil, Gas, Injection or Geothermal Well(s)	<input type="checkbox"/> SOLUTION MINING-Own/Operate Facility	<input type="checkbox"/> STORAGE-Underground Gas or LPG Facility	<input type="checkbox"/> BRINE DISPOSAL-Own/Operate Facility	<input type="checkbox"/> PURCHASING-Of Oil or Gas From Others	<input type="checkbox"/> STRATIGRAPHIC-Own Well or Hole	<input type="checkbox"/> TRANSPORTATION-By Truck or Pipeline for Others	<input checked="" type="checkbox"/> SURFACE MINING-Own/Operate Facility	<input type="checkbox"/> SALVAGE-Plug and Abandon Wells for Others	<input type="checkbox"/> UNDERGROUND MINING-Own/Operate Facility	<input type="checkbox"/> DRILLING-Drill Wells for Others	
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<input type="checkbox"/> SALVAGE-Plug and Abandon Wells for Others	<input type="checkbox"/> UNDERGROUND MINING-Own/Operate Facility												
<input type="checkbox"/> DRILLING-Drill Wells for Others													
<p>4. STATE WHETHER THE ENTITY IS A CORPORATION, ASSOCIATION, PARTNERSHIP, INDIVIDUAL, PUBLIC AUTHORITY OR GOVERNMENTAL AGENCY. IF FOREIGN CORPORATION, GIVE STATE AND DATE OF INCORPORATION AND DATE OF AUTHORIZATION TO DO BUSINESS IN NEW YORK STATE. IF PARTNERSHIP, STATE WHETHER GENERAL OR LIMITED AND COUNTY OF FILING. IF DBA, GIVE COUNTY OF FILING.</p> <p>Limited Liability Company</p>	<p>5. IF A NAME CHANGE, GIVE COMPLETE NAME AND ADDRESS OF PREVIOUS ENTITY.</p> <p>N/A</p>												
<p>6. IF CORPORATION OR ASSOCIATION, LIST ALL DIRECTORS AND ALL OFFICERS. IF PARTNERSHIP, LIST ALL GENERAL AND ALL LIMITED PARTNERS. ATTACH ADDITIONAL SHEETS IF NECESSARY.</p> <table border="0"> <tr> <td>NAME</td> <td>TITLE</td> </tr> <tr> <td>David J. Mahar</td> <td>President</td> </tr> <tr> <td>Charles J. Loiacano</td> <td>Sec/Treas</td> </tr> </table>	NAME	TITLE	David J. Mahar	President	Charles J. Loiacano	Sec/Treas	<p>7. LIST ALL PERSONS AUTHORIZED BY THE ENTITY TO SIGN ALL SUBMITTALS TO THE DEPARTMENT.</p> <table border="0"> <tr> <td>NAME</td> <td>TITLE</td> </tr> <tr> <td>David J. Mahar</td> <td>President</td> </tr> <tr> <td>Charles J. Loiacano</td> <td>Sec/Treas</td> </tr> </table>	NAME	TITLE	David J. Mahar	President	Charles J. Loiacano	Sec/Treas
NAME	TITLE												
David J. Mahar	President												
Charles J. Loiacano	Sec/Treas												
NAME	TITLE												
David J. Mahar	President												
Charles J. Loiacano	Sec/Treas												
<p>I hereby affirm under penalty of perjury that the information provided in the report is true to the best of my knowledge and belief. I am aware that false statements made in this report are punishable as a Class A misdemeanor under Section 210.45 of the Penal Law.</p>													
<p>TYPE OR PRINT NAME OF AUTHORIZED PERSON</p> <p>Charles J. Loiacano</p>	<p>SWORN TO AND SUBSCRIBED</p> <p>BEFORE ME, THIS 29th</p>												
<p>SIGNATURE</p> <p><i>Charles J. Loiacano</i></p>	<p>DATE</p> <p>11/29/05</p>												
<p>DAY OF November</p> <p>20 05</p> <p>NOTARY PUBLIC <i>Dawn Fitzgerald</i></p>	<p></p>												

DAWN FITZGERALD
Notary Public, State of New York
Reg. No. 01F16061943
Qualified in Erie County
My Commission Expires July 23, 2009



EAFF



617.20
Appendix A
State Environmental Quality Review
FULL ENVIRONMENTAL ASSESSMENT FORM

Purpose: The full EAF is designed to help applicants and agencies determine, in an orderly manner, whether a project or action may be significant. The question of whether an action may be significant is not always easy to answer. Frequently, there are aspects of a project that are subjective or unmeasurable. It is also understood that those who determine significance may have little or no formal knowledge of the environment or may not be technically expert in environmental analysis. In addition, many who have knowledge in one particular area may be aware of the broader concerns affecting the question of significance.

The full EAF is intended to provide a method whereby applicants and agencies can be assured that the determination process has been orderly, comprehensive in nature, yet flexible enough to allow introduction of information to fit a project or action.

Full EAF Components: The full EAF is comprised of three parts:

- Part 1:** Provides objective data and information about a given project and its site. By identifying basic project data, it assists a reviewer in the analysis that takes place in Parts 2 and 3.
- Part 2:** Focuses on identifying the range of possible impacts that may occur from a project or action. It provides guidance as to whether an impact is likely to be considered small to moderate or whether it is a potentially large impact. The form also identifies whether an impact can be mitigated or reduced.
- Part 3:** If any impact in Part 2 is identified as potentially-large, then Part 3 is used to evaluate whether or not the impact is actually important.

THIS AREA FOR LEAD AGENCY USE ONLY

DETERMINATION OF SIGNIFICANCE – Type 1 and Unlisted Actions

Identify the Portions of EAF completed for this project:

Part 1

Part 2

Part 3

Upon review of the information recorded on this EAF (Parts 1 and 2 and 3 if appropriate), and any other supporting information, and considering both the magnitude and importance of each impact, it is reasonably determined by the lead agency that:

A. The project will not result in any large and important impact(s) and, therefore, is one which **will not** have a significant impact on the environment, therefore a **negative declaration will be prepared.**

B. Although the project could have a significant effect on the environment, there will not be a significant effect for this Unlisted Action because the mitigation measures described in PART 3 have been required, therefore a **CONDITIONED negative declaration will be prepared.***

C. The project may result in one or more large and important impacts that may have a significant impact on the environment, therefore a **positive declaration will be prepared.**

* A Conditioned Negative Declaration is only valid for Unlisted Actions

Name of Action

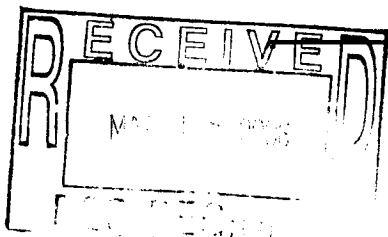
Name of Lead Agency

Print or Type Name of Responsible Officer in Lead Agency

Title of Responsible Officer

Signature of Responsible Officer in Lead Agency

Signature of Preparer (if different from responsible officer)



Date



PART 1 – PROJECT INFORMATION
Prepared by Project Sponsor

NOTICE: This document is designed to assist in determining whether the action proposed may have a significant effect on the environment. Please complete the entire form. Parts A through E. Answers to these questions will be considered as part of the application for approval and may be subject to further verification and public review. Provide any additional information you believe will be needed to complete Parts 2 and 3.

It is expected that completion of the full EAF will be dependent on information currently available and will not involve new studies, research or investigation. If information requiring such additional work is unavailable, so indicate and specify each instance.

Name of Action: Mining permit application for a consolidated, open pit mine

Location of Action (include Street Address, Municipality and County):

Sour Spring Road, Medina, New York 14103, Orleans County

Name of Applicant/Sponsor: Frontier Stone, LLC

Address: 7250 Lea Lane

City / PO: Lockport State: NY Zip Code: 14094

Business Telephone: (518) 434-1694

Name of Owner (if different): _____

Address: _____

City / PO: _____ State: _____ Zip Code: _____

Business Telephone: _____

Description of Action:

Application for permit to mine 174.1± acres for production of aggregate construction materials. Quarry will be a consolidated (i.e. bedrock) open pit mine affecting a total site of 215.5± acres. There will be processing on-site to include crushing, screening and washing. Process water will be on a closed circuit system. Life-of-mine operation is projected to be 75 +/- years. The site will be reclaimed to be two lakes, bisected by a Niagara Mohawk power line. The lakes would be suitable for such secondary uses as wildlife or recreation.



Please Complete Each Question – Indicate N.A. if not applicable

A. SITE DESCRIPTION

Physical setting of overall project, both developed and undeveloped areas.

1. Present Land Use: Urban Industrial Commercial Residential (suburban) Rural (non-farm)
 Forest Agriculture Other

2. Total acreage of project area: 215.5± acres.

APPROXIMATE ACREAGE	PRESENTLY	AFTER COMPLETION
Meadow or Brushland (Non-agricultural)	<u>2 ±</u> acres	<u>15.4±</u> acres
Forested	_____ acres	_____ acres
Agricultural (Includes orchards, cropland, pasture, etc.)	<u>213.5 ±</u> acres	_____ acres
Wetland (Freshwater or tidal as per Articles 24, 25 of ECL)	_____ acres	_____ acres
Water Surface Area	_____ acres	<u>200.1</u> acres
Unvegetated (Rock, earth or fill)	_____ acres	_____ acres
Roads, buildings and other paved surfaces	_____ acres	_____ acres
Other (Indicate type) _____	_____ acres	_____ acres

3. What is predominant soil type(s) on project site? Odessa silt loam, Churchville silt loam, Bombay fine sandy loam

- a. Soil Drainage: Well drained _____ % of site. Moderately well drained 15 % of site.
 Poorly drained 85 % of site.

b. If any agricultural land is involved, how many acres of soil are classified within soil group 1 through 4 of the NYS Land Classification System? 200± acres (see 1 NYCRR 370).

4. Are there bedrock outcroppings on project site? Yes No

a. What is the depth to bedrock 18' - 38' (in feet)

5. Approximate percentage of proposed project site with slopes:

- 0-10% 100 % 10-15% _____ % 15% or greater _____ %

6. Is project substantially contiguous to, or contain a building, site, or district, listed on the State or National Registers of Historic Places? Yes No

7. Is project substantially contiguous to a site listed on the Register of National Natural Landmarks? Yes No
 Iroquois National Wildlife Refuge

8. What is the depth to the water table? 4-20± (in feet)

9. Is site located over a primary, principal, or sole source aquifer? Yes No

10. Do hunting, fishing or shell fishing opportunities presently exist in the project area? Yes No
 Site is closed to public



11. Does project site contain any species of plant or animal life that is identified as threatened or endangered?

Yes No

According to:

[Empty text box]

Identify each species:

[Empty text box]

12. Are there any unique or unusual land forms on the project site? (i.e., cliffs, dunes, other geological formations)

Yes No

Describe:

[Empty text box]

13. Is the project site presently used by the community or neighborhood as an open space or recreation area?

Yes No

If yes, explain:

[Empty text box]

14. Does the present site include scenic views known to be important to the community?

Yes No

[Empty text box]

15. Streams within or contiguous to project area:

None

a. Name of Stream and name of River to which it is tributary

NA

16. Lakes, ponds, wetland areas within or contiguous to project area:

OK - 1 (near-by, not contiguous)

b. Size (in acres):

1,000's



17. Is the site served by existing public utilities? Yes No
- a. If **YES**, does sufficient capacity exist to allow connection? Yes No
- b. If **Yes**, will improvements be necessary to allow connection? Yes No
18. Is the site located in an agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? Yes No
19. Is the site located in or substantially contiguous to a Critical Environmental Area designated pursuant to Article 8 of the ECL, and 6 NYCRR 617? Yes No
20. Has the site ever been used for the disposal of solid or hazardous wastes? Yes No

B. PROJECT DESCRIPTION

1. Physical dimensions and scale of project (fill in dimensions as appropriate).
- a. Total contiguous acreage owned or controlled by project sponsor: 269.45± acres.
- b. Project acreage to be developed: 32.5± acres initially; 215.5 acres ultimately.
- c. Project acreage to remain undeveloped: 0 acres.
- d. Length of project, in miles: NA (if appropriate).
- e. If the project is an expansion, indicate percent of expansion proposed. NA %
- f. Number of off-street parking spaces existing NA: proposed NA.
- g. Maximum vehicular trips generated per hour: 8-10* (upon completion of project)? 0 *Dependent on market demand
- h. If residential: Number and type of housing units:

	One Family	Two Family	Multiple Family	Condominium
Initially	<u>NA</u>			
Ultimately	<u>NA</u>			

- i. Dimensions (in feet) of largest proposed structure: 20' height; 15' width; 30' length.
- j. Linear feet of frontage along a public thoroughfare project will occupy is? 2500± ft.
2. How much natural material (i.e. rock, earth, etc.) will be removed from the site? 78 million tons.
3. Will disturbed areas be reclaimed? Yes No N/A
- a. If yes, for what intended purpose is the site being reclaimed?
- Lake for wildlife/recreation
- b. Will topsoil be stockpiled for reclamation? Yes No
- c. Will upper subsoil be stockpiled for reclamation? Yes No
4. How many acres of vegetation (trees, shrubs, ground covers) will be removed from site? 215.5 acres



5. Will any mature forest (over 100 years old) or other locally important vegetation be removed by this project?

Yes No

6. If single phase project: Anticipated period of construction: mining is continuous months. (including demolition)

7. If multi-phased:

a. Total number of phases anticipated 4 (number)

b. Anticipated date of commencement phase 1: Aug month 2006 year, (including demolition)

c. Approximate completion date of final phase: _____ month 2081 year.

d. Is phase 1 functionally dependent on subsequent phases? Yes No

8. Will blasting occur during construction? Yes No

9. Number of jobs generated: during construction 3-4; after project is complete 0

10. Number of jobs eliminated by this project 0.

11. Will project require relocation of any projects or facilities? Yes No

If yes, explain:

NA

12. Is surface liquid waste disposal involved? Yes No

a. If yes, indicate type of waste (sewage, industrial, etc.) and amount: _____

b. Name of water body into which effluent will be discharged: NA

13. Is subsurface liquid waste disposal involved? Yes No Type: NA

14. Will surface area of an existing water body increase or decrease by proposal? Yes No

If yes, explain:

NA

15. Is project or any portion of project located in a 100 year flood plain? Yes No

16. Will the project generate solid waste? Yes No

a. If yes, what is the amount per month? NA Tons

b. If yes, will an existing solid waste facility be used? Yes No

c. If yes, give name: NA; Location NA

d. Will any wastes not go into a sewage disposal system or into a sanitary landfill? Yes No



e. If yes, explain:

NA

17. Will the project involve the disposal of solid waste?

Yes

No

a. If yes, what is the anticipated rate of disposal?

NA tons/month.

b. If yes, what is the anticipated site life?

NA years.

18. Will project use herbicides or pesticides?

Yes

No

19. Will project routinely produce odors (more than one hour per day)?

Yes

No

20. Will project produce operating noise exceeding the local ambient noise levels?

Yes

No

21. Will project result in an increase in energy use?

Yes

No

If yes, indicate type(s)

Use of diesel fuel and electricity on project site

22. If water supply is from wells, indicate pumping capacity

NA gallons/minute

23. Total anticipated water usage per day

* gallons/day (see below)

24. Does project involve Local, State or Federal funding?

Yes

No

If yes, explain:

* Several hundred gallons per day for dust control as needed. Future wash water system on a closed circuit using groundwater and precipitation from quarry. Make-up water from well or quarry sump as needed, perhaps 1,000 - 5,000 gallons per day.



25. Approvals Required:

		Type	Submittal Date
City, Town, Village Board	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____	_____
City, Town, Village Planning Board	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Special Use Permit	_____
City, Town Zoning Board	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____	_____
City, County Health Department	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____	_____
Other Local Agencies	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____	_____
Other Regional Agencies	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____	_____
State Agencies	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Mine Permit	March 2006
Federal Agencies	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	_____	_____

C. ZONING AND PLANNING INFORMATION

1. Does proposed action involve a planning or zoning decision? Yes No

If Yes, indicate decision required:

- | | | | |
|---|--|--|--------------------------------------|
| <input type="checkbox"/> Zoning amendment | <input type="checkbox"/> Zoning variance | <input type="checkbox"/> New/revision of master plan | <input type="checkbox"/> Subdivision |
| <input type="checkbox"/> Site plan | <input checked="" type="checkbox"/> Special use permit | <input type="checkbox"/> Resource Management Plan | <input type="checkbox"/> Other |



2. What is the zoning classification(s) of the site?

Residential/Agricultural (RA)

3. What is the maximum potential development of the site if developed as permitted by the present zoning?

NA

4. What is the proposed zoning of the site?

NA

5. What is the maximum potential development of the site if developed as permitted by the proposed zoning?

NA

6. Is the proposed action consistent with the recommended uses in adopted local land use plans?

Yes No

7. What are the predominant land use(s) and zoning classifications within a 1/4 mile radius of proposed action?

(RA) Residential/Agricultural Uses: Residence, farms and wildlife refuge

8. Is the proposed action compatible with adjoining/surrounding land uses with a 1/4 mile?

Yes No

9. If the proposed action is the subdivision of land, how many lots are proposed?

NA

a. What is the minimum lot size proposed?

NA



10 Will proposed action require any authorization(s) for the formation of sewer or water districts?

Yes No

[Empty box for response to question 10]

11. Will the proposed action create a demand for any community provided services (recreation, education, police, fire protection)?

Yes No

a. If yes, is existing capacity sufficient to handle projected demand?

Yes No

NA

12. Will the proposed action result in the generation of traffic significantly above present levels?

Yes No

a. If yes, is the existing road network adequate to handle the additional traffic?

Yes No

Yes, traffic pattern has been designed to avoid almost all residences before entering State highway

D. INFORMATIONAL DETAILS

Attach any additional information as may be needed to clarify your project. If there are or may be any adverse impacts associated with your proposal, please discuss such impacts and the measures which you propose to mitigate or avoid them.

E. VERIFICATION

I certify that the information provided above is true to the best of my knowledge.

Applicant/Sponsor Name: Frontier Stone, LLC

Date: 3/2/06

Signature: *Charles J. Loiacano*

Charles J. Loiacano

Title: Secretary/Treasurer

If the action is in the Coastal Area, and you are a state agency, complete the Coastal Assessment Form before proceeding with this assessment.



Soils Description



Bombay Series

The Bombay series consists of deep, nearly level to gently sloping, moderately well drained soils on glacial till plains. These soils formed in glacial till derived from sandstone and limestone.

In a representative profile the surface layer is dark grayish brown fine sandy loam 8 inches thick. The subsurface layer is 2 inches of brown fine sandy loam. The subsoil is 22 inches thick. In sequence downward, it is 4 inches of brown to dark brown, friable fine sandy loam; 7 inches of mottled brown to dark brown, firm fine sandy loam; 6 inches of mottled yellowish brown, firm fine sandy loam; and 5 inches of mottled reddish brown, firm loam. The substratum is reddish brown, firm loam.

A temporary high water table is perched above the substratum in spring and during other wet periods. Permeability is moderate in the subsoil and moderately slow in the substratum. Available water capacity is moderate. The capacity of these soils to supply nitrogen is medium, and the capacity to supply phosphorus and potassium is low to medium. Seasonal wetness and moderately slow permeability in the substratum are the main limitations in farming and in town and country planning.

Representative profile of Bombay fine sandy loam, 3 to 8 percent slopes, in a cultivated area 50 feet west of Kenyonville Road, three-eighths of a mile north of Eagle Harbor-Knowlesville Road, 300 feet north of cemetery, in the town of Gaines:

- Ap—0 to 8 inches, dark grayish brown (10YR 4/2) fine sandy loam; moderate, medium to fine, granular structure; friable; many roots; many fine pores; less than 5 percent coarse fragments; slightly acid; abrupt, smooth boundary.
- A2—8 to 10 inches, brown (7.5YR 5/4) fine sandy loam; moderate, medium, granular structure; friable; many roots; many fine pores; less than 5 percent coarse fragments; slightly acid; clear, wavy boundary.
- B&A—10 to 14 inches, brown to dark brown (7.5YR 4/4) fine sandy loam; weak, fine, subangular blocky structure parting to weak, thin, platy; friable; common roots; common fine pores with clay linings; light gray (10YR 7/2) ped coats 1 to 2 millimeters thick; 10 percent coarse fragments; neutral; gradual, smooth boundary.
- B21t—14 to 21 inches, brown to dark brown (7.5YR 4/4) fine sandy loam; common, medium, distinct, strong brown (7.5YR 5/6) mottles; weak, fine, subangular blocky structure parting to weak, thin, platy; firm; common roots; common fine pores with clay linings; clay films on 15 percent of ped faces; few clay linings in pores; 10 percent coarse fragments; neutral; clear, wavy boundary.
- B22t—21 to 27 inches, yellowish brown (10YR 5/4) fine sandy loam; common, medium, distinct, brownish yellow (10YR 6/6) mottles; weak, fine, subangular blocky structure parting to weak, thin, platy; firm; few pores; few patchy clay films on ped faces; 5 percent coarse fragments; neutral; abrupt, wavy boundary.
- B3—27 to 32 inches, reddish brown (5YR 4/3) loam; few, medium, prominent, brownish yellow (10YR 6/6) mottles; weak, fine, subangular blocky structure parting to weak, thin, platy; firm; 15 percent coarse fragments; neutral; smooth boundary.
- C—32 to 50 inches, reddish brown (5YR 4/3) loam; moderate, medium, platy structure; firm; 15 percent coarse fragments; calcareous; moderately alkaline.

Thickness of the solum and depth to carbonates range from 30 to 40 inches. The content of coarse fragments ranges from 10 to 20 percent in the solum and from 10 to 25 percent in the C horizon. Reaction ranges from medium acid to neutral in the solum and from neutral to moderately alkaline in the C horizon.



The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2. The A2 horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 or 4. It ranges from fine sandy loam to loam.

The B&A horizon has interfingering A2 material surrounding peds as coatings 1 to 2 millimeters thick in hue of 10YR, value of 6 or 7, and chroma of 2 or 3. The B horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 or 4. It is loam or fine sandy loam. The Bt horizon has clay films that coat 10 to 30 percent of the ped surfaces.

The C horizon has the same color and texture ranges as the B horizon.

Bombay soils are commonly near or are similar to Madrid, Massena, Hilton, and Appleton soils. They formed in material similar to that of the well drained Madrid soils and somewhat poorly drained Massena soils. Bombay soils are similar to Hilton soils, but have a coarser textured B horizon. They have a coarser textured B horizon and are better drained than Appleton soils.

BoB—Bombay fine sandy loam, 3 to 8 percent slopes.

This gently sloping soil has the profile described as representative of the series. It is on till plains in many parts of the county. Areas are oblong and range from less than 5 to about 50 acres in size.

Included with this soil in mapping are nearly level Bombay or Massena soils in drainageways or depressions and gently sloping Madrid soils in higher, drier areas. Near Fancher are a few areas where the soil is moderately deep over reddish silt and clay lacustrine deposits, and north of West Barre, areas where the soil is moderately deep over silt and fine sand. Near West Shelby are areas of soils that have a fragipan.

Runoff is medium, and the hazard of erosion is moderate. The seasonal high water table, the moderate hazard of erosion, and the moderately slow permeability are the main limitations. In most areas this soil responds well to tile drainage and to lime and fertilization. It is suited to most crops grown in the county, including cherries. Artificial drainage, however, is needed for crops that require good drainage. Contour planting, stripcropping, and diversions help to control runoff and reduce the risk of erosion. Capability unit IIe-2; woodland suitability group 2o1.



Cayuga Series

The Cayuga series consists of deep, gently sloping, moderately well drained to well drained soils on lake deposits in till plains. These soils formed in lacustrine silt and clay underlain by glacial till.

In a representative profile the surface layer is dark grayish brown silt loam 8 inches thick. The subsurface layer is 4 inches of mottled brown silt loam. The subsoil is 13 inches of reddish brown, firm silty clay. The substratum is firm, glacial till. The upper 7 inches is mottled brown loam, the next 17 inches is brown gravelly fine sandy loam, and the lower 11 inches is brown gravelly loam.

A seasonal high water table is perched above the slowly permeable substratum for brief periods in spring, especially in the lesser sloping areas. Available water capacity is high. The capacity to supply nitrogen and phosphorus is medium, and the capacity to supply potassium is high. Slight seasonal wetness, slow permeability, and the moderate hazard of erosion are the main limitations in farming and in town and country planning.

Representative profile of Cayuga silt loam, 2 to 6 percent slopes, in a cultivated area, 500 feet west of Drake Island Road and 50 feet north of Gillete Road, in the town of Barre:

- Ap—0 to 8 inches, dark grayish brown (10YR 4/2) silt loam; weak, fine, subangular blocky structure; friable; many fine roots; 2 percent coarse fragments; medium acid; abrupt, smooth boundary.
- A2—8 to 12 inches, brown (10YR 5/3) silt loam; common, medium, distinct, strong brown (7.5YR 5/6) mottles; weak, medium, subangular blocky structure; friable; common fine roots; common fine pores; 2 percent coarse fragments; medium acid; clear, wavy boundary.
- B2t—12 to 25 inches, reddish brown (5YR 4/4) silty clay; moderate, medium, blocky structure; firm; few fine roots; common fine pores; continuous, thin, reddish brown (5YR 4/3) clay films on ped faces with thicker linings in pores; grayish brown (10YR 5/2) silty ped coats 1 millimeter thick in upper 3 to 4 inches; 2 percent coarse fragments; slightly acid; clear, smooth boundary.
- IIC1—25 to 32 inches, brown (7.5YR 5/4) loam; few, fine, faint, strong brown (7.5YR 5/6) mottles; weak, thick, platy structure; firm; few fine roots; few fine pores; 10 percent coarse fragments; neutral; clear, wavy boundary.
- IIC2—32 to 49 inches, brown (10YR 5/3) gravelly fine sandy loam; massive; firm; few fine pores; 20 percent coarse fragments; calcareous; moderately alkaline; abrupt, smooth boundary.
- IIC3—49 to 60 inches, brown (10YR 5/3) gravelly loam; weak, medium, platy structure; firm; 20 percent coarse fragments; calcareous; moderately alkaline.

Thickness of the solum ranges from 20 to 36 inches. Depth to carbonates ranges from 20 to 40 inches. Reaction ranges from medium acid to neutral. The content of coarse fragments ranges from 10 to 50 percent in the C horizon.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 to 4. The A2 horizon has hue of 10YR, value of 4 to 6, and chroma of 2 or 3.

The Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 or 4. It ranges from heavy silty clay loam to silty clay.

The C horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 3 or 4. It ranges from fine sandy loam to silt loam.

Cayuga soils formed in the same kind of parent material and are in the same drainage sequence as the somewhat poorly drained Churchville soils and the poorly drained Barre soils. They are better drained and are on thinner clay deposits than Odessa or Rhinebeck soils.



CcB—Cayuga silt loam, 2 to 6 percent slopes. This gently sloping soil is on glacial till deposits that have a lacustrine cap 20 to 36 inches thick. Areas are oblong and generally less than 25 acres in size.

Included with this soil in mapping are areas of other Cayuga soils where slope is less than 2 percent or more than 6 percent. Also included are areas of Churchville, Odessa, and Rhinebeck soils in depressions and along drainageways, areas of Ontario or Hilton soils on knolls, areas where the clay cap is thinner than 20 inches, and south of Clarendon, areas of similar soils that are moderately deep over shale or limestone.

Runoff is medium, and the hazard of erosion is moderate. Slow permeability and the moderate hazard of erosion are the main limitations. This soil is well suited to most crops grown in the county. Cover crops and green manure crops along with contour planting and contour stripcropping help to reduce runoff and erosion. Capability unit IIe-5; woodland suitability group 2o1.



Churchville Series

The Churchville series consists of deep, nearly level and gently sloping, somewhat poorly drained soils on thin lake deposits on till plains. These soils formed in lacustrine silt and clay underlain by glacial till.

In a representative profile the surface layer is dark grayish brown silt loam 9 inches thick. The subsoil is 13 inches of mottled reddish brown, firm silty clay. The upper part of the substratum is mottled reddish brown, very firm silty clay loam. The lower part is mottled reddish brown, firm loam.

A seasonal high water table is generally perched above the slowly permeable subsoil. The substratum is also slowly permeable. Available water capacity is moderate. The capacity of these soils to supply nitrogen and phosphorus is medium. The capacity to supply potassium is medium to high. The seasonal high water table and the slow permeability are the main limitations in farming and in town and country planning.

Representative profile of Churchville silt loam, 2 to 6 percent slopes, in hay, 150 yards south of N.Y. 31 (Telegraph Road), 50 feet west of Taylor Hill Road, in the town of Ridgeway:

- Ap—0 to 9 inches, dark grayish brown (10YR 4/2) silt loam; weak, medium and fine, granular structure; friable; many roots; slightly acid; abrupt, smooth boundary.
- B21t—9 to 15 inches, reddish brown (5YR 4/3) silty clay; common, medium, distinct, strong brown (7.5YR 5/6) mottles; moderate, coarse prisms parting to moderate, medium, subangular blocky structure; firm; common roots; common pores; coatings of reddish gray (5YR 5/2) silty material 1 to 2 millimeters thick on peds in upper part; thin, dark reddish gray (5YR 4/2) clay films on 50 percent of peds; less than 2 percent coarse fragments; neutral; clear, smooth boundary.
- B22t—15 to 22 inches, reddish brown (5YR 4/3) silty clay; common, fine, faint, yellowish red (5YR 4/6) and reddish gray (5YR 5/2) mottles; moderate, coarse prisms parting to moderate, medium, blocky structure; firm; common roots; common pores with clay linings; dark reddish gray (5YR 4/2) coats and thin continuous clay films on peds; less than 2 percent coarse fragments; neutral; clear, smooth boundary.
- C1—22 to 29 inches, reddish brown (5YR 4/3) silty clay loam; many, medium, distinct, yellowish red (5YR 4/6) mottles; moderate, medium, platy structure; very firm; few roots; less than 5 percent coarse fragments; calcareous; moderately alkaline; abrupt, wavy boundary.
- IIC2—29 to 52 inches, reddish brown (5YR 5/3) loam; common, medium, faint, yellowish red (5YR 5/6) mottles; massive; firm; 15 percent coarse fragments; calcareous; moderately alkaline.

Thickness of the solum ranges from 20 to 36 inches. Depth to carbonates ranges from 18 to 36 inches. The content of coarse fragments ranges from none to less than 2 percent. Reaction ranges from slightly acid in the upper part of the solum to mildly alkaline in the lower part.

The Ap horizon has hue of 10YR to 2.5YR, value of 3 to 5, and chroma of 2 or 3.

The B horizon has hue of 10YR to 2.5YR, value of 4 or 5, and chroma of 2 to 4. Texture ranges from silty clay loam to clay. Thin patchy to continuous clay films are on both vertical and horizontal ped faces.

The C1 horizon is similar to the B horizon in color and texture. It is discontinuous, has platy structure, and is calcareous.

The IIC horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. The texture is loam or silt loam. The content of coarse fragments ranges from 10 to 35 percent.

Churchville soils are commonly near or are similar to Cayuga, Barre, Odessa, and Rhinebeck soils. They formed in similar deposits and are in the same drainage sequence as the well drained to moderately well drained Cayuga soils and the poorly drained Barre soils. They formed in thinner clayey deposits than Odessa and Rhinebeck soils.



ChA—Churchville silt loam, 0 to 2 percent slopes.
This nearly level soil has a profile similar to the one described as representative of the series, but it has more mottles nearer the surface. It is in glacial lake areas that are near areas of glacial till. Areas are irregularly shaped and range from less than 5 to more than 50 acres in size.

Included with this soil in mapping are areas where the surface layer is silty clay loam and small areas of wetter Barre, Lakemont, and Madalin soils in depressions and drainageways. Also included are small areas of better drained Cayuga, Schoharie, and Cazenovia soils on knolls and a few areas where stones are on the surface and in the profile.

Runoff is slow, and the hazard of erosion is slight. The seasonal high water table and the slow permeability are the main limitations.

If surface drainage is adequate, this soil is well suited to hay and grain crops. If artificially drained, it is suited to grapes, apples, and pears. It is not so well suited to cherries, peaches, and many vegetables even under artificial drainage, because of the fine textured subsoil. Surface drainage, such as land shaping, is generally more effective than tile systems because of the slowly permeable subsoil. Capability unit IIIw-2; woodland suitability group 3w1.



Odessa Series

The Odessa series consists of deep, nearly level to gently sloping, somewhat poorly drained soils on glacial lake plains. These soils formed in reddish colored silt and clay lacustrine sediment.

In a representative profile the surface layer is very dark grayish brown silt loam 8 inches thick. The upper 9 inches of the subsoil is mottled brown, firm silty clay loam. The lower 24 inches is mottled reddish brown, firm silty clay. The substratum is mottled dark reddish gray and brown to dark brown, stratified silt and clay.

A seasonal high water table is generally perched above the slowly permeable subsoil. The substratum is slowly to very slowly permeable. Available water capacity is moderate to high. The capacity of these soils to supply nitrogen is high, but release is slow in spring when the soil is wet. The capacity to supply phosphorus is medium and potassium high. The seasonal high water table, the slow to very slow permeability, and the high content of silt and clay are the main limitations in farming and in town and country planning.

Representative profile of Odessa silt loam, 0 to 2 percent slopes, in an idle area one-half mile south of East Shelby-West Barre Road, 50 feet east of Shelby-Barre Town Line Road, in the town of Barre:

- Ap—0 to 8 inches, very dark grayish brown (10YR 3/2) silt loam; gray to light brownish gray (10YR 6/2) when dry; weak, medium, granular structure; friable; many roots; slightly acid; abrupt, smooth boundary.
- B21t—8 to 17 inches, brown to dark brown (7.5YR 4/4) silty clay loam; common, medium, distinct, strong brown (7.5YR 5/6) mottles; weak, coarse prisms parting to moderate, medium, angular blocky structure; firm; common roots; common fine pores with clay linings; pinkish gray (7.5YR 6/2) silty films on peds in upper part; thin; dark brown to brown (7.5YR 4/2) clay films on ped surfaces in lower part; slightly acid; clear, wavy boundary.
- B22t—17 to 29 inches, reddish brown (5YR 4/3) silty clay; common, fine, distinct, yellowish red (5YR 4/8) and few, fine, faint, brown (7.5YR 5/2) and pinkish gray (7.5YR 6/2) mottles; moderate, coarse prisms parting to moderate, medium, angular blocky structure; firm; few roots; common fine pores with clay linings; dark brown to brown (7.5YR 4/2), thin, continuous clay films on ped surfaces; neutral; clear, wavy boundary.
- B3—29 to 41 inches, reddish brown (5YR 5/4) silty clay; common, medium, distinct, yellowish brown (10YR 5/6) mottles; weak, medium, angular blocky structure; firm; calcareous; mildly alkaline; clear, smooth boundary.
- C—41 to 50 inches, dark reddish gray (5YR 4/2) and brown to dark brown (7.5YR 4/2) stratified silt and clay; common, medium, distinct, yellowish brown (10YR 5/6) mottles; moderate, medium, platy structure; firm; calcareous; moderately alkaline.

Thickness of the solum ranges from 20 to 45 inches. Depth to carbonates ranges from 17 to 40 inches. Depth to bedrock is more than 4 feet. The content of coarse fragments ranges from 0 to 5 percent.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2.

The B horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 2 to 4. High chroma mottles range from common to many in ped interiors. Ped surfaces are dominantly 2 chroma or less. The texture ranges from silty clay loam to silty clay. Clay films are on 10 to 40 percent of



both vertical and horizontal ped faces. Reaction ranges from slightly acid to mildly alkaline in the lower part.

The C horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 2 to 4. It is silty clay loam, silty clay, or varved silt, clay, and very fine sand.

Odessa soils are commonly near or are similar to Schoharie, Lakemont, Rhinebeck, and Madalin soils. They formed in similar material and are in the same drainage sequence as the moderately well drained to well drained Schoharie soils and poorly drained to very poorly drained Lakemont soils. Odessa soils are redder in the lower part of the B horizon than Rhinebeck and Madalin soils.

OdA—Odessa silt loam, 0 to 2 percent slopes. This nearly level soil has the profile described as representative of the series. It is on glacial lake deposits that are dominantly silt and clay. Areas are narrow and finger shaped or irregularly shaped and range from about 5 to more than 100 acres in size.

Included with this soil in mapping are areas where the surface layer is silty clay loam. Also included are areas of Schoharie or Cayuga soils on knolls and on small, better drained spots and areas of Lakemont or Fonda soils in depressions and along drainageways. In a few areas are Rhinebeck soils, which are browner in the lower part of the subsoil, and in some areas are Churchville soils, which are similar to the Odessa soil but are moderately deep over glacial till. Small areas where gravel, stones, or sand is in the surface layer are indicated by spot symbols on the soil map.

Runoff is slow, and the hazard of erosion is slight. A seasonal high water table, the slow to very slow permeability, and the high silt and clay content are the main limitations.

This soil responds well to surface drainage. Tile generally is less effective. The soil crusts or forms hard clods if cultivated when wet. Unless artificially drained, it is best suited to short-season crops, hay, pasture, and trees. If adequately drained, it can be used for most crops commonly grown in the area. Additions of organic matter are needed to maintain soil tilth. Capability unit IIIw-2; woodland suitability group 3w1.



Mining Plan Map

