

ALTERNATIVES ANALYSIS & MASTER PLAN FOR

Moore's Station Quarry Restoration & Park Development

Mercer County Planning Department



Project Background & Analysis

Public Meeting 1

12.02.2020

Welcome and Thank You for Attending !

Aaron Watson & Leslie Floyd

County Steering Committee

AARON WATSON	EXECUTIVE DIRECTOR
JOE PIZZA	DEPUTY DIRECTOR
LESLIE FLOYD	PLANNING DIRECTOR
LISA FRITZINGER	ASSISTANT PLANNING DIRECTOR
ANTHONY CUCCHI	SUPERINTENDENT OF PARKS
JENN ROGERS	DIRECTOR OF STEWARDSHIP / COUNTY NATURALIST
EMILY BLACKMAN	SENIOR PLANNER



Moore's Station Quarry Restoration
&
Park Development

Quarry Fly Through Video



Moores Station Quarry Restoration
&
Park Development

Project Team & Scope of Work

SIMONE COLLINS LANDSCAPE ARCHITECTURE Landscape Architects / Planners - team leader will facilitate overall Vision, Design, Planning and Community Participation

GANNETT FLEMING Multidisciplinary Engineering Firm for: Mining / Reclamation; Geology / Geotechnical, Civil / Stormwater, Structural, and permitting expertise.

APPLIED ECOLOGICAL SERVICES Science driven consulting, design and environmental reclamation & contracting firm will undertake the site Ecological Assessment and collaborate on rehabilitation recommendations.

RE:VISION ARCHITECTURE Uber green firm serving as sustainability & architectural consultant

4WARD PLANNING Economic Planner / Market Analyst will assess the recreational marketplace and develop revenue and cost recovery analysis

Moores Station Quarry Restoration
&
Park Development

Project Team Professionals

SIMONE COLLINS LANDSCAPE ARCHITECTURE Peter Simone, Sarah Leeper, Melissa Barley

GANNETT FLEMING Michael Knight, Andrew Smithmyer, Eric Neast

APPLIED ECOLOGICAL SERVICES Michael McGraw, Jessie Buckner

RE:VISION ARCHITECTURE Scott Kelly, Drew Lavine

4WARD PLANNING Todd Poole, Susan Crowell-Berigan

Moores Station Quarry Restoration
&
Park Development

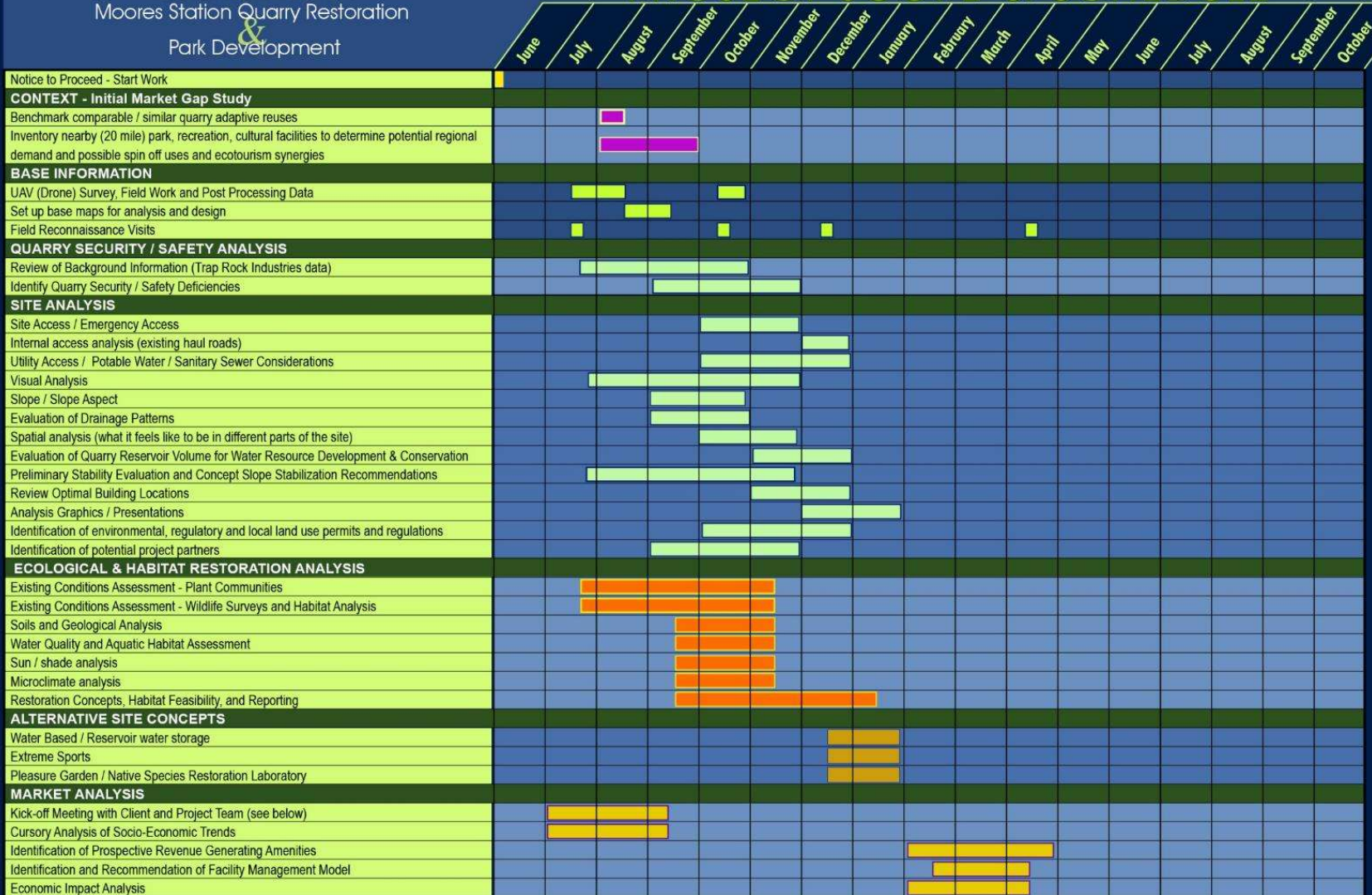
Agenda

1. INTRODUCTIONS – AARON WATSON / LESLIE FLOYD
2. PROJECT AND QUARRY REVIEW
3. GEOLOGIC ANALYSIS – GANNETT FLEMING
4. ECOLOGICAL ANALYSIS – APPLIED ECOLOGICAL SERVICES
5. SUMMARY - MARKET GAP ANALYSIS – 4WARD PLANNING
6. DESIGN APPROACH – SIMONE COLLINS
7. FREQUENTLY ASKED QUESTIONS
8. BRAINSTORMING AND DISCUSSION – QUESTIONS CAN BE SUBMITTED AT ANY TIME IN THE CHAT SECTION.



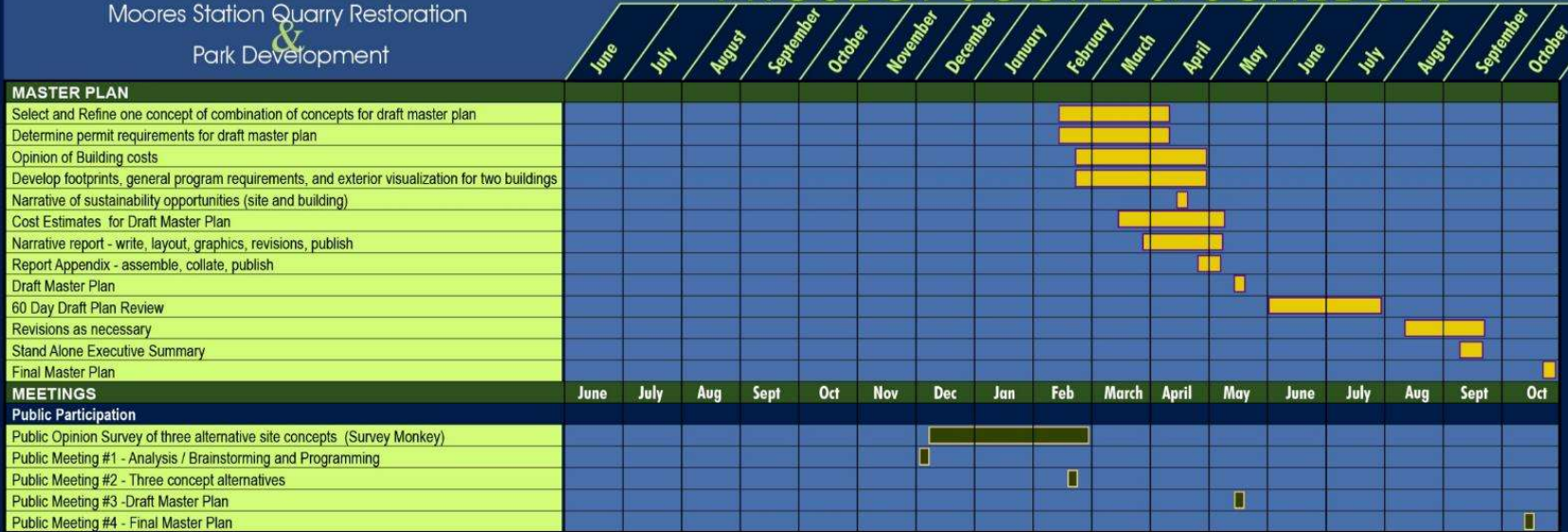
Alternatives Analysis & Master Plan for
 Moores Station Quarry Restoration
 &
 Park Development

PROJECT SCOPE & SCHEDULE



Alternatives Analysis & Master Plan for
Moores Station Quarry Restoration
 &
Park Development

PROJECT SCOPE & SCHEDULE



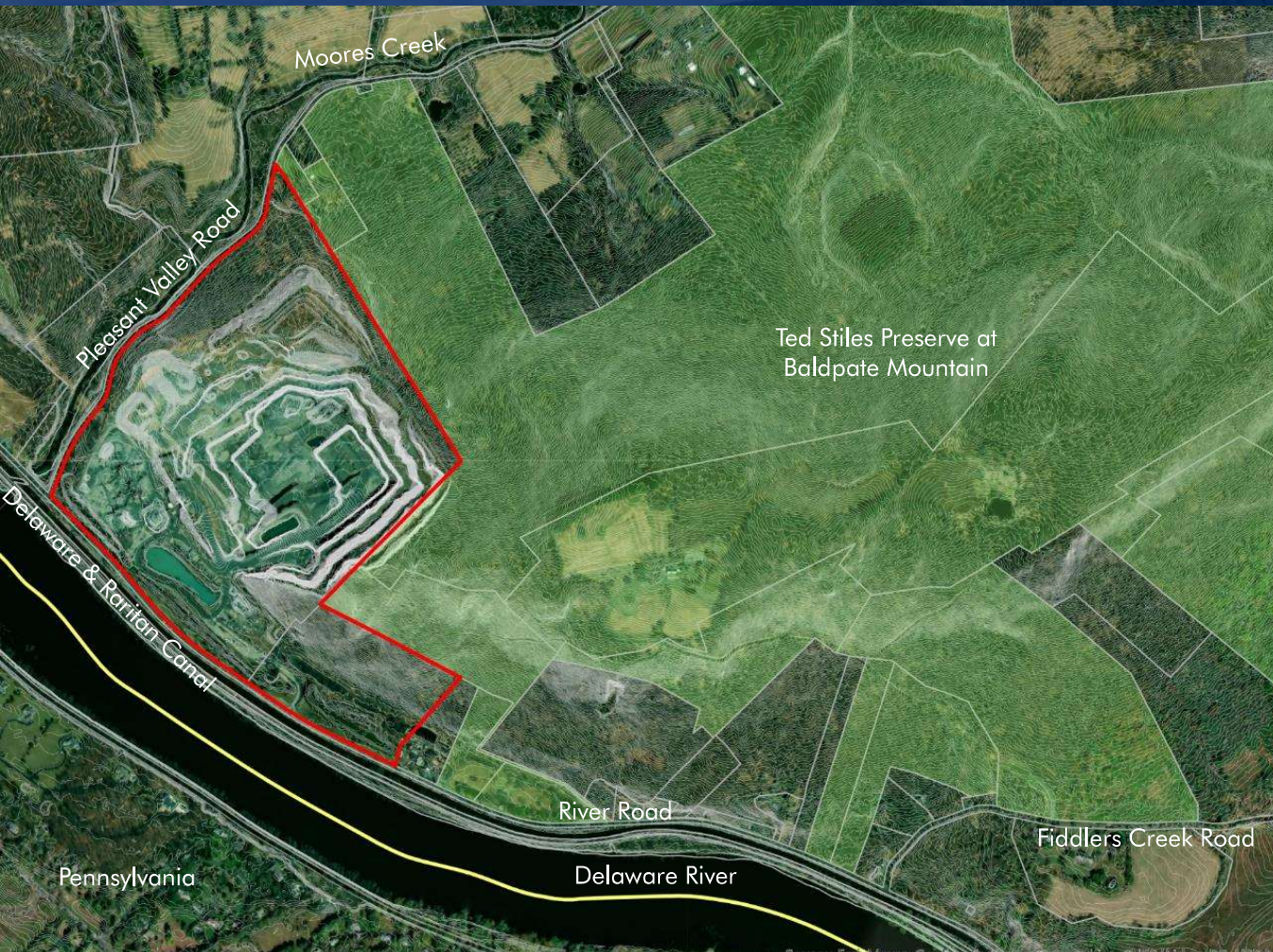
Project Meetings

MEETING	PURPOSE	DATE
Public Meeting #1	Project Background & Brainstorming	Tuesday Dec 2, 2020
Public Meeting #2	Concept Review & Feedback	Tuesday, Feb 23, 2021
Public Meeting #3	Draft Plan Presentation	Tuesday, May 18, 2021
60-day draft plan review		June - July
Public Meeting #4	Final Plan Presentation	Tuesday, October 12, 2021

What is a Master Plan?



Site Context



166 Acres

Elevations:

- EL 54' at River Road Elevation
- EL -116' at Pit Floor
- EL 360' at highest point

Pit is not dry

- Water pumped & filtered
- Permit to discharge into Moores Creek

Bordering uses:

- River Road (Rt. 29)
- Pleasant Valley Road
- Ted Stiles Preserve at Baldpate Mountain – over 1,500 acres
- Delaware & Raritan Canal

Moores Station Quarry Restoration
&
Park Development

Quarry Site Visit



Pit floor looking southeast toward high point of site.



Pit floor looking west toward Pleasant Valley Road.

Moores Station Quarry Restoration
&
Park Development

Quarry Site Visit



Entering the Quarry from River Road parking area.



Site pond used for dewatering pit and dust control

Quarry Site Visit



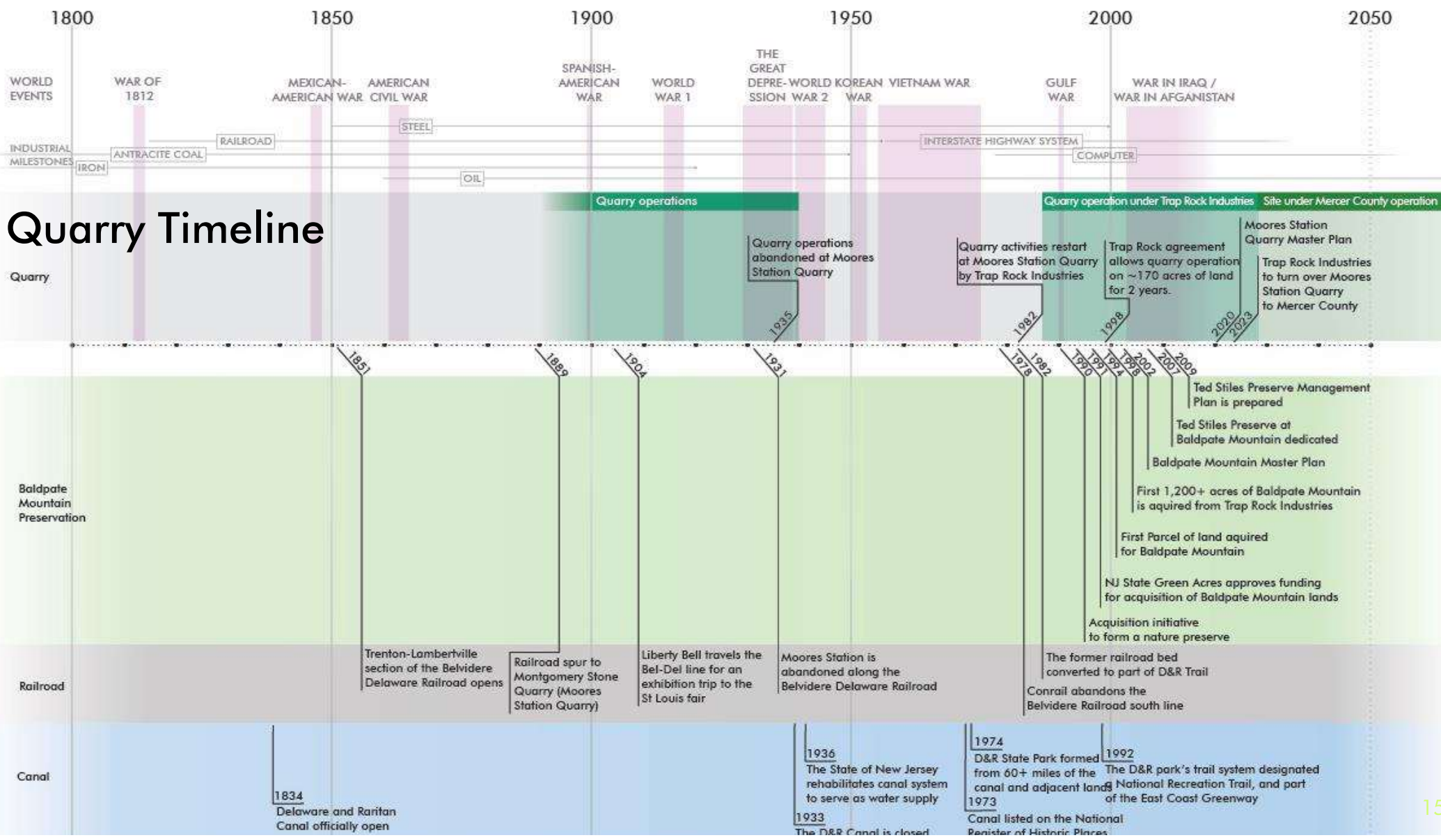
Eastern upper ledge of quarry edge looking West towards Pleasant Valley

Upper tier access road



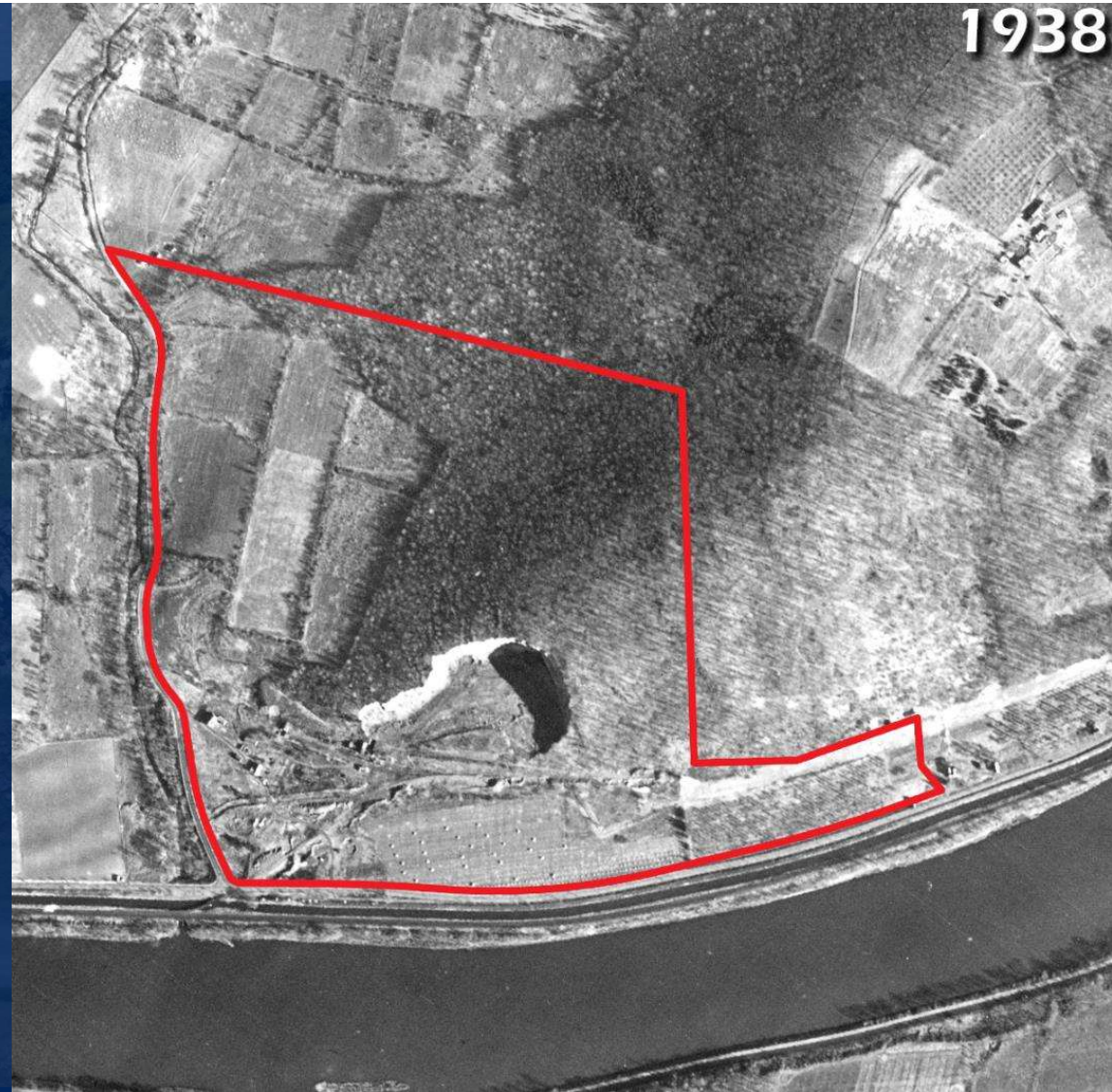
Northwest quarry edge looking south towards the river.

Moore's Station Quarry Restoration & Park Development



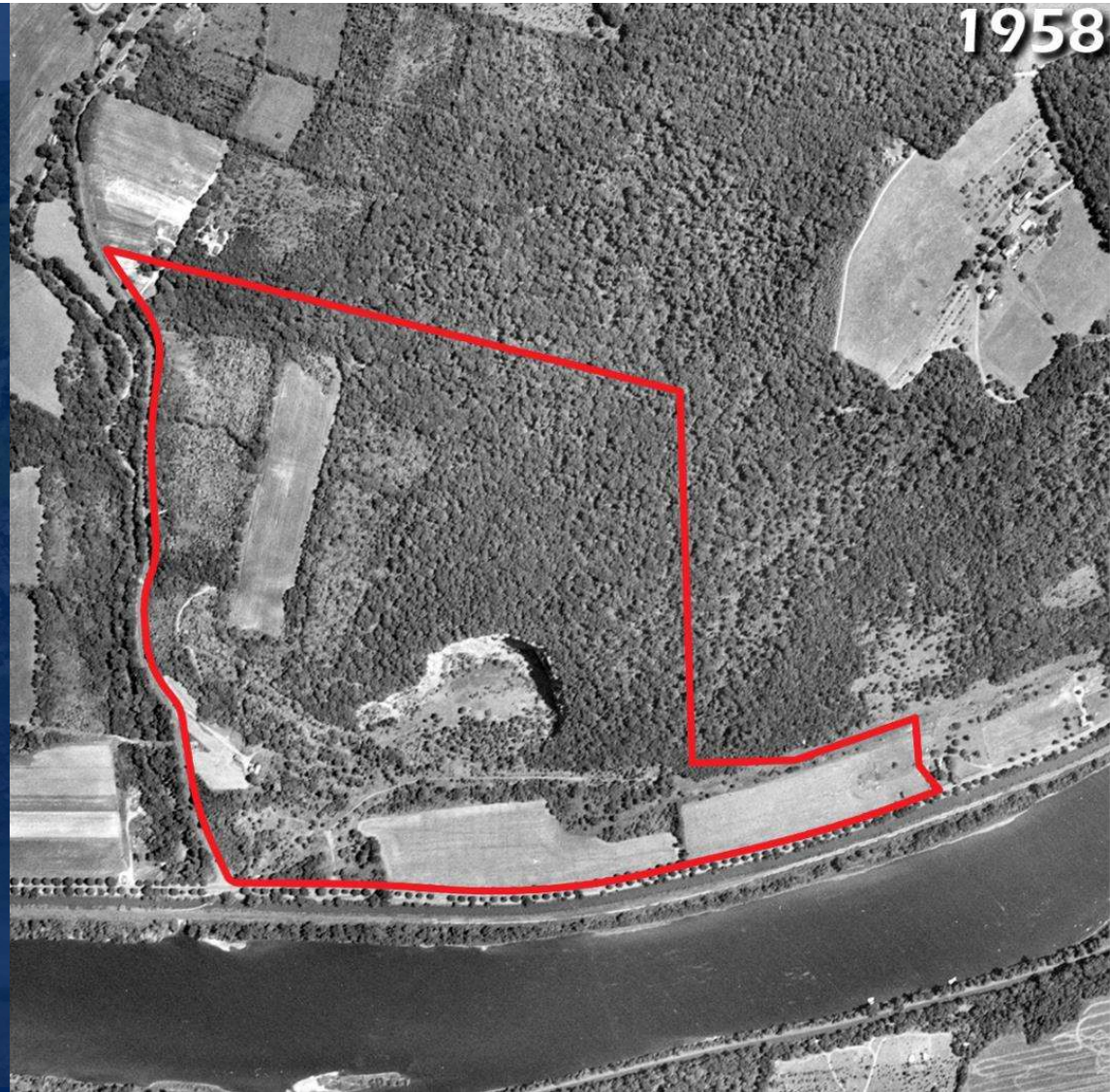
Historic Aerials & Quarry Timeline

- 1834 Delaware and Raritan Canal officially opens
- 1851 Trenton-Lambertville section of the Belvidere Delaware Railroad opens
- 1989 Railroad spur is completed to Montgomery Stone Quarry (Moores Station Quarry)
- 1904 Liberty Bell travels the Bel-Del line on a special flatcar for an exhibition trip from Philadelphia to the St. Louis Fair.
- 1931 Moores Station is abandoned along the Belvidere Delaware Railroad
- 1933 The D & R Canal is closed
- 1935 Quarry operations abandoned at Moores Station Quarry



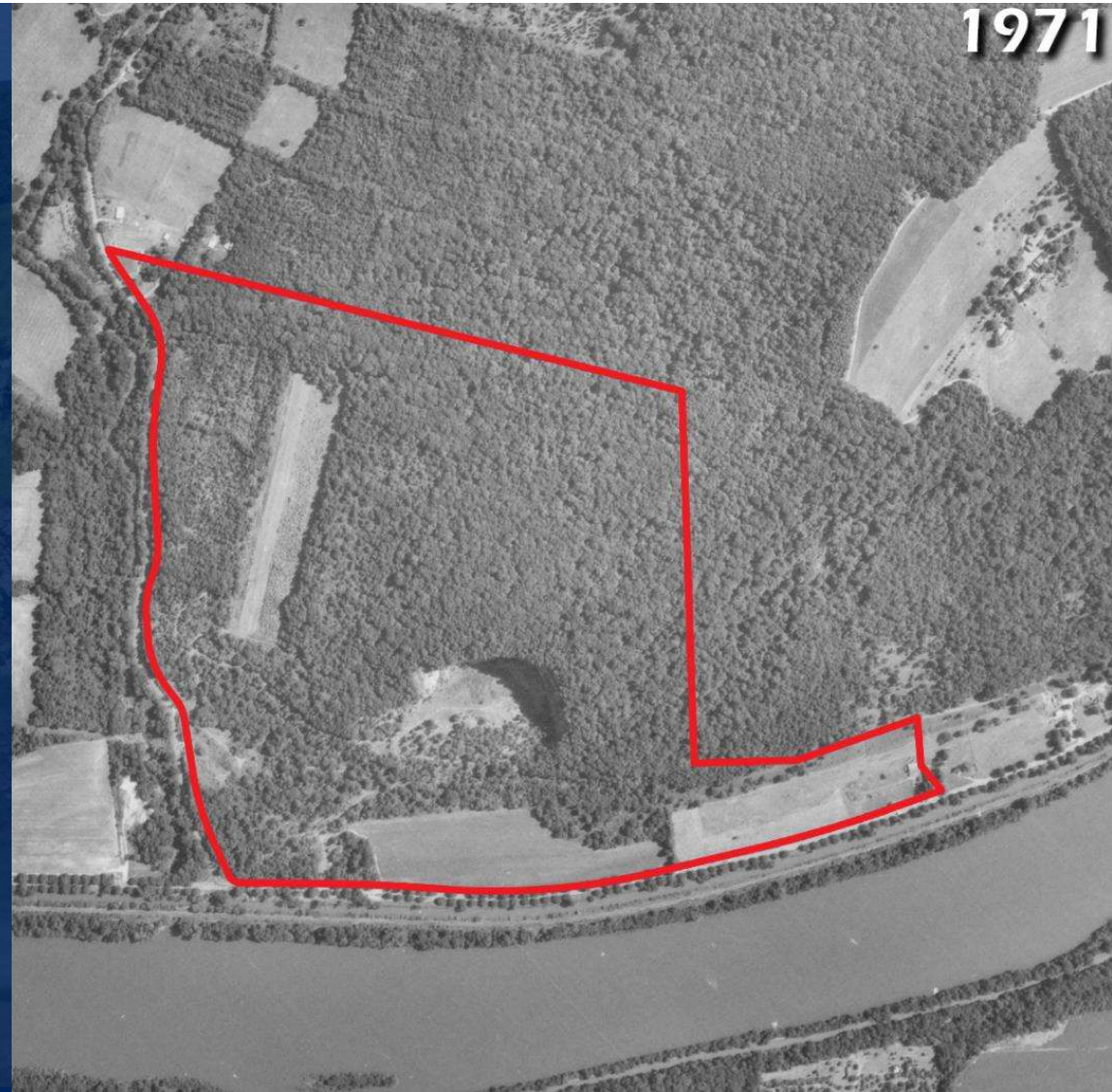
Historic Aerials & Quarry Timeline

- 1936 State of New Jersey rehabilitates the canal system to serve as a water supply
- 1960 Belvidere Delaware Railroad passenger service ends



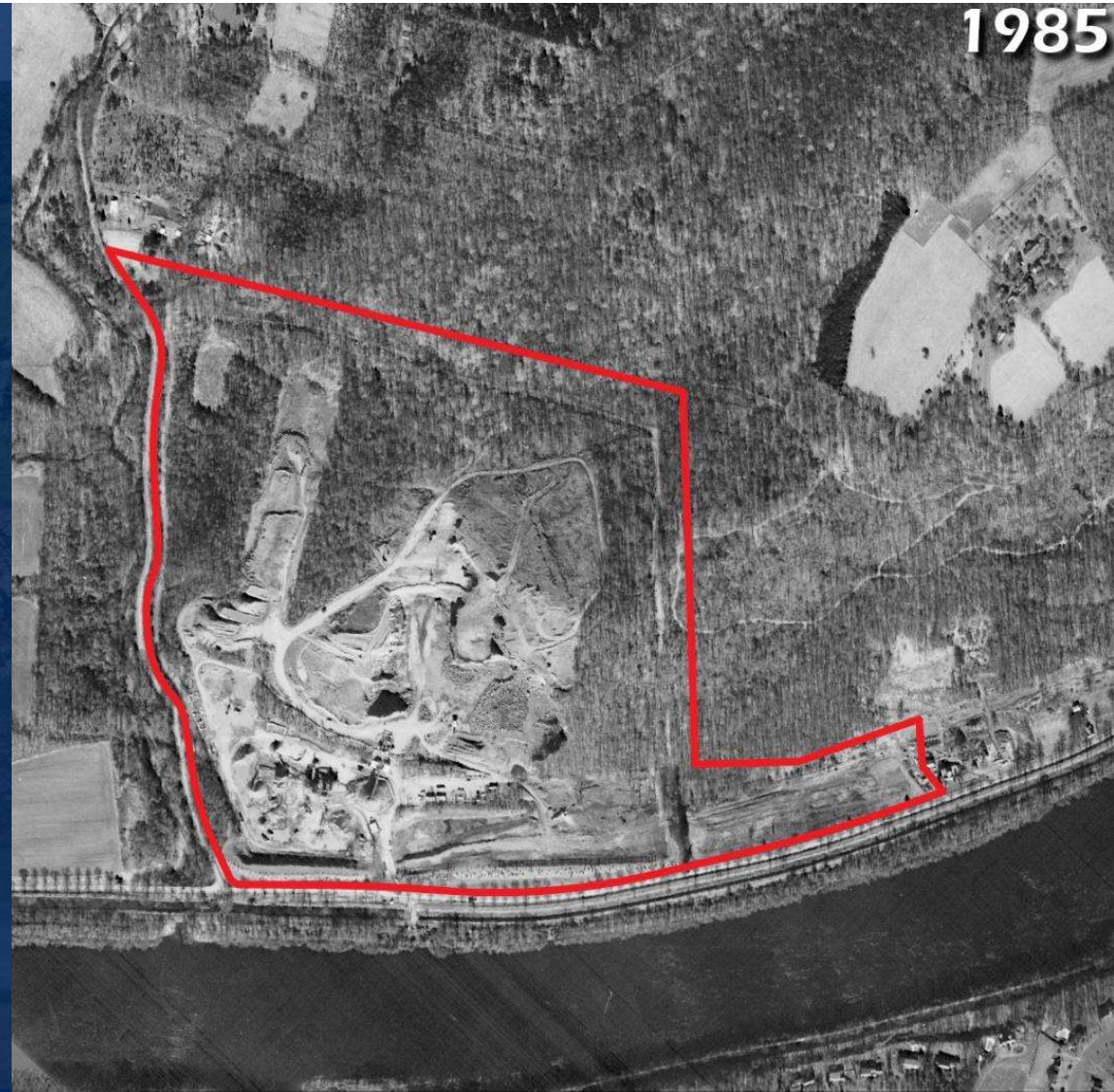
Historic Aerials & Quarry Timeline

- 1973 Canal and associated structures are listed on the National Register of Historic Places
- 1974 D & R State park formed from 60+ miles of the canal and adjacent lands
- 1978 - Conrail abandons the Belvidere Delaware 1982 Railroad south line south of Milford to Trenton. The former railroad bed was converted for use as part of the D & R Trail



Historic Aerials & Quarry Timeline

- 1982 Quarry activities restart at Moores Station Quarry by Trap Rock Industries
- 1990 Initiative starts for acquisition of Baldpate Mountain lands to form a nature preserve
- 1991 NJ State Green Acres approves funding for acquisition of Baldpate Mountain lands
- 1992 The D&R park's trail system was designated a National Recreation Trail and is a part of the East Coast Greenway



Historic Aerials & Quarry Timeline

- 1994 First parcel of land acquired for Baldpate Mountain
- 1998 1,200+ acres of land of Baldpate Mountain is acquired from Trap Rock Industries
- 1998 Trap Rock agreement allows for the continuance of quarry operation on approximately 170 acres of land at Moores Station Quarry for a period of 25 years
- 2002 Baldpate Mountain Master Concept Plan is prepared



Historic Aerials & Quarry Timeline

- 2007 Ted Stiles Preserve at Baldpate Mountain is dedicated by Mercer County Executive Brian Hughes
- 2009 Ted Stiles Preserve Management Plan is prepared



2015

Historic Aerials & Quarry Timeline

2020 Moores Station Quarry Master Plan
2023 Trap Industries to turn over Moores Station
 Quarry to the Mercer County



2020

Quarry Base Map



Hydrology Analysis Map

Hydrology Legend	
	Site Boundary
	Parcel Boundary
	Site Areas
	Topography
	Major Road
	Minor Road
	Trail
	Fence
	100 Year Floodplain
	Stormwater Piping
	Groundwater Seepage
	Wetland
	Water



Circulation Map

Circulation Legend	
	Site Boundary
	Parcel Boundary
	Site Areas
	Topography
	Major Road
	Minor Road
	Interior Entrance Road
	Interior Primary Road
	Interior Secondary Road
	Former Interior Road
	Site Entrance
	Parking Area
	Multi-Use Trail
	Hiking Trail
	Fence
	Tree Cover
	Water



Open Area Analysis Map



Area Acreages

A1	8.8 Acres
A2	1.1 Acres
A3	2.5 Acres
A4	3.3 Acres
A5	1.2 Acres
A6	6.2 Acres
A7	6.4 Acres
A8	10 Acres
A9	0.7 Acres

Open Area Size Comparisons

Football Field*
360' x 160'



*Note: not a recommended feature

Open Area Size Figures

Mercer County
Festival Grounds*
≈ 1000' Across



*Note: not a recommended feature

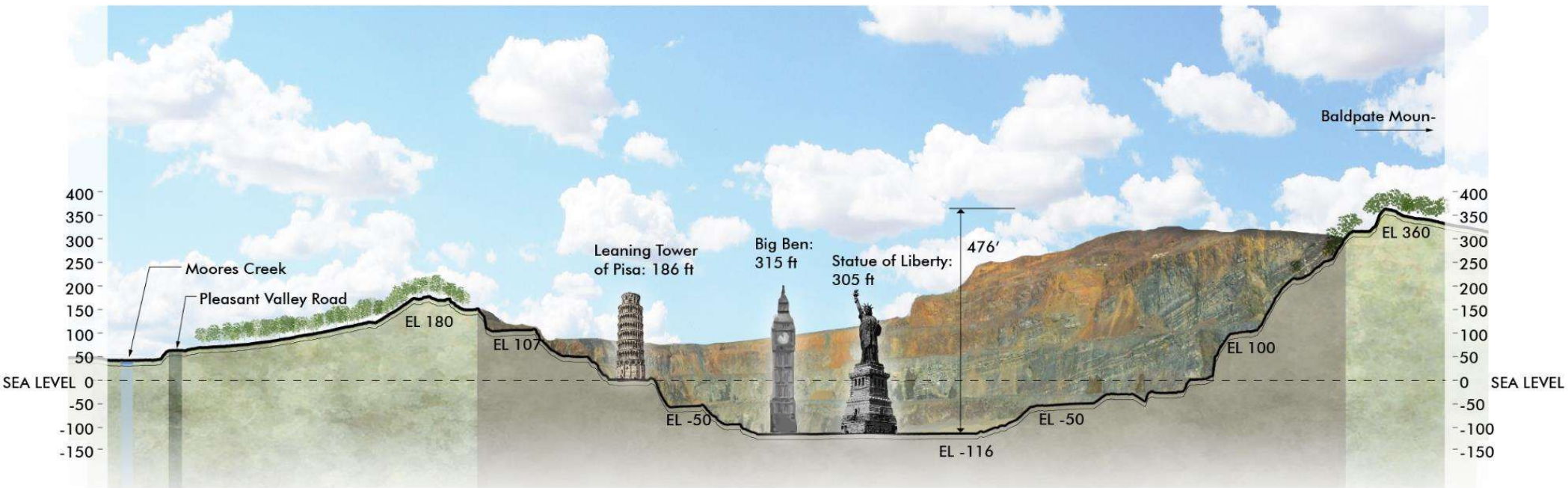
Open Area Size Figures

Mercer County
Tennis Center*
≈ 1200' Across

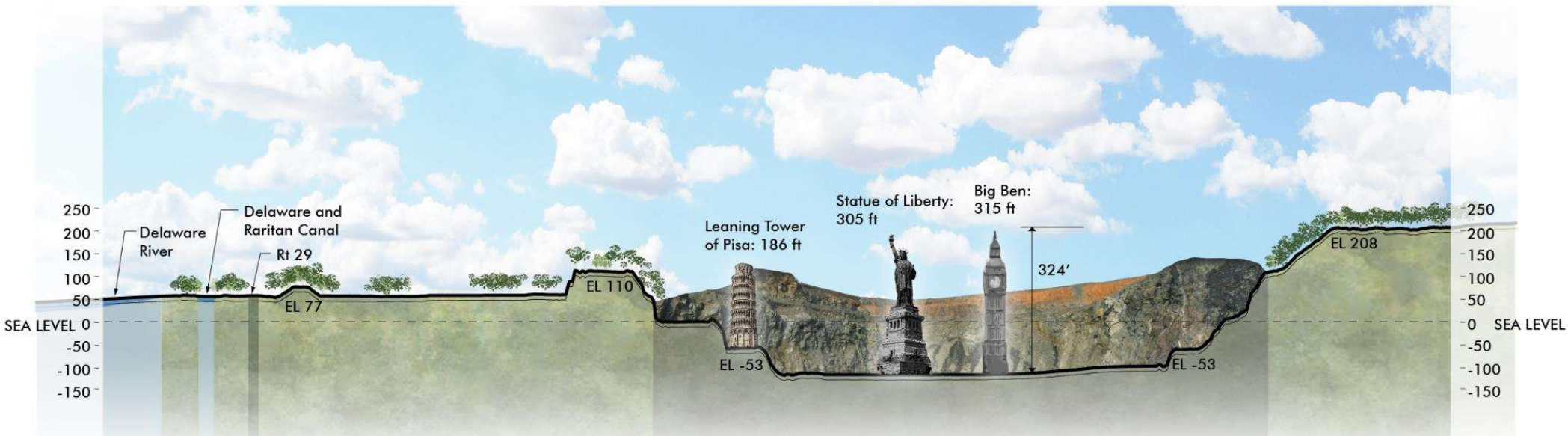


*Note: not a recommended feature

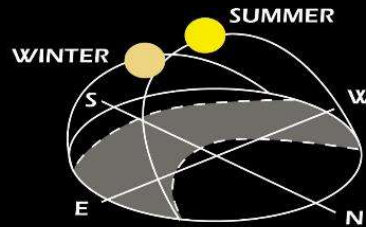
Quarry Section – North to South Looking East



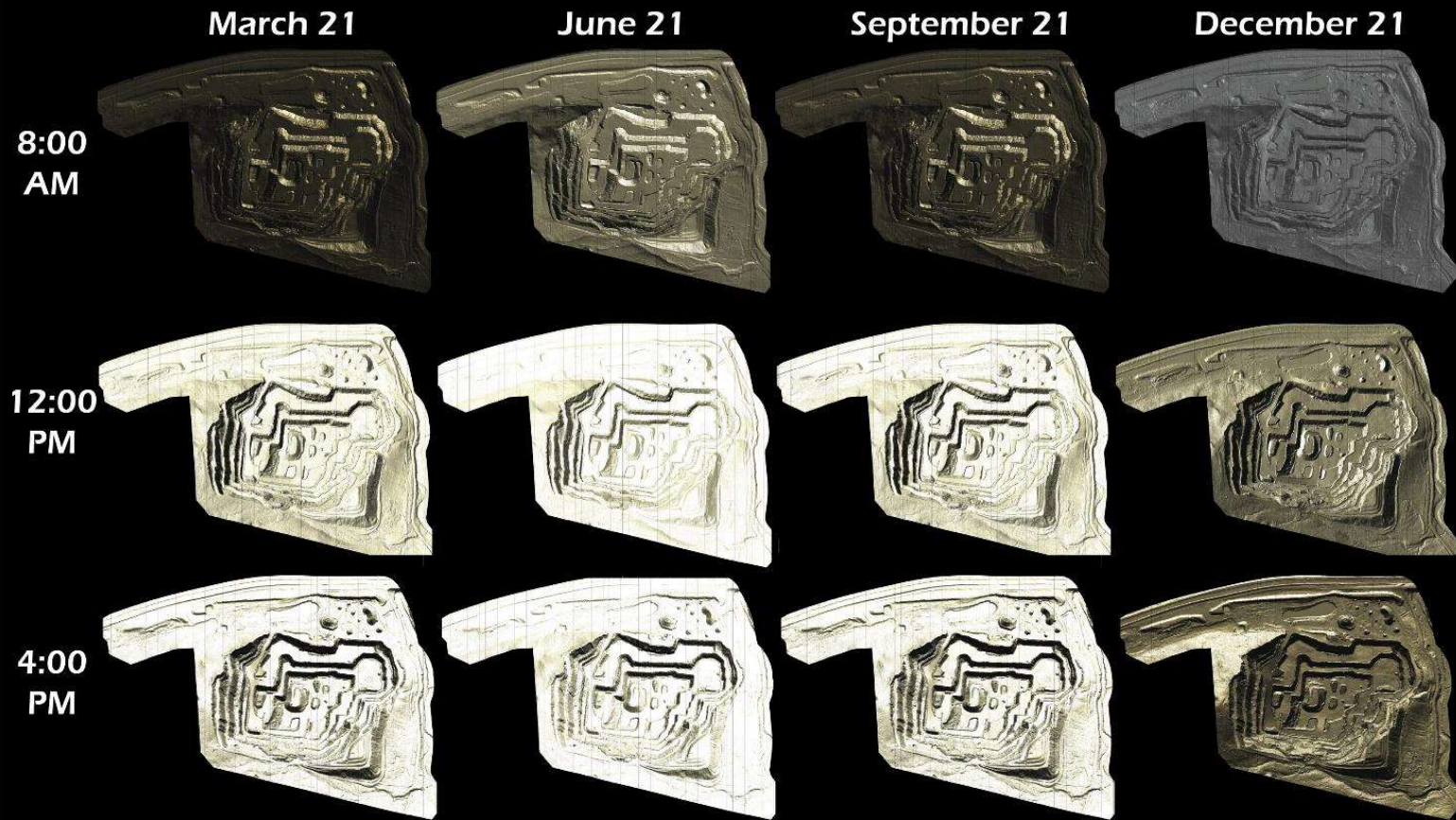
Quarry Section – West to East Looking North



Sun-Shade Studies



Shaded area represents the sun's path throughout the year



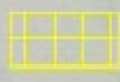



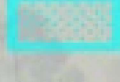





Geologic Analysis - Summary of Findings

- Retained to examine public safety attributes of the site
 - Relevant experience in quarries, quarry re-purposing and rock slopes
- Performed Field Reconnaissance and Analysis of Aerial Survey Products
- Five (5) Rock Slope Feature types and Two (2) Areas of Concern Observed
- Potential for Global Rock Slope Failure is Low
- Four (4) Localized Slope Hazards
 - Rockfall (Southwest Slope Section)
 - Rockfall (South Slope Section)
 - Local Wedge Failure (Southwest Slope Section)
 - Local Planar Sliding (North Slope Section)
- Site development planning underway will guide safety improvements
- Mine site reclamation will be undertaken by the mining company
 - Aspects of the reclamation plan are being cooperatively examined by Trap Rock Industries, Mercer County and Hopewell Township.

Field Reconnaissance Observations

FIELD OBSERVATIONS LEGEND

	SIGNIFICANT ROCKFALL SOURCE AREA		SLOPE SECTION LIMITS
	SIGNIFICANT TALUS/BOULDER ACCUMULATION		OBSERVED SCARP FEATURE
	RAVELING/ EROSION AREA		OBSERVED WEDGE FAILURE
	SCREE/DEBRIS ACCUMULATION		OBSERVED SHEAR PLANE
	GROUNDWATER SEEPAGE		OBSERVED FAULT ZONE

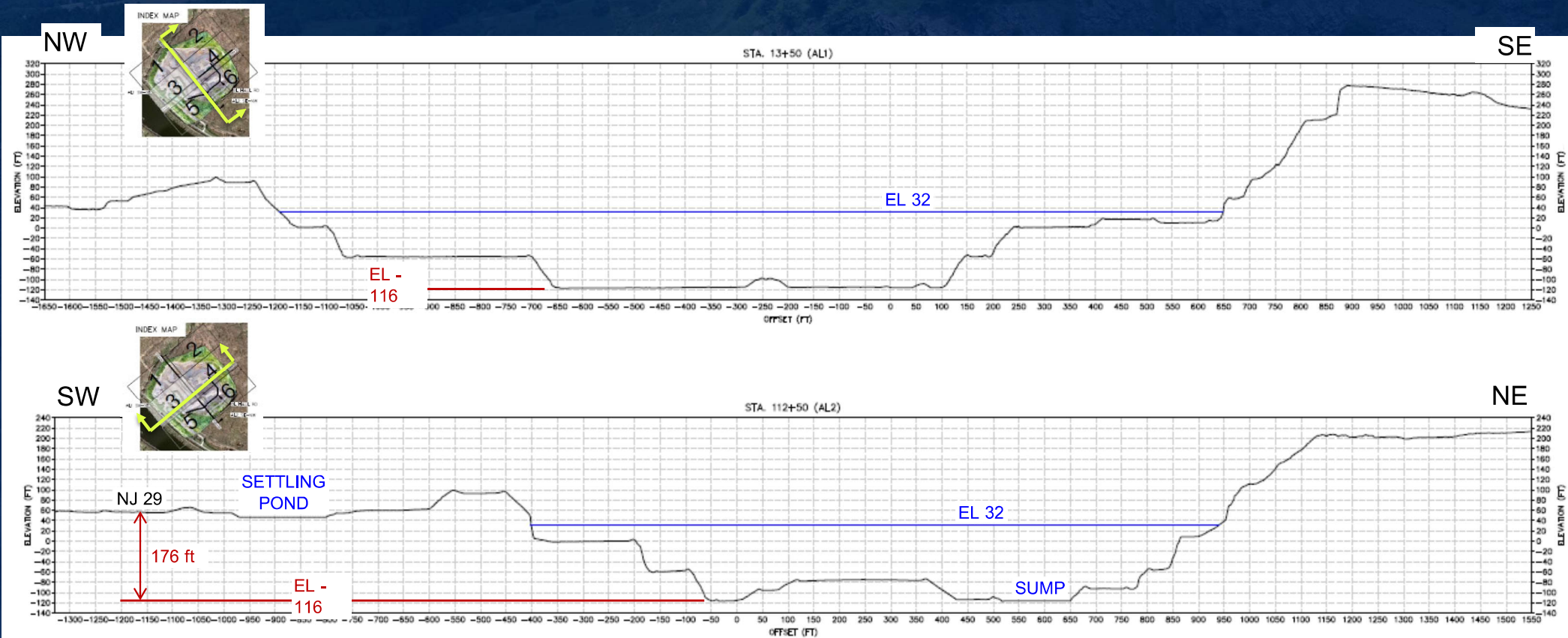


Global Stability

Diabase Layering Dips SE and Passaic Formation Bedding Dips NW = Favorable



Quarry Cross Sections as of July 2020



Natural Resources Inventories

METHODS

- COMPLETED AND FUTURE WORK

REVIEW OF PRIOR STUDIES & INVENTORIES FOR BALDPATE MOUNTAIN

- ASSESSMENT OF PRE-EXISTING DATA

ECOLOGICAL ASSESSMENT

- COLLECTION OF NEW DATA TO SUPPORT AND PROVIDE
FOUNDED ANALYSIS AND RECOMMENDATIONS



Moore's Station Quarry Restoration
&
Park Development

Natural Inventories

- **METHODS**

- Unlimited-distance, Single-observer Point Count for Birds (permanent plots)
- Calling Anuran (frog and toad) surveys
- Rapid Ecosystem Assessment
- Assessment of Aquatic Communities
- Threatened and Endangered Animal Species Habitat Assessment
- Timed Meanders for Botanical Diversity
- Vegetation Community Mapping (both on site and at pre-selected reference locations within the adjacent Baldpate Mountain forest and meadow habitats)
 - Natural Ecosystems Characterization
 - Botanical Inventory
 - Invasive plants
 - RTE Species Habitat/Presence
- Passive Insect Transects



Moore's Station Quarry Restoration
&
Park Development

Natural Inventories

- REVIEW OF PRIOR STUDIES & INVENTORIES FOR BALDPATE MTN

- Forest Health Study
- Deer Infrared Survey
- Rare Plant Monitoring
- Invasive Plant Survey
- Cornell Birds in the Forested Landscape
- Amateur Breeding Bird Surveys
- Amateur Herp Surveys
- Rare reptile monitoring
- Forest Stand Surveys
- Wildlife Trail Cameras

- SIGNIFICANT VALUE IN THIS SECONDARY DATA AND ONGOING RESEARCH !!!!!!!



Moore's Station Quarry Restoration
&
Park Development

Natural Inventories

- **MANAGEMENT UNITS**

- MU01 North Woods
 - Vernal pools/ephemeral wetlands present
 - Agricultural history
 - Original spoil piles
 - Significant habitat restoration opportunities
- MU02 East Woods
 - Oak-Hickory Mesophytic Forest
 - Basking, nesting, and overwintering locations for snakes and turtles
 - Warbler breeding territories
- MU03 South Forest
 - Highest potential on site for locally rare plants
 - Shrub layer invaded but decent herbaceous layer in shallow soils/ west-facing
- MU04 Western Strip and Settling Pond
 - Highly manipulated
 - Strong opportunity for water conveyance/wetland creation as dual function (stormwater management and robust habitat enhancement)
- MU05 Active Quarry



Moore's Station Quarry Restoration
&
Park Development

Natural Resources Inventories

ECOLOGICAL ASSESSMENT

- Over 140 total plant species identified to date
 - 33 invasive (13f, 4g, 8s, 5t, & 3v)
 - 109 native (49f, 20g, 8s, 25t, & 6v)
- Multiple Community Types
 - Mesophytic hardwood forest types
 - Small PEM wetland in North
 - Early succession and lithophilic communities
- 31 breeding bird species on the property
 - Mostly forest- and edge-dwelling passerine birds
 - Common raven nest in northeast edge of quarry
 - Turkey Vulture cliff nesting somewhere
 - Bald Eagle observed regularly (likely nesting nearby)
 - Hooded warbler from adjacent woods to the northeast
- 7 herpetofauna
- 8 mammal species (camera traps deployed)
- 44 Insects and Other



Moores Station Quarry Restoration
&
Park Development

Preliminary Market Gap Analysis

- METHODS
- CASE STUDIES
- PRELIMINARY TAKEAWAYS

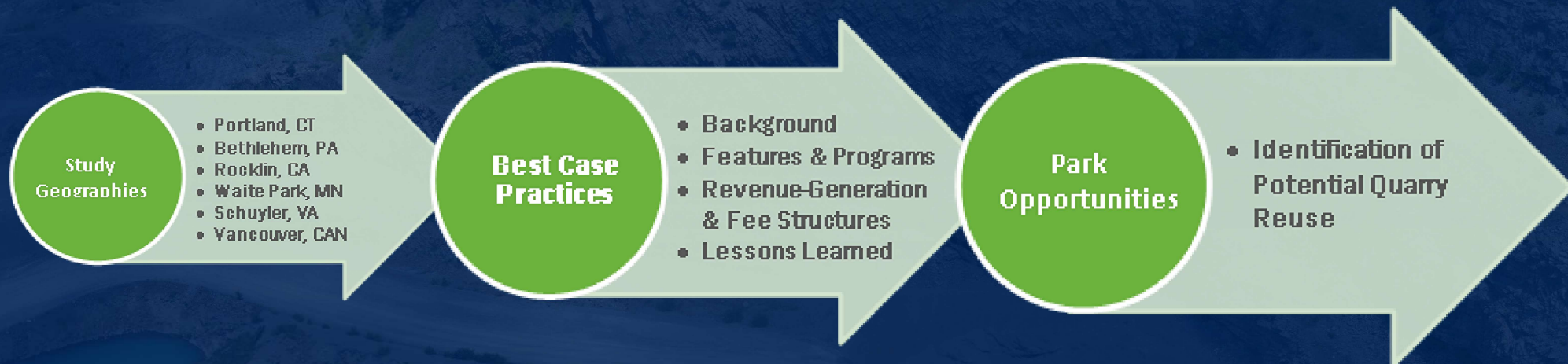


Moore's Station Quarry Restoration
&
Park Development

Methodology: Quarry Reuse Case Studies

4ward Planning examined current best-case practice quarry reuse facilities in North America, spanning the water-centric resource, extreme sports center, and ecological restoration area concepts (with some examples including elements of more than one concept).

Case study facilities were selected for their viability, variety of uses, and comparable seasonality. Each case study is detailed with facility background, features and programs, revenue-generation details, and lessons learned. Interviews with facility operators were sought to verify research and fill information gaps.



Moore's Station Quarry Restoration
&
Park Development

Case Studies

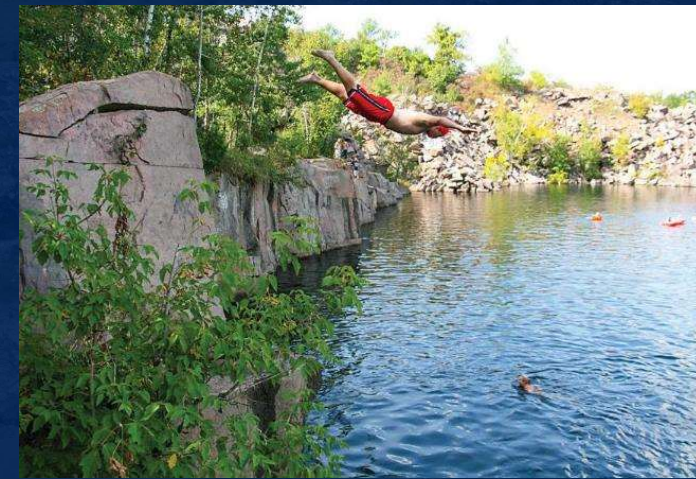
- Quarry Gardens, Schuyler, VA
- Butchart Gardens, Vancouver, Canada



Moores Station Quarry Restoration
&
Park Development

Case Studies

- Quarry Park Adventures, Rocklin, CA
- Quarry Park & Nature Preserve, Waite Park, MN



Moore's Station Quarry Restoration
&
Park Development

Case Studies

- Brownstone Exploration & Discovery Park, Portland, CT
- Dutch Springs Aqua & Aerial Park, Bethlehem, PA



Moores Station Quarry Restoration
&
Park Development

Key Findings: Quarry Reuse Case Studies

EXTEND BENEFITS TO AND INCLUSION OF LOCAL COMMUNITY.

DESIGN FOR FLUCTUATING ATTENDANCE AND WEATHER.

CONSIDER EVENT SPACE USES.

CONSIDER NON-PROFIT PARTNERSHIPS AND CHARITABLE EVENTS.



Moores Station Quarry Restoration
&
Park Development

Key Findings: Quarry Reuse Case Studies

RETAIN A SENSE OF HISTORY, PLACE, AND COMMUNITY.

OFFER ELEMENTS OF WATER, LAND, AND SKY TO A DIVERSITY OF VISITORS.

OFFER A VARIETY OF ADMISSIONS PASSES.

INCORPORATE TEAM-BUILDING AND YOUTH-BASED PROGRAMS.



Moores Station Quarry Restoration
&
Park Development

Key Findings: Quarry Reuse Case Studies

EXTEND MARKETING TO RELATIONSHIPS WITH REGIONAL AND STATE AGENCIES.

OFFSET LIABILITY INSURANCE COSTS THROUGH PUBLIC-PRIVATE PARTNERSHIPS.

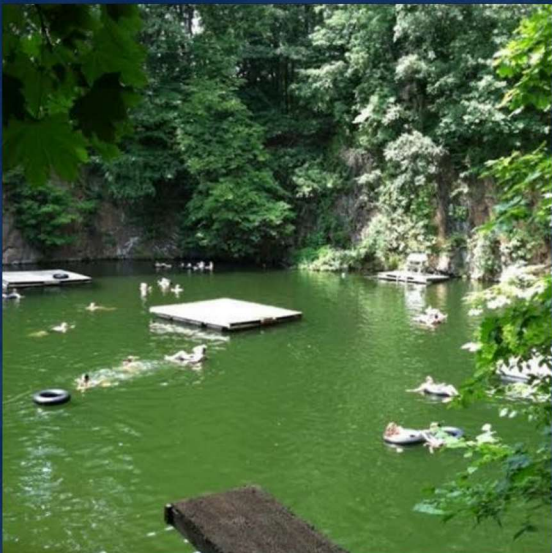
DON'T UNDERESTIMATE THE IMPORTANCE OF EMPLOYEE TRAINING AND DEVELOPMENT.



Moores Station Quarry Restoration
&
Park Development

ALTERNATIVE SITE CONCEPTS – THREE APPROACHES

- EXPLORE THREE CONCEPTS
 1. WATER BASE RECREATION
 2. LAND BASE RECREATION
 3. ECOLOGICAL RECLAMATION / BOTANICAL GARDENS
- FINAL CONCEPTS WILL REFLECT COMBINATIONS OF ELEMENTS



Moore's Station Quarry Restoration
&
Park Development

Frequently Asked Questions

Q: Why is the County Park Commission creating a park at the Moores Station Quarry site?

A: In 1998 the County of Mercer, the New Jersey Green Acres Program and Hopewell Township jointly purchased more than 1,000 acres of land, including the Moores Station Quarry property, to create a county park at Baldpate Mountain. The land sale allowed the quarry operator to continue its mining operation on a portion of the land for 25 years after the transfer. That right expires in the spring of 2023, at which time the Mercer County Park Commission will take possession of the site and over time, create a new park. To prepare for this transfer, a master planning process has begun in order to create a plan for the new park.

Q: What is the plan for the new park? What kinds of recreational facilities will be included?

A: Currently, there is no plan for the park or the types of recreational facilities that will be developed. However, since the quarrying operations have created a unique landscape, there are opportunities for facilities and activities that are well-suited to this landscape. Examples of recreational opportunities include mountain biking, rock climbing, and other activities and facilities that fit into this highly disturbed landscape.

Frequently Asked Questions

Q: Does this mean that ecological rehabilitation of part or all of the site will not be considered?

A: No. Rehabilitation to some or all of this highly disturbed landscape will be one goal for the site. The consultant team includes landscape architects, ecologists, biologists and sustainability experts and they will examine and consider options to restore the site and help protect the ecological integrity of the adjacent Preserve at Baldpate Mountain.

Q: How much will the new park cost and how will it be funded?

A: Cost estimates for construction will be prepared as a part of the master planning process. However, it is likely that the eventual park construction will total millions of dollars over a period of 10 to 20 years. Park construction will be paid for by a combination of County funds specifically earmarked for park construction, and state grants.

Q: When can the park be used by County residents?

A: That will be determined, in part, by the master plan recommendations. It may be possible to incrementally open a portion of the site soon after 2023, in a manner that is safe and allows use of part of the site or some facilities as construction is completed over a longer period of time.

Frequently Asked Questions

Q: Will the park create new traffic on Route 29 and the surrounding roads?

A: It is anticipated that park visitors who drive to the park will come primarily via Route 29. New park visitor traffic is anticipated to be the highest on weekends. Fortunately, the heavy truck traffic that has occurred for many years in connection with the quarry operations will cease once the property transitions into a park. The master plan will examine pedestrian and cyclist connections to the park from the D&R Canal towpath and other regional trails to encourage access to the new park without a motor vehicle. Creating a safe pedestrian / cyclist crossing of Route 29 will be analyzed as part of the planning process for the project. A pedestrian connection between the quarry and Baldpate Mountain trails will also be considered during the master plan.

Q: How can I get involved in the park master planning process?

A: All interested persons are encouraged to attend the virtual public meetings that will be held as a part of the master planning process. Please visit the Mercer County Park Commission website at <http://mercercountyparks.org/> to learn how to attend a meeting. Updates during the year-long master planning process will also be posted to the County Park Commission website.

General Discussion

Questions and statements can be submitted using:

- the chat function on Zoom,
- the “Raise your Hand” function – the host will prompt you to unmute your microphone, you can then unmute and ask your question.

Please keep questions or statements to 3 minutes maximum so everyone can participate.



Site Photos



Moore's Station Quarry Restoration
&
Park Development

Next Meeting

MEETING	PURPOSE	DATE
Public Meeting #1	Project Background & Brainstorming	Tuesday Dec 2, 2020
Public Meeting #2	Concept Review & Feedback	Tuesday, Feb 23, 2021
Public Meeting #3	Draft Plan Presentation	Tuesday, May 18, 2021
60-day draft plan review		June - July
Public Meeting #4	Final Plan Presentation	Tuesday, October 12, 2021

SIMONE COLLINS LANDSCAPE ARCHITECTURE:

PHONE: 610-239-7601

PETER SIMONE, PROJECT PRINCIPAL

EMAIL: PSIMONE@SIMONECOLLINS.COM

SARAH LEEPER, PROJECT MANAGER

EMAIL: SLEEPER@SIMONECOLLINS.COM

MELISSA BARLEY, STAFF LANDSCAPE ARCHITECT

EMAIL: MBARLEY@SIMONCOLLINS.COM

MERCER COUNTY PARK COMMISSION:

ANTHONY CUCCHI, SUPERINTENDENT OF PARKS

PHONE: 609-303-0710

EMAIL: ACUCCHI@MERCERCOUNTY.ORG

MOORES STATION QUARRY MASTER PLAN WEBSITE

[HTTPS://WWW.MERCERCOUNTYPARKS.ORG/#!/ABOUT/MOORES-STATION-QUARRY-PARK-PLAN](https://www.mercercountyparks.org/#!/ABOUT/MOORES-STATION-QUARRY-PARK-PLAN)

Thank you!