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(upgraded version of HydroQuest letter originally dated 6-18-21)

Delivered via Electronic Mail
Town of Kingston Planning Board
Kingston Town Hall
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RE: 850 Route 28 - Public Hearing Documents and Mining Impact Comments

Dear Chairman Konior and Planning Board Members:

I am a Hydrogeologist and Professional Geologist who has been investigating historic and geologic resources within Bluestone Wild Forest over the last year. Prior to working professionally as a geologist, I obtained a degree in Anthropology and worked as an archaeologist. By way of this letter and the twelve attached documents (listed below), I wish to share with you some of the fruits of my field research. Many of the findings presented in this material directly relate to the 850 Route 28 bedrock mining and industrial facility application now before you. This information is relevant to your determination regarding whether the proposed project should be given a positive declaration under the State Environmental Quality Review Act ("SEQRA"), or not. Material provided in this letter and its attachments provides justification, based on rigorous field work and documentation, for issuance of a positive declaration under SEQRA, complete with the requirement of a full Environmental Impact Statement to analyze impacts and examine alternatives.

The many environmental issues attendant to the 850 Route 28 application should be comprehensively evaluated relative to potential adverse environmental impacts and given the necessary "hard look" required under the State Environmental Quality Review Act. As you are aware, NYSDEC's Full Environmental Assessment Form (FEAF); Part 2 - Identification of Potential Project Impacts is to be completed by lead agencies to help them inventory all potential resources that could be affected by a proposed project or action. This inventory allows the reviewing agency to properly evaluate the significance of environmental impacts to ascertain whether a negative or positive SEQRA environmental declaration is needed to ensure that the environmental resources of the town are protected. This letter report and its attachments provide my professional opinion and technical evaluation of numerous of issues raised on Part 2 of the FEAF. This report is provided in the context of rigorous scientific assessment contemplated in the spirit of SEQRA. The issues brought forth provide important evidence that support a positive declaration of environmental impact under SEQRA and a comprehensive evaluation, complete with full public

scoping and review, within the framework of an Environmental Impact Statement. For your convenience, these issues are addressed in letter report format patterned after the questions listed on the FEAF Part 2 form. Many of the key questions posed on the Part 2 form are highlighted and correctly answered in the excerpted blocks below. Again, this material, individually and collectively, provides technical justification supporting a positive SEQRA declaration.

Supportive Documents and PowerPoint Presentation Attached to this Letter Report

Documents and comments to be considered in your evaluation of the site plan and special permit application for 850 Route 28 LLC are provided for incorporation in the Public Hearing record. To this end, I have placed twelve items (listed below at the end of this letter) consisting of a Power Point presentation, Fact Sheets, GIS maps, and letters linked to my web page at: http://www.hydroquest.com Each item provides valuable information pertaining to proposed bedrock mining and industrial development. They may be viewed and downloaded from my web page. Simply, go to the first HydroQuest web page, click on the horse and wagon button labeled Bluestone Wild Forest and this will bring you directly to a collection of files that I wish to be placed within your file of Public Hearing records related to the 850 Route 28 site. **In addition to direct document access via my web page link, I have submitted individual files via electronic email to the Town Clerk and yourselves.**

Beyond the material presented in the twelve attachments, please note that new material is presented within this letter report that is also submitted as part of the Public Hearing record (e.g., Impacts on Surface Water and Impact on Human Health sections of this letter).

After review of this letter report, I suggest that you start your review of these files with the Historic Bluestone Power Point presentation dated June 14, 2021. I think you will find it very interesting. Many, but not all, of the key issues that you will assess as part of your inventory of all potential resources that could be affected by the proposed project are listed on Full Environmental Assessment Form (FEAF) Part 2 - Identification of Potential Project Impacts. By way of a brief overview summary, please let me highlight some of the key issues that I believe require the full hard look contemplated in SEQRA. Some of the project related FEAF questions are highlighted in numbered issue boxes and also follow each segment in red italic. You may find others.

Full Environmental Assessment Form - Part 2 Issues/Questions

FEAF Part 2 issues highlighted below are designed to help you, the lead agency, inventory potential resources that could be affected by the proposed project. HydroQuest responses, based on intensive field work, documentation and technical assessment, are provided to relevant questions provided by NYSDEC to help with your assessment process. They are provided to help you identify relevant environmental areas that may be impacted by the proposed activity.

Impact on Historic and Archaeological Resources

10. Impact on Historic and Archeological Resources The proposed action may occur in or adjacent to a historic or archaeological resource. (Part 1. E.3.e, f. and g.)	☐ NO ■ YES	
	No, or small impact may occur	**Moderate to large impact may occur**
a. The proposed action may occur wholly or partially within, or substantially contiguous to, any buildings, archaeological site or district which is listed on or has been nominated by the NYS Board of Historic Preservation for inclusion on the State or National Register of Historic Places.	☐	■
b. The proposed action may occur wholly or partially within, or substantially contiguous to, an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory.	☐	■
e. If any of the above (a-d) are answered "Moderate to large impact may occur", continue with the following questions to help support conclusions in Part 3: i. The proposed action may result in the destruction or alteration of all or part of the site or property.	☐	■

The 850 Route 28 site is almost completely surrounded by NYS Wild Forest lands that encompass valuable historic and archaeologic resources. This is well illustrated on the attached HydroQuest map titled: *Land Use: Past (1800s): Historic Hemlock Quarry District, Ulster County, NY* (Figure 1), as well as on Figure 2. The New York State Department of Environmental Conservation (NYSDEC) provides guidance specific to projects that may adversely impact historic resources. Their *Mined Land Reclamation Program Applicant's Guide* has a section titled *State Historic Preservation Act (SHPA)*. It states:

> "*If a project may have a significant impact on historical structures or archaeological sites protected by the State Historic Preservation Act (SHPA), DEC must evaluate this impact. If your application is for a major project, the application packet should contain a Structural and Archaeological Assessment Form (SAAF). Please fill out this form according to the instructions attached to it. In some cases, a cultural resource survey, including a field study of archaeological or historic features, may be needed.*"

Similarly, as stated on the NYSDEC Application Procedures: Mined Land Reclamation Permit checklist: "*7. Structural/Archaeological Assessment Form (SAAF). In accordance with the State Historic Preservation Act (SHPA),* ***the application is not complete until a determination has been made concerning the impact of the project on properties listed on or eligible for listing on the State or National Register of Historic Places***." (Emphasis added) This determination has not been made. *Therefore, a determination of no potential negative impact would be unfounded.*

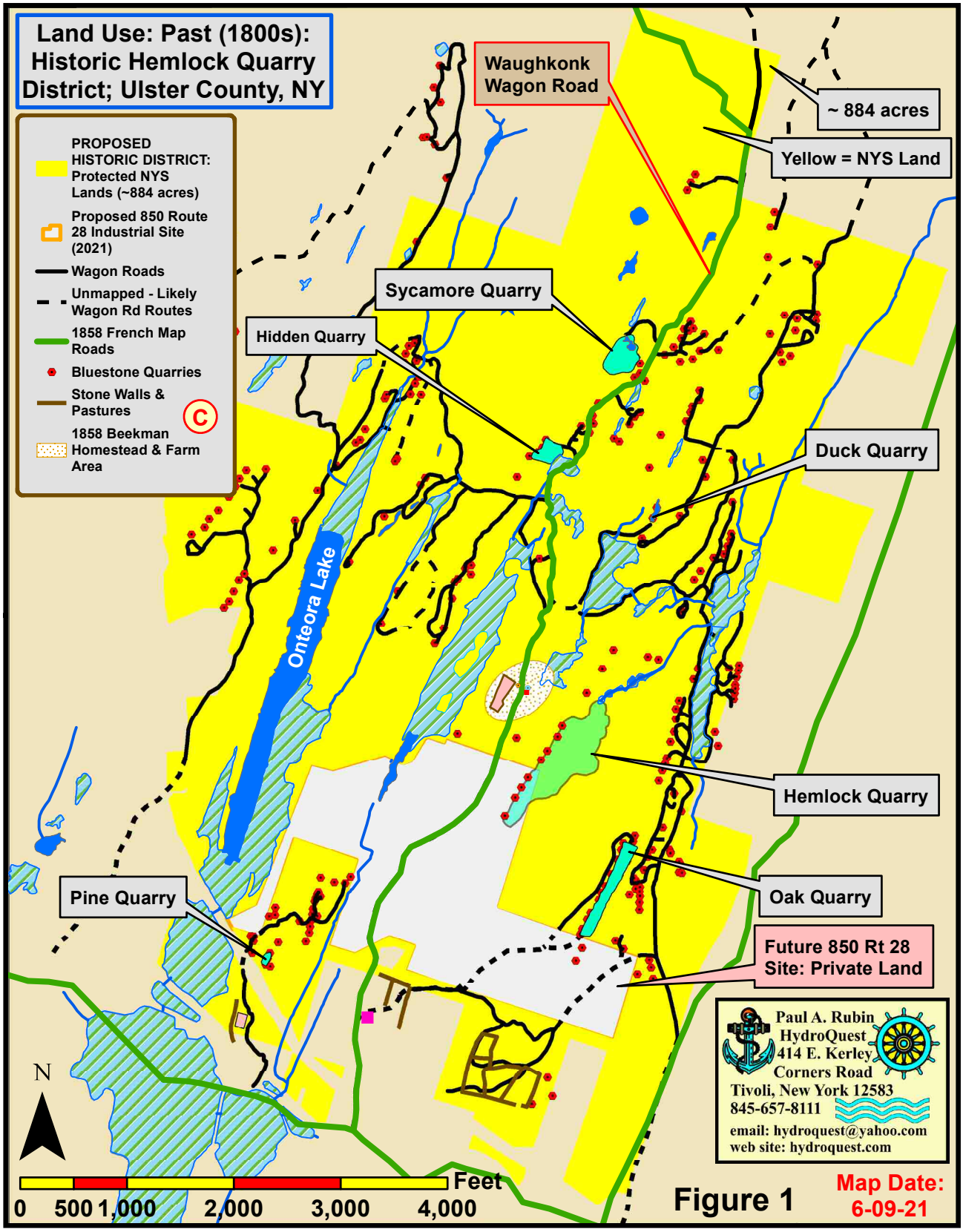
Land Use: Past (1800s): Historic Hemlock Quarry District; Ulster County, NY
PROPOSED HISTORIC DISTRICT: Protected NYS Lands (~884 acres)
Proposed 850 Route 28 Industrial Site (2021)
Wagon Roads
Unmapped - Likely Wagon Rd Routes
1858 French Map Roads
Bluestone Quarries
Stone Walls & Pastures
1858 Beekman Homestead & Farm Area
C
Waughkonk Wagon Road
~ 884 acres
Yellow = NYS Land
Sycamore Quarry
Hidden Quarry
Duck Quarry
Onteora Lake
Hemlock Quarry
Oak Quarry
Pine Quarry
Future 850 Rt 28 Site: Private Land
N
0 500 1,000 2,000 3,000 4,000 Feet
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Figure 1
Map Date: 6-09-21

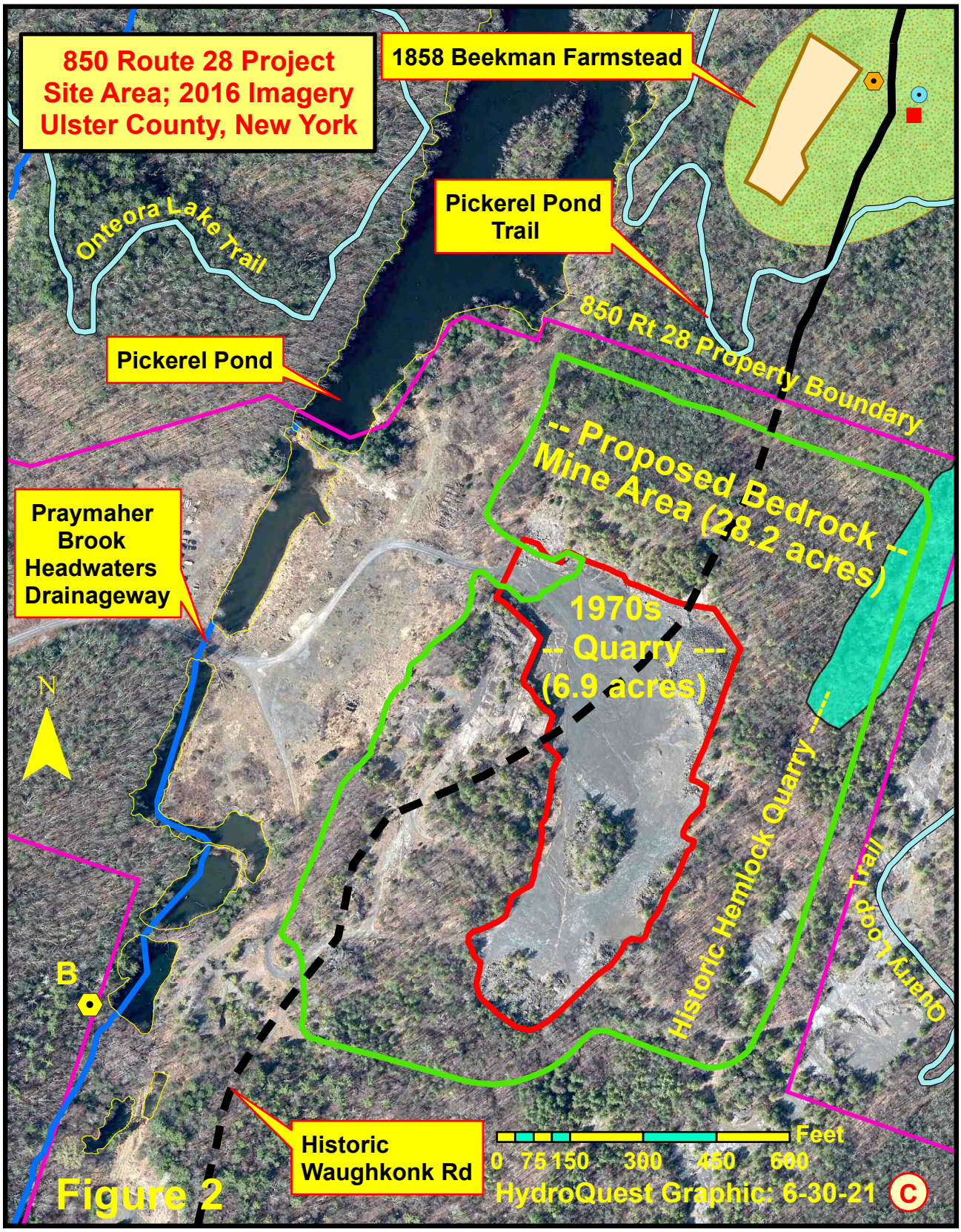

850 Route 28 Project
Site Area; 2016 Imagery
Ulster County, New York
1858 Beekman Farmstead
Pickerel Pond Trail
Onteora Lake Trail
850 Rt 28 Property Boundary
Pickerel Pond
-- Proposed Bedrock --
Mine Area (28.2 acres)
Praymaher Brook Headwaters Drainageway
1970s
-- Quarry ---
(6.9 acres)
N
B
Historic Hemlock Quarry
Quarry Loop Trail
Historic Waughkonk Rd
Feet
0 75 150 300 450 600
HydroQuest Graphic: 6-30-21 C

Figure 2

Over the last year, HydroQuest has documented historic bluestone quarries in Bluestone Wild Forest, dating back to about 190 years that were integrated via a 20+-mile tributary wagon road network. Until recently, 19th century bluestone quarries were viewed in isolation within the forest. However, all quarries were connected along a road network on which heavily laden horse drawn wagons transported stone to docks in Wilbur. Reconnaissance, field mapping, and topographic analysis were used to identify roads and numerous quarries. A number of attachments to this letter solidly document this (e.g., 6-14-21 PowerPt presentation, 12-07-20 Geoarchaeology report, 5-26-20 Hemlock Quarry Report).

Recent investigation within Bluestone Wild Forest has found and documented dozens of bluestone quarries interconnected by a network of engineered wagon roads - all within an 884-acre area. Other features connected by these wagon roads include building foundations at quarries and of a former railroad station, stone-walled farm fields, and a bluestone house. They indicate interrelated day to day life activities and early industrial operations, possibly under the guidance of a single quarry master or land lessee. Cultural features reflect a time capsule of pre-Civil War industrial quarrying methods.

The bluestone quarry industry was instrumental in shaping our industrial heritage and in providing solid work for immigrants. Together, historic wagon roads, quarries, workshop areas, foundations, stone-walled pastures, an abandoned railroad station, and unique geologic features combine to portray an important early 19th and 20th century landscape. OPRHP has recognized this work and recently provided you, the Planning Board, with an April 12, 2021 letter opining that Phase IB archaeological survey work and Phase II Site Evaluation is warranted.

> **The "*Office of Parks, Recreation and Historic Preservation (OPRHP) has determined that the Hemlock Historic Bluestone Quarry District (aka Historic Hemlock Quarry District) is eligible for the New York State and National Registers of Historic Places (11106.000034)*."**

It is clear that the full context of the historic resource must be viewed and preserved not solely on the basis of single quarries (e.g., Hemlock Quarry), but instead as one cohesive integrated network that with continued study will fill a chapter on the early bluestone industry of the United States. In keeping with National Register of Historic Places categories of historic properties, this "*…district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.*"

The SEQRA process is designed to comprehensively identify, review, and assess potential environmental impacts with full public scoping and review, not to be confused with a piecemeal segmented item by item review and approval process. For major projects, such as the 850 Route 28 project, this involves up front assessment of all issues raised on the FEAF Part 2 form. **Clearly, consideration of a negative declaration in the absence of requested OPRHP studies and full public review would be premature. Furthermore, it is difficult to conceive of any potential "*mitigation*" option that would entail destruction and removal of irreplaceable historic resources (Hemlock Quarry, portions of Waughkonk Wagon Road).**

Potentially Related FEAF Question Areas: 10.a.b.e. (i) Impact on Historic and Archaeological Resources.

Impact on Land (Bedrock Mining Without an Appropriate Mining Permit)

9. Impact on Land

Proposed action may involve construction on, or physical alteration of, the land surface of the proposed site. (See Part 1. D.1) ☐ NO ■ YES

	No, or small impact may occur	Moderate to large impact may occur
d. The proposed action may involve the excavation and removal of more than 1,000 tons of natural material.	☐	■
e. The proposed action may involve construction that continues for more than one year or in multiple phases.	☐	■
h. Other impacts: *Years of bedrock mining would irreparably harm and destroy historic resources (i.e., Hemlock Quarry, portions of Waughkonk Wagon Road) identified by HydroQuest (see reports and 6-14-21 PowerPt presentation) and recognized by the Office of Parks, Recreation and Historic Preservation (OPRHP) that has determined that the Hemlock Historic Bluestone Quarry District (aka Historic Hemlock Quarry District) is eligible for the New York State and National Registers of Historic Places (11106.000034).*	☐	■

Massive bedrock mining as preparation for the construction of two 800-foot-long industrial buildings, each 120,000 ft^2 in areal extent, would remove about 50 percent of historic Hemlock Quarry and a portion of the historic Waughkonk Wagon Road. Application material documents assorted mining-related features including rock processing areas, stone crusher, screener, washer, sedimentation basins, drill rig, blasting, sound berms, and truck scale. Other 850 Route 28 site construction mining-related terms include aggregate storage area, rock removal areas, drainage swale from stone washing, and silt fences. Bedrock mining at the 850 Route 28 site, central to the New York State Bluestone Wild Forest, has the potential of impacting the land, Pickerel Pond, groundwater that provides base flow to Pickerel Pond, people's health from airborne fugitive dust, fauna in Pickerel Pond and beyond, aesthetic resources on surrounding NYS lands, historic and archaeological resources within and adjacent to the project site, open space and recreation, noise, human health, and is not consistent with current surrounding land use.

Bedrock mining for project construction would irreparably harm and forever destroy historic resources that warrant permanent protection. As proposed, bedrock mining would excavate 405,000 cubic yards (between 506,250 tons and 540,000 tons) of bluestone over a 28.2-acre area. This tonnage is over 500 times the quantity cited in 9.d. above. Of this 540,000-tons of mined bedrock, the applicant plans to remove and market some 202,500 tons (162,000 cubic yards) offsite over a two-to-three-year period (67,500 tons/yr). A NYSDEC Mined-Land Reclamation Permit is required for all excavations and related activities defined as mining, from which "*More than 1,000 tons or 750 cubic yards, whichever is less, of a mineral(s) is (are) removed, or proposed to be*

removed, from the earth during twelve successive calendar months." Bluestone (aka sandstone) is a mineral.

The project applicant plans to sell mined, crushed and processed, bluestone offsite for commercial profit. The quantity of bluestone mineral material the applicant seeks to haul offsite as "*excess rock*" (~162,000 cubic yards; 202,500 tons) "*to dispose of the excess material*" has been downplayed in application related material and presentations, whereas its market value is likely well in excess of $10,000,000.00. For example, on January 22, 2020 Medenbach stated (page 8; Planning Board EAF Addendum presentation): "*As the Board knows, we have a substantial amount of rock we have to move on site. Some of it will be cut and used as fill,* ***some will be hauled off site****, some of it will be processed and saved for the manufacturing process in the concrete.*" (Emphasis added)

Comparison of project details provided above with Mined Land Reclamation exemption criteria for construction projects shows that both mineral quantity and offsite commercial sale far exceed the minimal mining activities contemplated in the construction exemption. Proposed construction preparation would entail open-pit bluestone mining for <u>two to three years</u> with drilling, blasting, stone crushing and washing, bulldozing, truck loading, noise, and dispersal of fugitive dust to numerous recreational areas within State owned Bluestone Wild Forest. The applicant seeks <u>exemption</u> from a standard DEC Mined Land Reclamation Permit under a construction exemption <u>despite their planned removal and marketing of 67-times the maximum annual quantity of minerals beyond which a mining permit is normally required</u>. This would have significant adverse offsite impacts to users of adjacent Bluestone Wild Forest lands.

The 850 Route 28 Project Meets NYSDEC Regulatory Criteria for a Major Project

Total 850 Route 28 acreage to be directly affected by mining is 28.2 acres. NYSDEC criteria for major mined land reclamation projects include (italicized text by HydroQuest):

* Excavations that remove more than 1,000 tons or 750 cubic yards, whichever is less, of minerals during 12 successive months; *(Applicant seeks to remove 405,000 cubic yards of consolidated minerals)*;
* Total acreage affected by mining for the entire mining site is greater than 5 acres;
* There is mining within 100 feet of any surface water *(approximately 87 feet from Pickerel Pond)*; and
* There is mining of consolidated minerals. *(Bedrock is a consolidated mineral.)*

Ecosystem Health Impacts Associated with 850 Route 28 Bedrock Mining

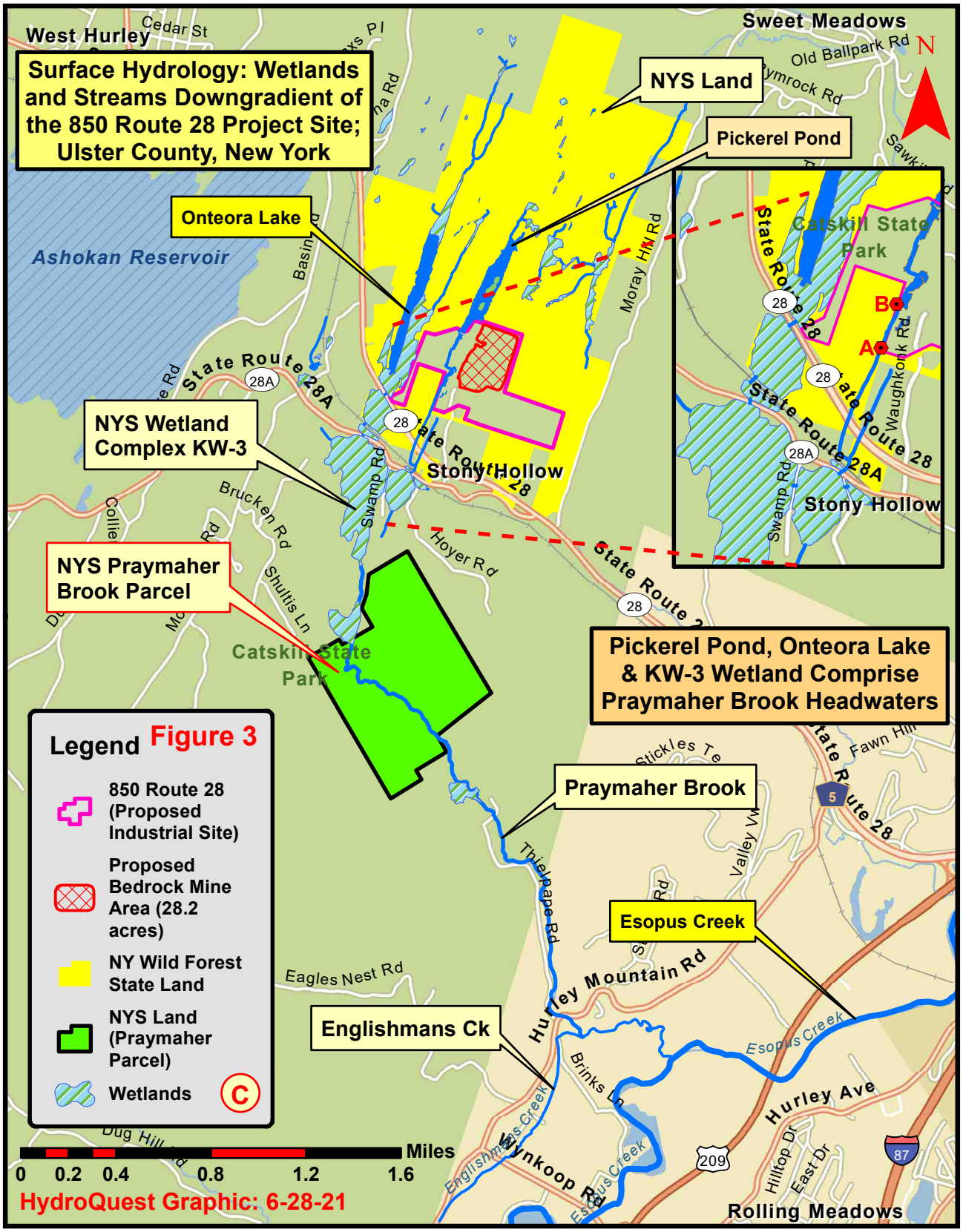
Bedrock mining would excavate 405,000 cubic yards of bluestone over 28.2 acres and would entail <u>removal of about 8 percent of the tributary watershed that feeds the prized Pickerel Pond fishery and ecosystem</u>. This would almost certainly adversely impact the ecosystem. In addition, offsite transport of fugitive dust from mining operations may adversely impact the Pickerel Pond fishery and ecosystem, as well as asthmatic individuals hiking on the nearby Pickerel Pond trail or other nearby areas. This is discussed in greater depth below.

Potentially Related FEAF Question Areas: 1. Impact on Land; 3. Impacts on Surface Water; 9. Impact on Aesthetic Resources; 10. Impact on Historic and Archaeological Resources; 15. Impact on Noise, Odor, and Light.

3. Impacts on Surface Water ☐ NO ■ YES The proposed action may affect one or more wetlands or other surface water bodies (e.g., streams, rivers, ponds or lakes). (See Part 1. D.2, E.2.h)		
	No, or small impact may occur	**Moderate to large impact may occur**
e. The proposed action may create turbidity in a waterbody, either from upland erosion, runoff or by disturbing bottom sediments.	☐	■
g. The proposed action may include construction of one or more outfall(s) for discharge of wastewater to surface water(s).	☐	■
h. The proposed action may cause soil erosion, or otherwise create a source of stormwater discharge that may lead to siltation or other degradation of receiving water bodies.	☐	■
i. The proposed action may affect the water quality of any water bodies within or downstream of the site of the proposed action.	☐	■

Both onsite and offsite transport of sediment stemming from 850 Route 28 bedrock mining operations and quarry runoff may overwhelm the capacity of the two proposed settling basins. Outfalls from these basins may jeopardize the integrity of 850 Route 28 federal wetlands (onsite), NYS regulated wetland KW-3, other downstream wetlands, Praymaher Brook, Englishmans Creek, and the Esopus Creek (Figure 3). This may result in expansive turbidity and siltation in waterbodies downstream of project settling basins that may adversely impact fauna, flora, and ecosystem health. Sufficient assessment of downstream water quality and ecologic risk has not been provided by the applicant. The forum to do this is via the SEQRA process in a Draft Environmental Impact Statement (DEIS).

The Pickerel Pond and Onteora Lake watersheds, and the KW-3 wetland complex comprise the headwater region of Praymaher Brook, a Class C(T) [trout] stream (Figure 3). The NYS regulatory KW-3 wetland complex encompasses seven interconnected wetland areas that NYSDEC lists as having a total area of 106 acres. Figure 3 and its insert show the portion of this wetland complex that the outflow from Pickerel Pond traverses through before entering the single thread channel of Praymaher Brook (through three wetland segments encompassing approximately 64 acres). This channel then trends southward for 2.7 miles, passing through two wetlands until briefly joining Englishmans Creek for 0.6 miles prior to discharging into the Esopus Creek. A portion of Bluestone Wild Forest includes the Praymaher Brook parcel (Figure 3), through which Praymaher Brook flows.


Surface Hydrology: Wetlands and Streams Downgradient of the 850 Route 28 Project Site; Ulster County, New York
NYS Land
Pickerel Pond
Onteora Lake
Ashokan Reservoir
NYS Wetland Complex KW-3
NYS Praymaher Brook Parcel
Pickerel Pond, Onteora Lake & KW-3 Wetland Comprise Praymaher Brook Headwaters
Praymaher Brook
Esopus Creek
Englishmans Ck
West Hurley
Sweet Meadows
Stony Hollow
Catskill State Park
Rolling Meadows
State Route 28
State Route 28A
Hurley Mountain Rd
Eagles Nest Rd
Hurley Ave
Legend
Figure 3
850 Route 28 (Proposed Industrial Site)
Proposed Bedrock Mine Area (28.2 acres)
NY Wild Forest State Land
NYS Land (Praymaher Parcel)
Wetlands
Miles
0 0.2 0.4 0.8 1.2 1.6
HydroQuest Graphic: 6-28-21

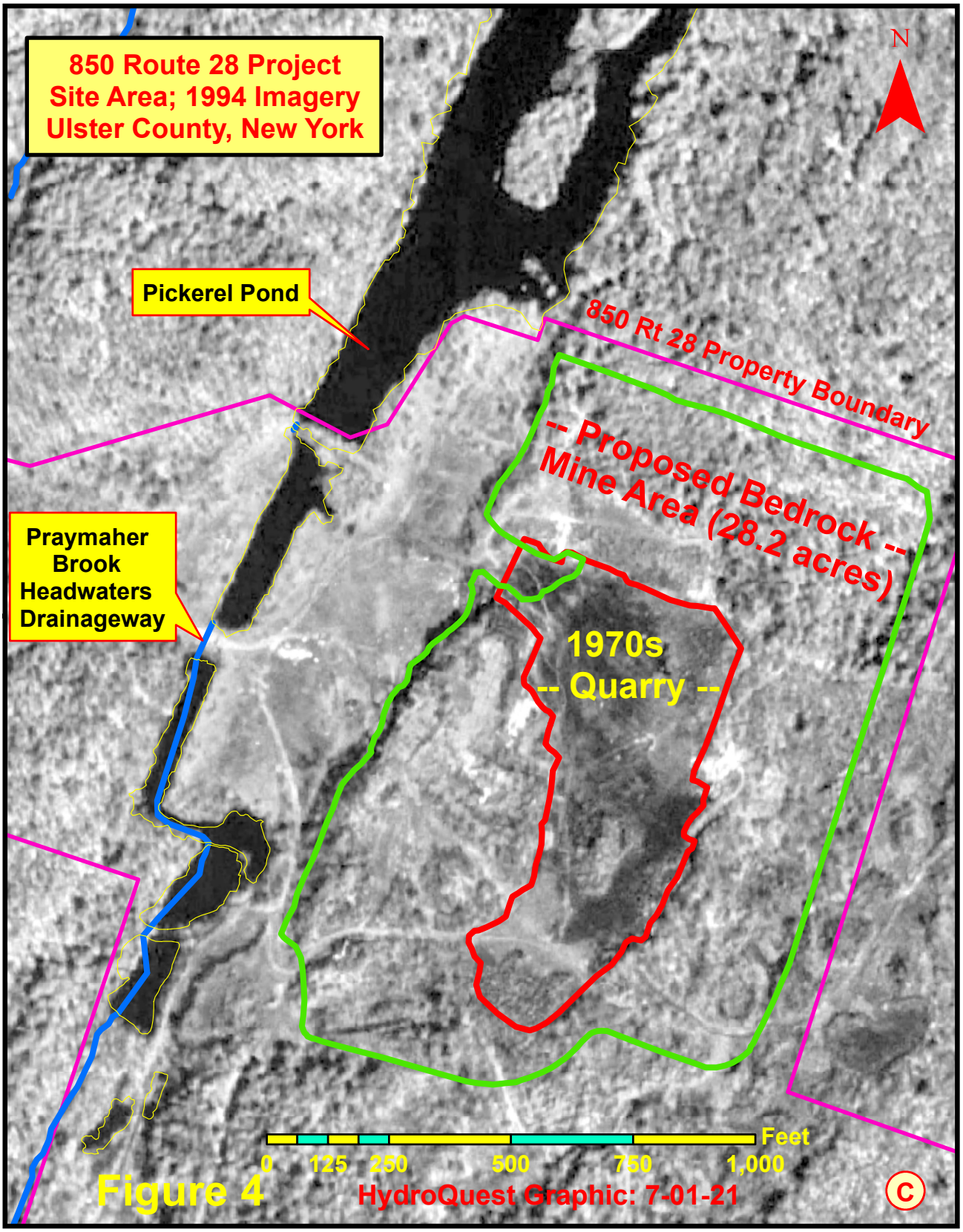
Water outflow from Pickerel Pond traverses through a series of manmade impoundments that behead flow in the headwater area of Praymaher Brook. These impoundments are depicted in Figures 2, 4, 5, and 6 for the years 2016, 1994, 2009, and 2013, respectively. Note the discolored water in these impoundments on Figure 5 that reflect particulate laden runoff from the abandoned quarry site. Figure 7 depicts this same area in 1963 prior to construction of the dammed ponds to serve as settling ponds for mine-related particulates. Four of the yellow polygons on Figure 7 (~ 2.3 acres) denote where the natural headwater flow of Praymaher Brook was and remains impounded behind a series of manmade dams (Figure 8). Medenbach & Eggers (2-26-20; NYS Environmental Quality Review Act Environmental Assessment Form Addendum) state that these former settling ponds have been classified as federally-regulated wetlands.

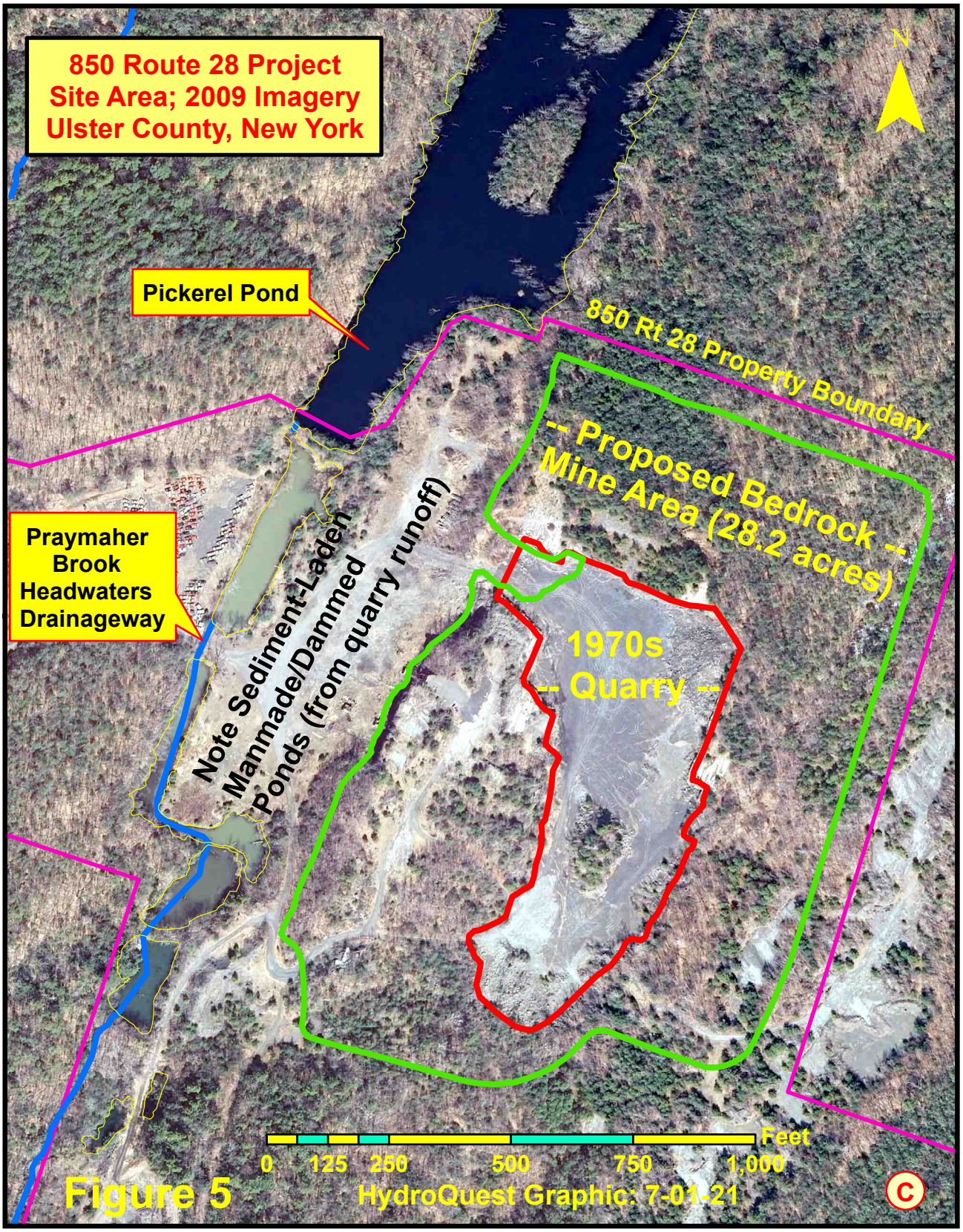
Consideration should be given to reclaiming and restoring the natural flow regime of Praymaher Brook downstream of Pickerel Pond. This consideration should assess the pros and cons of removing a number of 850 Route 28 federal wetlands that preclude offsite flow during much of the year versus restoring the natural flow dynamics of upstream reaches of Praymaher Brook that formerly contributed natural hydrologic flow to downstream State regulated wetlands and Praymaher Brook throughout much of the year. Medenbach & Eggers (2020) state that: "*These ponds do not have a direct connection to one another, but they do overflow into each other during heavy rains*." It is important to recognize that the drainageway (stream channel) south of Pickerel Pond supported, prior to mining operations, a natural free-flowing stream extending southward to the Esopus Creek. Its natural, unaltered, channel is depicted on Figure 9 at point A. The natural channel cross section along this reach is V-shaped, deeply incised (20 to 27 feet), and has a top width varying between 100 and 137 feet. Its bottom width and previous ability to conduct significant flows southward of Pickerel Pond is visible on Figure 9 photographs.

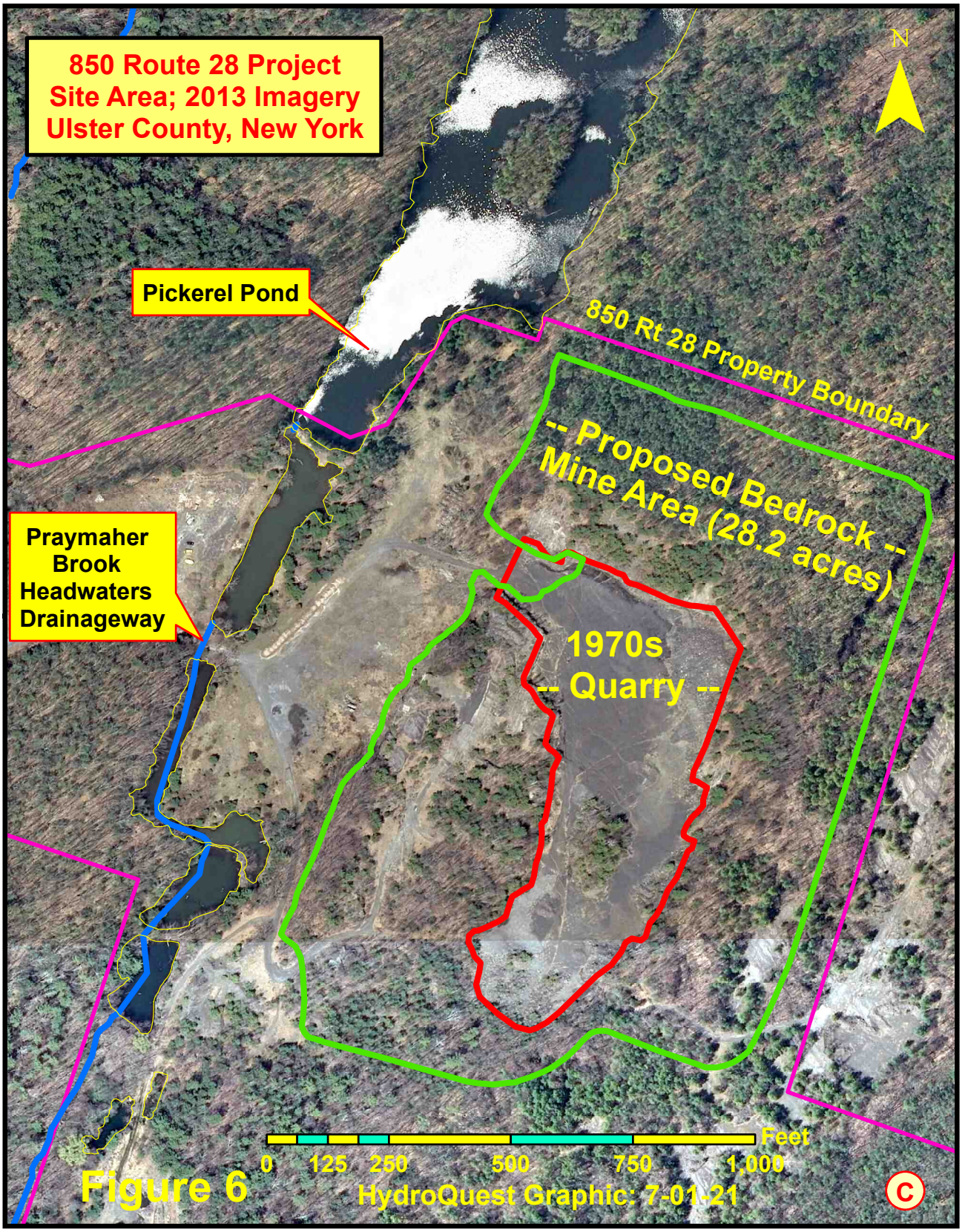
The applicant proposes construction of two settling basins encompassing an area of about one acre. Their ability to effectively allow complete settling of particulates during times of high runoff and winter, so as to not adversely impact onsite ponded federal wetlands, downstream waterbodies, and trout spawning habitat requires detailed analysis that should be conducted via the "hard look" contemplated by the SEQRA process. **The information and concerns raised here should be carefully reviewed by NYSDEC relative to stream disturbance, stream water quality protection, wetland water quality protection, trout habitat health, and discharge permits.**

In addition, analysis of other potential water quality impacts (e.g., pH increase) should also be addressed in a DEIS relative to any chemicals that may be used in the proposed manufacturing process that may not be contained onsite (e.g., cement components and any additives).

Potentially Related FEAF Question Areas: 3.e.g.h.i. Impacts on Surface Water; 7. Impact on Plants and Animals.


850 Route 28 Project
Site Area; 1994 Imagery
Ulster County, New York
N
Pickerel Pond
850 Rt 28 Property Boundary
-- Proposed Bedrock --
Mine Area (28.2 acres)
Praymaher
Brook
Headwaters
Drainageway
1970s
-- Quarry --
Feet
0 125 250 500 750 1,000
Figure 4
HydroQuest Graphic: 7-01-21
C


850 Route 28 Project
Site Area; 2009 Imagery
Ulster County, New York
N
Pickerel Pond
850 Rt 28 Property Boundary
-- Proposed Bedrock --
Mine Area (28.2 acres)
Praymaher
Brook
Headwaters
Drainageway
Note Sediment-Laden
Manmade/Dammed
Ponds (from quarry runoff)
1970s
-- Quarry --
Feet
0 125 250 500 750 1,000
Figure 5
HydroQuest Graphic: 7-01-21
C


850 Route 28 Project
Site Area; 2013 Imagery
Ulster County, New York
N
Pickerel Pond
850 Rt 28 Property Boundary
-- Proposed Bedrock --
Mine Area (28.2 acres)
Praymaher
Brook
Headwaters
Drainageway
1970s
-- Quarry --
Feet
0 125 250 500 750 1,000
Figure 6
HydroQuest Graphic: 7-01-21
C

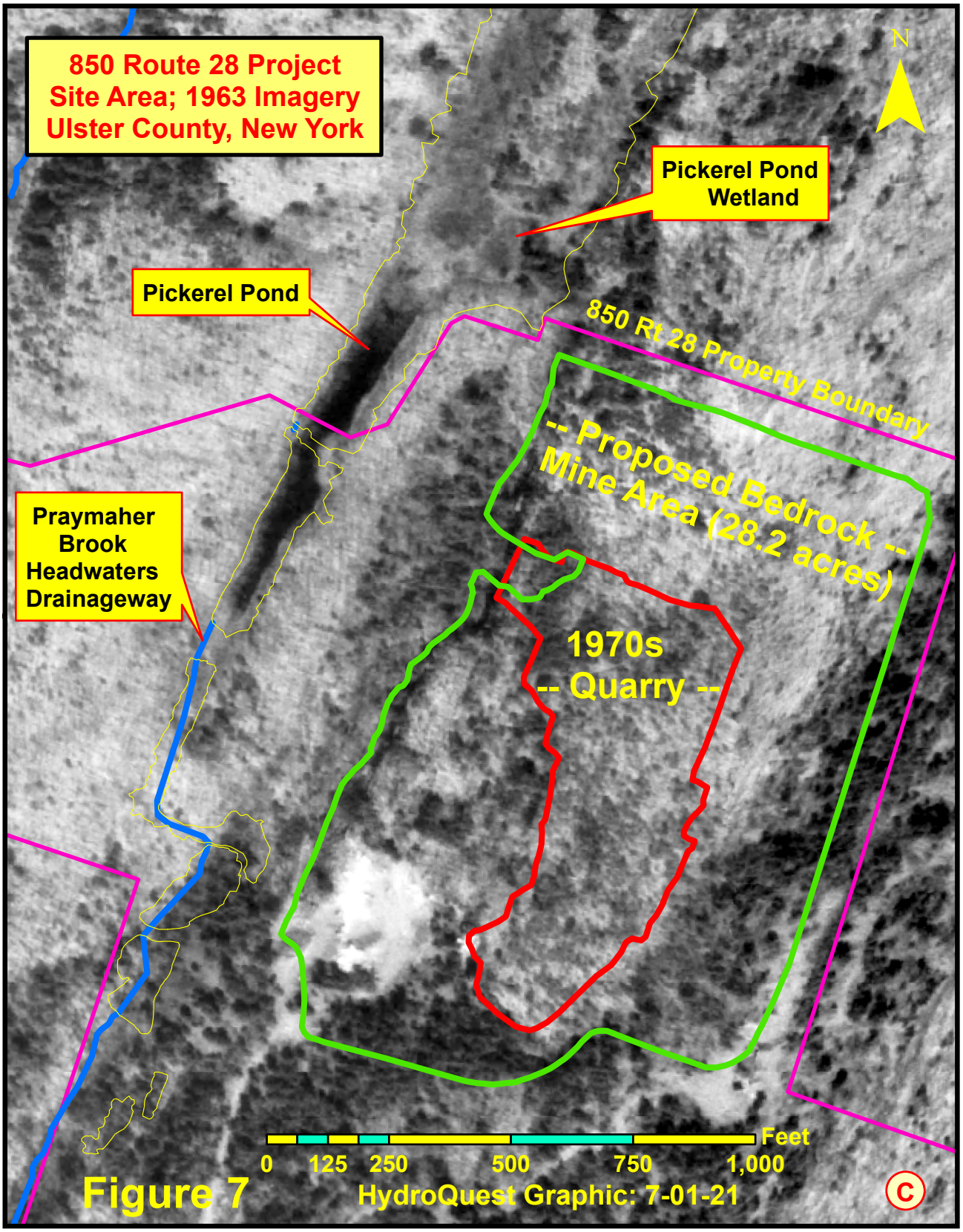

850 Route 28 Project
Site Area; 1963 Imagery
Ulster County, New York
N
Pickerel Pond
Wetland
Pickerel Pond
850 Rt 28 Property Boundary
-- Proposed Bedrock --
Mine Area (28.2 acres)
Praymaher
Brook
Headwaters
Drainageway
1970s
-- Quarry --
Feet
0 125 250 500 750 1,000
Figure 7
HydroQuest Graphic: 7-01-21
C

Figure 8. Dammed former settling pond located just northeast of point B depicted on the inset map of Figure 3 and on Figure 2. The bottom two photographs depict a pond dam that beheads natural surface flow to Praymaher Brook.

Figure 9. Headwater channel of Praymaher Brook at Point A depicted on the inset map of Figure 3. This is the natural stream channel downstream of the 850 Route 28 project site where quarry operators disrupted and altered the former free-flowing headwaters of Praymaher Brook.

Impact on Groundwater (Ecosystem Degradation or Loss Associated with Groundwater Pumping)

4. Impact on Groundwater

The proposed action may result in new or additional use of ground water, or may have the potential to introduce contaminants to ground water or an aquifer. (See Part 1. D.2.a, D.2.c, D.2.d, D.2.p, D.2.q, D.2.t) ☐ NO ■ YES

	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may require new water supply wells, or create additional demand on supplies from existing water supply wells.	☐	■
b. Water supply demand from the proposed action may exceed safe and sustainable withdrawal capacity rate of the local supply or aquifer. Cite Source: *HydroQuest Hydrology Report - May 5, 2020*	☐	■
h. Other impacts: *The proposed action may lower the water level in nearby Pickerel Pond or could potentially dewater it during dry times.*	☐	■

Groundwater pumping to meet project water demand has a high likelihood of either lowering the water level in Pickerel Pond or in completely dewatering it (see HydroQuest 5-05-20 Pickerel Pond Hydrology Report). This is significant because Pickerel Pond is shallow and receives no surface water input during moderate to dry times. The applicant's own hydrogeologist shows significant groundwater drawdown extending outward from proposed project wells under most of Pickerel Pond. As pointed out by HydroQuest and Professor Emeritus David Walker, additional groundwater testing is needed to meet even basic State mandated pumping test protocols. The project applicant has not conducted sufficient hydrogeologic testing and has not generated the empirical data required to assess onsite or offsite impacts. Documentation of sufficient water quantity to meet maximum daily water demand is a keystone of any major development project.

Furthermore, the applicant has not provided sufficient documentation of project water demand.

Potentially Related FEAF Question Areas: 3.e.g.h.i. Impacts on Surface Water; 4.a.b.h. Impact on Groundwater.

Impact on Geological Features (Unique Geologic Landforms)

2. Impact on Geological Features

The proposed action may result in the modification or destruction of, or inhibit access to, any unique or unusual land forms on the site (e.g., cliffs, dunes, minerals, fossils, caves). (See Part 1. E.2.g) ☐ NO ■ YES

	No, or small impact may occur	Moderate to large impact may occur
a. Identify the specific land form(s) attached. *Geologic mapping nearby has identified glacial features unique to the Catskill Mountain region (e.g., recessional moraines, knolls, kettles, meltwater channels). See Hydro-Quest reports dated 5-05-20, 5-26-20, and 12-27-20, the 6-14-21 PowerPt presentation, and Walker letter (5-31-20). The project site has not been assessed.*	☐	■
c. Other impacts: *The proposed action may grade over, remove, or destroy unique geologic features that may be present on the project site.*	☐	■

Bluestone Wild Forest has extensive and unique glacial geology features not found elsewhere in the Catskill Mountain region. While they undoubtedly extend into the 850 Route 28 site, they have not been accessed. HydroQuest is actively mapping and interpreting these features. They are discussed in a number of HydroQuest submitted documents (e.g., 5-05-20 and 12-07-20 reports, 6-14-21 Historic Bluestone PowerPoint Presentation), as well as by Professor Emeritus David Walker in his letter of May 31, 2020 that calls for a full SEQRA review inclusive of unique glacial geology features and aquifer testing.

Figure 10 portrays many of these glacial features that have only recently been mapped. It is likely that the 850 Route 28 site also contains glacial features that, once identified, will help with the geologic interpretation of the Bluestone Wild Forest area, as well as in documenting the deglacial history of the Hudson Valley region. The proposed action may result in the modification or destruction of unique geologic landforms.

Potentially Related FEAF Question Areas: 1. Impact on Land; 2. Impact on Geological Features.

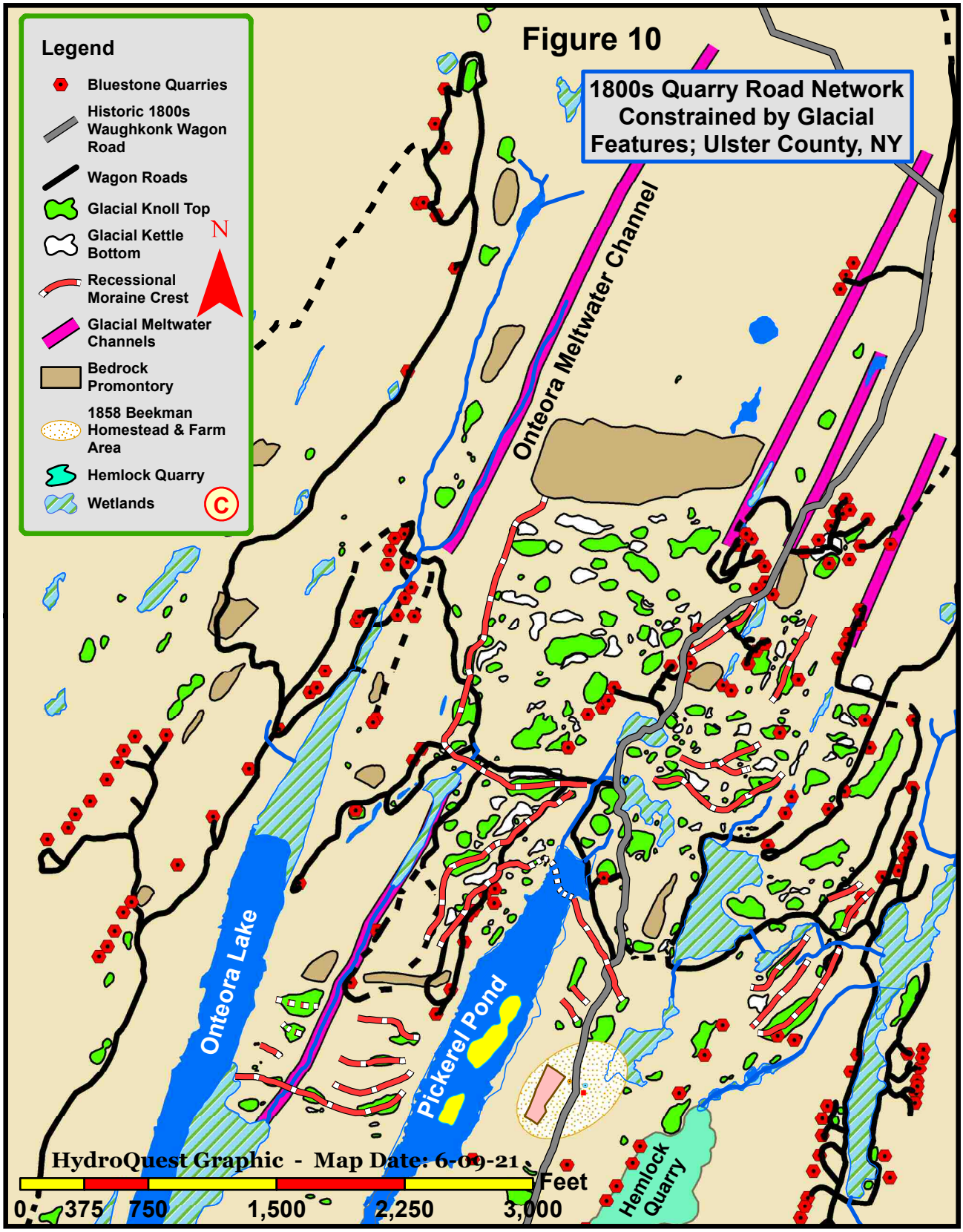


Figure 10
1800s Quarry Road Network Constrained by Glacial Features; Ulster County, NY
Legend
Bluestone Quarries
Historic 1800s Waughkonk Wagon Road
Wagon Roads
Glacial Knoll Top
Glacial Kettle Bottom
Recessional Moraine Crest
Glacial Meltwater Channels
Bedrock Promontory
1858 Beekman Homestead & Farm Area
Hemlock Quarry
Wetlands
N
C
Onteora Meltwater Channel
Onteora Lake
Pickerel Pond
Hemlock Quarry
HydroQuest Graphic - Map Date: 6-09-21
0 375 750 1,500 2,250 3,000 Feet

Aesthetic Resources

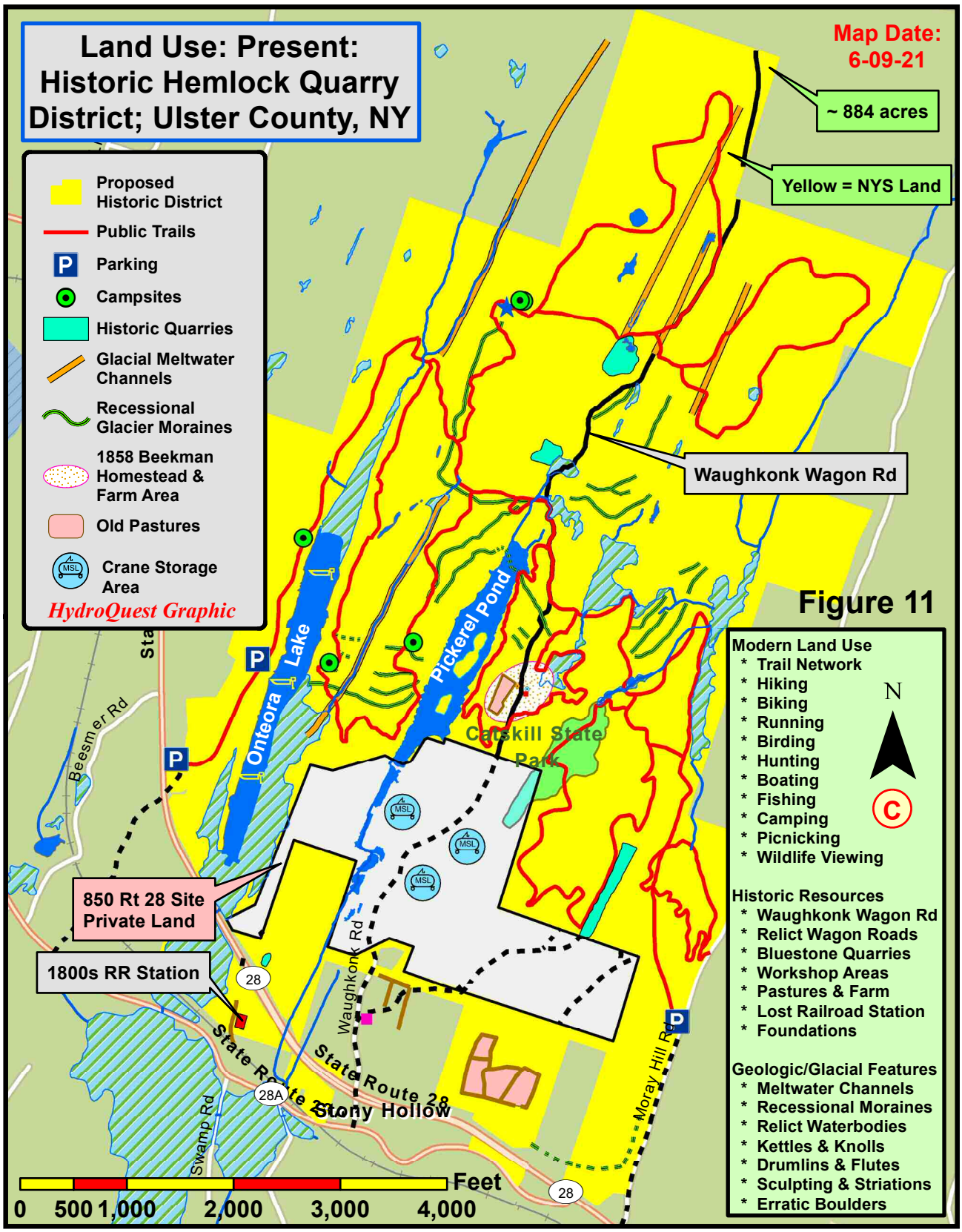
9. Impact on Aesthetic Resources The land use of the proposed action are obviously different from, or are in sharp contrast to, current land use patterns between the proposed project and a scenic or aesthetic resource. (Part 1. E.1.a, E.1.b, E.3.h.)	☐ NO	■ YES
	No, or small impact may occur	**Moderate to large impact may occur**
c. The proposed action may be visible from publicly accessible vantage points: i. Seasonally (e.g., screened by summer foliage, but visible during other seasons)	☐	■
d. The situation or activity in which viewers are engaged while viewing the proposed action is: ii. Recreational or tourism based activities.	☐	■
e. The proposed action may cause a diminishment of the public enjoyment and appreciation of the designated aesthetic resource.	☐	■

Bluestone Wild Forest is extensively used by the public for many purposes, inclusive of water bodies, trails, and more. Many of these uses are identified on the HydroQuest map titled *Land Use: Present: Historic Hemlock Quarry District; Ulster County, NY* (Figure 11). For example, industrial buildings would be within 370 feet and 200 feet, respectively of the Onteora Lake and Pickerel Pond trails. The proposed multi-year mining and industrial facility operation would adversely impact a large population of Bluestone Wild Forest users.

Bedrock mining and operation of an industrial facility are not land uses that are compatible with modern Bluestone Wild Forest activities identified on Figure 11. These activities are peacefully and quietly enjoyed within a natural forest setting. They attract local residents and ecotourists from throughout a broad area. They exemplify the character of the Town of Kingston as being the *Gateway to the Catskills*.

Alternately, the project applicant has addressed the concerns of users of the Bluestone Wild Forest by providing a mitigation approach regarding mining duration and hours of operation (2-26-20 EAF Addendum revision, page 22):

> "*In order to mitigate the impacts to neighbors and hikers on the adjacent trails,* ***drilling and blasting activities will occur only during the 2-3 years of site preparations and will be limited to weekdays from 7AM to 7PM****."* (Emphasis added)


Land Use: Present:
Historic Hemlock Quarry
District; Ulster County, NY
Map Date:
6-09-21
~ 884 acres
Yellow = NYS Land
Waughkonk Wagon Rd
Proposed Historic District
Public Trails
Parking
Campsites
Historic Quarries
Glacial Meltwater Channels
Recessional Glacier Moraines
1858 Beekman Homestead & Farm Area
Old Pastures
Crane Storage Area
HydroQuest Graphic
Figure 11
Onteora Lake
Pickerel Pond
Catskill State Park
Beesmer Rd
Waughkonk Rd
Moray Hill Rd
Swamp Rd
Stony Hollow
State Route 28
850 Rt 28 Site
Private Land
1800s RR Station
28
28A
N
C
Modern Land Use
* Trail Network
* Hiking
* Biking
* Running
* Birding
* Hunting
* Boating
* Fishing
* Camping
* Picnicking
* Wildlife Viewing
Historic Resources
* Waughkonk Wagon Rd
* Relict Wagon Roads
* Bluestone Quarries
* Workshop Areas
* Pastures & Farm
* Lost Railroad Station
* Foundations
Geologic/Glacial Features
* Meltwater Channels
* Recessional Moraines
* Relict Waterbodies
* Kettles & Knolls
* Drumlins & Flutes
* Sculpting & Striations
* Erratic Boulders
Feet
0 500 1,000 2,000 3,000 4,000

Bedrock mining operations would occur on weekdays, including throughout summers for most daylight hours for years. In time (years), industrial operations would continue 24 hours per day in two 800-foot buildings. Clearly, this is not the land use that many spoke in favor of during the June 21, 2021 Public Hearing. **The proposed action would cause a major diminishment of the public enjoyment and appreciation of the Bluestone Wild Forest aesthetic resource.**

Potentially Related FEAF Question Areas: 9.c.d.e. Impact on Aesthetic Resources; 11.b. Impact on Open Space and Recreation.

Impact on Human Health Associated with 850 Route 28 Bedrock Mining

16. Impact on Human Health The proposed action may have an impact on human health from exposure to new or existing sources of contaminants. (See Part 1.D.2.q., E.1. d. f. g. and h.)	☐ NO ■ YES	
	No, or small impact may occur	**Moderate to large impact may occur**
m. Other impacts: *The proposed action may release fugitive dust (aka small sized silica particulates) into the air that may adversely impact recreational users of adjacent Bluestone Wild Forest. This is of particular concern regarding asthmatic individuals as bedrock mining related dust may impact them within seconds of airborne transport from nearby bedrock mining and crushing operations.*	☐	■

Fugitive Dust

Information contained within the 850 Route 28 application to site an industrial activity states that open-pit mining would extract 405,000 cubic yards of bluestone over two to three years prior to completion of two large buildings. Application material documents assorted mining-related features including rock processing areas, stone crusher, screener, washer, sedimentation basins, drill rig, blasting, sound berms, and truck scale. Use of some of these items coupled with bulldozing and truck loading would result in creation of fine particulates that could be carried offsite by wind. Bedrock mining would occur over 28.5 acres, an area four times the size of a 1970s open-pit mine situated within the proposed mined area footprint.

Inhalation of airborne fugitive dust from mines situated close to public trails, water resources, and homes may adversely impact public health and the aesthetic setting. Fugitive dust from mine sites may trigger asthma attacks and other breathing problems. There may also be adverse impacts to lake and wetland water quality and species health from particulate accumulation. In sufficient quantities fugitive dust can result in silicosis, especially due to occupational exposure. Knowledge of wind directions and velocity provides information needed to assess likely exposure pathways. To examine potential public exposure and inhalation pathways from extractive mining within Bluestone Wild Forest, three years of average monthly wind speed data was analyzed from a weather station situated 1.5 miles northeast of the 850 Rt. 28 site at approximately the same elevation (2018-2020). Analysis revealed that the average of these monthly wind speeds is 2.63 mph, that wind gusts reach 46 mph, and that wind directions vary among all compass directions. Figure 12 illustrates potential receptor locations extending outward from the proposed 850 Rt. 28 mine site, providing a means to examine airborne particulate (i.e., fugitive dust) transport potential within public forest lands. Dust arrival times, at a low average monthly wind speed of 2.63 mph, are presented in Table 1.

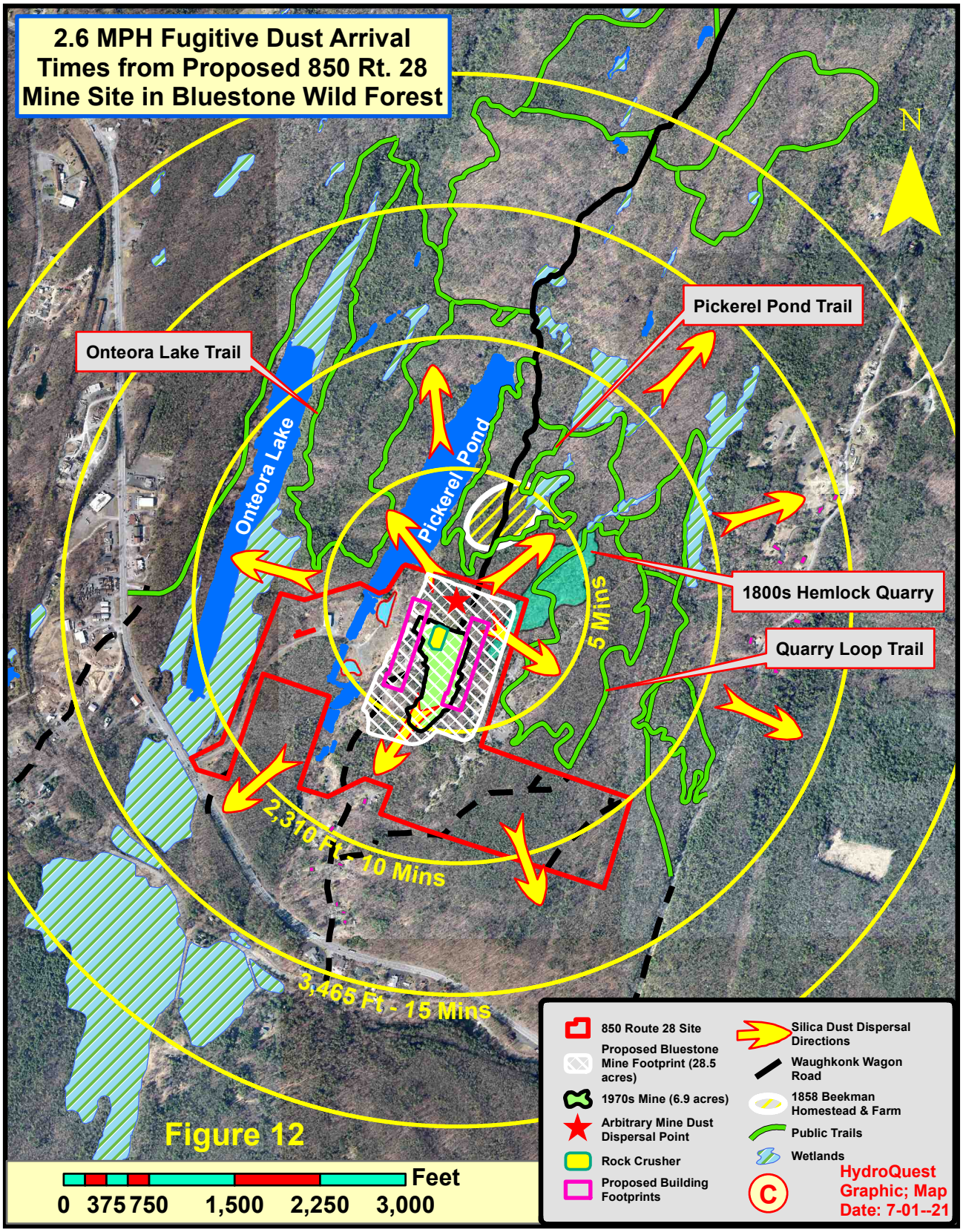
Receptor Locations & Fugutive Silica Dust Arrival Times

Location	Approx. Distance From Nearest Proposed Industrial Building (feet)	Approx. Distance From Proposed Mine Footprint (feet)	Approx. Fugitive Dust Arrival Time From Proposed Mine Boundary With 2.63 MPH Wind Speed (seconds)
Pickerel Pond Trail	200	120	31
Quarry Loop Trail	315	130	34
Onteora Lake Trail	370	485	126
1858 Beekman Homestead Site	445	375	97
Pickerel Pond	90	55	14
Onteora Lake	1485	1400	364
Onteora Lake Picnic Area	1670	1790	465
Nearest Wetland	1050	820	213
Nearest Residence	1000	560	145

Table 1. Fugitive dust arrival times.

A number of studies and modeling efforts have been conducted to assess the potential transport range of fugitive dust particles. Sairanen and Pursio (2020), for example, found that large fugitive dust particles will deposit within a few hundred meters from a dust source, while particles of an intermediate size range (10–30 µm) are likely to travel up to 200 to 500 meters (656 to 1640 feet). The most common regulated forms of particulate matter are known as PM_{10} (particulate matter with a diameter of 10 microns (µm) or less in size) and $PM_{2.5}$ (particulate matter with a diameter of 2.5 microns or less in size) (Michigan Department of Environmental Quality; 2014). Sivacoumar, Raj, Chinnaduria, and Jayabalou (2009) assessed both empirical data and different dust transport models. The impact zone for measured concentrations varied but ranged up to 2650 meters (8,692 feet). The means of three different models suggested that the spreading of dust can occur over great distances from a source (means ranging from 501 meters to 1335 meters [1,643 to 4,379 feet]).

While some of these spreading distances of fugitive dust transport are long, it is reasonable to assume that under favorable atmospheric conditions, fugitive dust can be blown up to at least 500± meters (~ 1640 feet). Using an average wind velocity of 2.63 mph, Table 1 lists fugitive dust arrival times from the 850 Route 28 bedrock mining area to a number of Bluestone Wild Forest receptor locations. Arrival times range from 14 seconds along Pickerel Pond, to 31 seconds on the Pickerel Pond Trail, to 465 seconds (7.75 minutes) at the Onteora Lake picnic area. Arrival times would be shorter for higher wind velocities. Health experts acknowledge that airborne silica, the main component of bluestone, can be harmful to humans. For example, John MacFarland, a


2.6 MPH Fugitive Dust Arrival Times from Proposed 850 Rt. 28 Mine Site in Bluestone Wild Forest
N
Pickerel Pond Trail
Onteora Lake Trail
Onteora Lake
Pickerel Pond
1800s Hemlock Quarry
Quarry Loop Trail
5 Mins
2,310 Ft - 10 Mins
3,465 Ft - 15 Mins
Figure 12
Feet
0 375 750 1,500 2,250 3,000
850 Route 28 Site
Proposed Bluestone Mine Footprint (28.5 acres)
1970s Mine (6.9 acres)
Arbitrary Mine Dust Dispersal Point
Rock Crusher
Proposed Building Footprints
Silica Dust Dispersal Directions
Waughkonk Wagon Road
1858 Beekman Homestead & Farm
Public Trails
Wetlands
HydroQuest Graphic; Map Date: 7-01--21

neurosurgeon on the board of Utah Physicians for a Healthy Environment, is quoted as saying that crystalline silica poses a serious threat to human health when inhaled. He points out that sharply fractured particles can damage lung tissue and cause cancer.

It is important to recognize that inhalation of fugitive dust by asthmatic individuals can be serious, albeit not to the level experienced by occupational exposure. Example statistics from elsewhere in the region accent this. For example, the NYS Dept. of Health SPARCS data for 2012-2014 documents 89 and 85 asthma-related Emergency Department (ED) visits for Wurtsboro and Bloomingburg, respectively. Only three of the 44 zip code areas in Sullivan County had higher ED visits. Sullivan County is number 7 of 10 among the top ten asthma prevalence rates among Medicaid recipients by NYS county (per thousand Medicaid enrollees in SFY 2012-13; DOH data for 63 counties). Clearly, potential human health impacts stemming from inhalation of airborne fugitive dust must be addressed in an Environmental Impact Statement.

Potentially Related FEAF Question Areas: 3. Impacts on Surface Water; 16. Impact on Human Health.

Conclusion

All told, even in the absence of other project related issues (e.g., Traffic, Consistency with Community Character), comprehensive evaluation of the above items either individually or collectively justifies issuance of a positive SEQRA determination and development of a Draft Environmental Impact Statement.

As stated by NYSDEC, "*all applications are subject to the requirements of the Mined Land Reclamation Law (MLRL) and the State Environmental Quality Review Act (SEQRA). In addition, each application must be reviewed for possible impacts to historic or archaeological sites protected by the State Historic Preservation Act (SHPA)*." The requirements of the Mined Land Reclamation Law, SEQRA, and SHPA, inclusive of archaeological survey work recommended by the Office of Parks, Recreation and Historic Preservation (OPRHP), have not been satisfied. Thus, there is no scientific foundation or site-specific empirical data upon which to issue a negative declaration under SEQRA.

Instead, the supporting documentation and answers provided to the Part 2 questions above provide justification for the Town of Kingston Planning Board to issue a positive declaration under SEQRA.

Thank you for your consideration.

Sincerely yours,

Paul A. Rubin
Professional Geologist

Cc: Richard Golden, attorney
Kelly Naughton, attorney
New York State Department of Environmental Conservation
Office of Parks, Recreation and Historic Preservation (OPRHP)

The list of maps, documents, letters, Fact Sheets, and a Power Point presentation that I wish to officially enter into the 850 Route 28 Public Hearing record is as follows. All are available via the HydroQuest web link provided above.

June 14, 2021 Power Point presentation: *Historic Hemlock Quarry District: Archaeologic & Geologic Resources in Bluestone Wild Forest (circa 1830 – 1905); Ulster County, New York*; 28 frames.

June 9, 2021 GIS map: *Land Use: Present: Historic Hemlock Quarry District; Ulster County, NY*; 1 page.

June 9, 2021 Fact Sheet: *Historic Bluestone Industry* with GIS map depicting *Land Use: Past (1800s): Historic Hemlock Quarry District: Ulster County, NY*; 2 pages.

June 9, 2021 GIS map: *Land Use: Past (1800s): Historic Hemlock Quarry District: Ulster County, NY*; 1 page.

June 9, 2021 GIS map: *Proposed Historic Hemlock Quarry District; Ulster County, NY*; 1 page.

May 24, 2021 GIS map: *2.6 MPH Fugitive Dust Arrival Times from Proposed 850 Rt. 28 Mine Site in Bluestone Wild Forest*; 1 page.

April 12, 2021 Letter to Town of Kingston Planning Board Chair John Konier from the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP); *RE: DEC, SEQRA, 850 Route 28 LLC: Steel and Concrete Fabrication Facility, Town of Kingston, Ulster County, NY - 18PRO4534*; 3 pages with GIS map.

December 22, 2020 Fact Sheet: *Historic Survey Map Documents the Waughkonk Wagon Road Placement Through Bluestone Wild Forest and the Proposed 850 Route 28 Industrial Park;* 2 pages with GIS map.

December 7, 2020 Report: *Geoarchaeology of the Stony Hollow Wagon Road and Quarry Network (circa 1830 - 1905); Ulster County, New York*; 46 pages.

May 31, 2020 Professor Emeritus David Walker - Columbia University Letter calling for a full SEQRA review inclusive of unique glacial geology and aquifer testing: *850 Rt. 28 LLC Site Development Considerations*; 2 pages.

May 26, 2020 Report: *Preliminary Cultural/Archaeologic Resource Investigation: Hemlock Quarry*; 12 pages.

May 5, 2020 Report: *Surface Hydrology, Hydrogeology, Bluestone Quarries, and Glacial Geology Proximal to Pickerel Pond and the Proposed 850 Route 28 Manufacturing Facility*; 37 pages.