

Carya Ecological Services, LLC



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September 29, 2025

Att. Chairman Robert Klee
Town of Woodbridge
Town Plan and Zoning Commission
11 Meeting Street
Woodbridge, CT 06525

RE: APPLICATION REVIEW - SUPPLEMENTAL
Proposed Residential Development, Fountain Street LLC
804 Fountain Street, Woodbridge, CT

Dear Chairman Klee and Commissioners:

At the request of an Intervenor, Woodbridge Land Trust, Sigrun Gadwa, principal of CARYA ECOLOGICAL SERVICES ("CARYA") has been asked to continue her review of the above referenced project. M.s Gadwa was an author of the June 2, 2025 REMA report, working as subcontractor to REMA. Her own company, CARYA is responsible for this second phase of the review because George Logan of REMA now has a conflict of interest - a prior contract with Solli Engineering, the new engineering firm for the project.

1.0 INTRODUCTION

Because the proposed project is very much the same as it was last June, all the concerns set forth in the REMA June report still hold and will not be repeated. The project continues to be inconsistent with the stated goals of Section 495-23 of the Woodbridge Zoning Regulations (Environmental Conditions), namely Preservation of Special Features and minimizing air pollution.

In this letter we explain additional inherent constraints for the proposed project related to the inherent properties of the site's greenschist bedrock. They were elucidated in an in-depth conversation with Dr. Charles Dimmick on September 24, 2025. Dr. Dimmick is a retired professor of geology and geohydrology at Central CT State University, who was also active as a consultant for many years. He is familiar with the Maltby Lakes metavolcanic formation. Earlier, I had showed him rock samples from the 804 Fountain Street site and photos of outcrop exposures and had explained the project to him. We both attend St. Peter's Episcopal Church in Cheshire.

2.0 CONSTRAINTS DUE TO GREENSCHIST PROPERTIES

Charles Dimmicks's first question was whether there were any nearby wetlands. He explained why an evaluation by a suitable rock excavation specialist was needed. An excavation into greenschist rock formation has a substantially greater likelihood of adverse hydrologic impacts on wetlands - and perhaps also neighboring properties and roads, compared, for example to gneiss or granite. Weak joints in this highly laminated schist are prone to develop into widening cracks. Impacts could be either dewatering or increased seepage discharge.. At this site, the threat is dewatering of Bishops Pond, nearby to the west. The pond's elevation is higher than the lower extent of proposed blasting. Dr. Dimmick recommended against granting a permit unless proper geologic investigations by qualified professionals have ruled out this risk.

Dr. Dimmick also noted that the monetary value of gravel crushed from greenschist is very low and that the applicant may not be aware of this. Basically, being so laminated, splintery, and easily weathered, greenschist makes gravel that is unsuitable for most construction and stormwater purposes, It will not meet CTDOT specifications for most uses, other than fill in deep holes. He had been a consultant for the applicant, for another similar project. Plans to gravel that rock formation were dropped after the applicant learned how little revenue the graveling operation would generate.

Dr. Dimmick noted that the risk of slabs of schist from falling off the rock face can be largely prevented by spraying a gray substance all over the rock face. This measure does eliminate the natural beauty of the green-gray rock, which makes it so desirable for use as pavers.

Greenschist has high potential long-term value for landscaping pavers, especially garden pavers and decorative stone, as it naturally fractures to form slabs about 2" thick. However, a developer is unlikely to have the expertise to operate such a quarry. Also, because quarrying pavers is a slow process, the timing would not work out for this project – constructing an apartment building. Perhaps the developer could sell to an experienced rock quarry company, and donate the crest to the Woodbridge Land Trust. Noise levels would be lower than with rock removal by blasting.

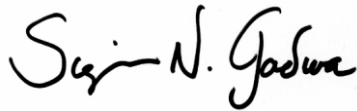
3.0 CONCLUSION

In conclusion, we emphasize that a specialist needs to evaluate the potential for water to move through cracks formed in the greenschist, resulting in dewatering of the pond. This long ridge crest

in the Maltby Lakes Formation has multiple rock exposures and well-developed lichen and moss communities. The eastern hillside supports a mature, high-quality forest that provides multiple services. Alternative could reduce forest loss and better preserve the scientific and educational value of the ridge crest. A lower building would preserve more of the forested hillside adjacent to this ridge crest.

Respectfully submitted,

CARYA ECOLOGICAL SERVICES, LLC

A handwritten signature in black ink, reading "Sigrun N. Gadwa". The signature is fluid and cursive, with the first name "Sigrun" and last name "Gadwa" clearly legible.

Sigrun N. Gadwa, MS, PWS
Professional Wetland Scientist, Soil Scientist
Botanist, Ecologist

Curriculum vitae

Sigrun N. Gadwa, MS, PWS
Ecologist/Botanist/Wetland Scientist

EDUCATION:

M.S., Plant Ecology, University of Connecticut, Storrs, CT, 1997
B.A., Biology, Brown University, Providence, R.I., 1975

Continuing Education

16 credit hours in Soil Science and Geology, 1993 – 2001
University of Connecticut, Storrs
Five Plant Pathology courses, Cook College, Rutgers University, New Brunswick, N. J. 1978 - 1979
Graduate Phycology course. Pan American U., Brownsville, Texas, 1982
Arboriculture course, Quinnipiac College, Hamden, CT, 1984
CT DEEP training workshop Series: Rapid Bioassessment Techniques, & Stream Ecology Workshops, Bethany, 1996 - 7
Marking, Measuring & Planning Turtle Surveys. H. Gruner, CT Science Museum, workshop for QRWA Turtle Crossing Program, 1998
Riparian Buffer Function, Performance & Limitations. Urban Riparian Buffers Conference & Technical Training Session. April 1999
Sedimentation and Erosion Control Review Session. USDA Natural Resource Conservation Service and CPESC (Certified Professionals in Erosion Control), Concord, NH, September 2001
Freshwater Mussel Workshop. New Hampshire Department of Environmental Conservation. August 2004
Moss Identification & Ecology, Eagle Hill Institute. 2019

CERTIFICATIONS:

Registered Soil Scientist,
Society of Soil Scientists of Southern New England
Certified Professional Wetland Scientist
Society of Wetland Scientists
Organic Land Care Professional. NOFA (NE Organic Farming Association)

EXPERIENCE:

As a plant ecologist Ms. Gadwa inventories, assesses, photographs, and monitors ecological communities, often in support of open space acquisition initiatives. She plans and guides control programs for invasive plants, searches for listed plant and turtle populations, and assesses their habitat. Botanical specialties include vascular plant identification and winter botany. She is experienced with third-party reviews of development projects, assessments of functions and values, wetland and watercourse delineation, planning and implementing wetland and habitat restoration, vernal pools studies, water quality testing and data analysis, and in-stream bio-assessments.

Curriculum vitae: *(continued)*

Sigrun N. Gadwa, MS, PWS
Ecologist/Botanist/Wetland Scientist

EMPLOYMENT HISTORY:

- 1999 to present **Carya Ecological Services, LLC, Principal**
Ecological and wetland assessments, botany & habitat inventories, Vegetation planning. CTDEEP surveys for rare plants and turtles.
- Recent **Carya** clients include the Berlin Land Trust, Hamden Land Conservation Trust, Avalonia Land Conservancy, East Lyme Land Trust, Brookfield North, LLC, Black & Veatch for the Town of West Haven, Mumford Cove Association, Town of Colebrook, SCS-Bethmour Rd., and private landowners.
- 1999 to present **Carya Ecological Services, LLC, Principal, Subcontractor to Rema Ecological Services, LLC**, Vernon, CT, an environmental science collaborative; ecological fieldwork, planning, and reporting
- 2015 to 2022 **Post University, Waterbury Campus**
Adjunct Professor of Botany & Ecology.
- 2013 to 2018 **K & W Construction**, Southbury, CT, *Subcontractor*
Erosion & Sediment Control Inspections, Turbidity testing for CT DEEP
- 2014 to 2019 **South Central CT Regional Water Authority**, New Haven, CT
Subcontractor. Annual vegetation monitoring and reporting for compliance with CT DEEP Wellfield Diversion Permit
- 2001 to 2004 **CT DEEP Wildlife Division**, *Subcontractor*
Vegetation and wetland inventories, and mapping of large Wildlife Management Areas (WMAs).
- 2003 to May 2016 **Ships' Hole Farm Partnership**, Smithtown, Long Island, NY
Farm Tenant Supervisor. Responsible for vegetation management & invasive control; grew and collected seed of native species on family farm, and advised the monitors of the Eastern turtle population.
- 1995 to 2000 **Quinnipiac River Watershed Association (QRWA)**
Executive Director/Staff Scientist
Led botany hikes and a volunteer monitoring program, including stream bio-assessments, turbidity testing, and bird/turtle surveys; site plan reviews of projects impacting the watershed; wrote testimony, grants, publicity, and educational materials; liaison with officials. Chair of Habitat Work Group of the **Watershed Partnership**, which identified and documented Quinnipiac watershed habitats in need of protection or restoration until 2003.

Curriculum vitae: *(continued)*

Sigrun N. Gadwa, MS, PWS
Ecologist/Botanist/Wetland Scientist

EMPLOYMENT HISTORY: *(continued)*

- 1996-2018 **QRWA Turtle Crossing Program**
Volunteer monitoring - Coordinator/instructor.
Instructed citizens on preparing detailed accurate record forms for the Natural Diversity Database. Over 50 records submitted. Outreach on Eastern box turtles and wood turtles: behavior through the seasons, habitat usage, and conservation needs. Multi-year wood turtle study in north Cheshire
- 1991 to 1995 **De Leuw-Cather, Inc.,** East Hartford, CT
Environmental Planner/Field Ecologist
Field data collection, analysis, and report preparation, mostly for highway projects; specialties included listed plant searches, assessment of wetland functions, mitigation design, and wetland delineation (ACOE method).
- 1987 to 1991 **Univ. of Connecticut Department of Civil Engineering,** Storrs, CT
Wetlands Researcher
Part of an interdisciplinary team, studying man-made replication wetlands and natural reference wetlands. Took part in research design; collected vegetation, soils, and hydrologic data; literature searches; data analysis. Research used for wetlands mitigation-related manual for the Connecticut Department of Transportation and for master's thesis.
- 1974 to 1975 **Brown University,** Providence, R.I.
Teaching Assistant, Plant Systematics
- 1968 to 1975 **Long Island Nature Conservancy, Stewardship Volunteer**
Nature trail development and maintenance, botanical inventories, wrote preserve descriptions and self-guided nature trail brochures.

PROFESSIONAL AFFILIATIONS:

Connecticut Botanical Society (Board Member, Chair of Ecology & Conservation Committee, frequent field trip leader)
Connecticut Invasive Plant Working Group (CIPWG)
Connecticut Association of Wetland Scientists
Society of Soil Scientists of Southern New England
Connecticut Ornithological Society
Connecticut Entomological Society
Ecological Society of America
Native Plant Trust, PCV (Plant Conservation Volunteer) Program

Curriculum vitae: *(continued)*

Sigrun N. Gadwa, MS, PWS
Ecologist/Botanist/Wetland Scientist

- PUBLICATIONS:** Lefor, M.W. Barklay, J.S. Cooke, R.S. Craig, S.N. Gadwa, T.S. Murray, April 1990. *Annotated Bibliography for Wetland Mitigation*.
- August 1990. *Patterns of Herb Layer Species Association*. In Lefor, M.W. et al *Wetland Mitigation: Interim Report* No. CT-RD-JHR-90-8, The Transportation Institute, Storrs, Conn. 97 pp.
- May 1995. *Wetland Mitigation: Botany*. Volume 1 of 6. Lefor, M.W. and S.N. Gadwa. Report No. JR95-241. Dept. Civil Engineering, Joint Highway Research Council, Transportation Institute, Storrs, Conn. 259 pp.
- December 1997. *Plant Colonization Processes and Patterns along Shorelines of Man-made Mitigation Basins in Relation to Reproductive and Life History Traits*. MS Thesis. Dept. Ecology & Evolutionary Biology. Univ. of Connecticut, Storrs, Conn. 181 pp.
- River Resources Education Series, Quinnipiac River Watershed Association, Meriden, CT. May 1995 *New Haven Oysters*; June 1996 *What Good are Streamside Woods?* August 1996 *Taking a Close Look at Streamside Woods*; June 1997 *Foraging in the Quinnipiac Estuary*; March 1998 *Stream Biosurveys* (G.T. Logan & S. Gadwa); September 2000 *Muddy Waters*.
- Logan, G.T. & S.N. Gadwa. *Quinnipiac River Watershed Assoc. Stream Study: Water Quality in the Quinnipiac River*. In Proceedings of a Symposium on Impact of Nonpoint Source Pollution in the Quinnipiac River Watershed, pp. 66-70.
- October 2000. *A Report on the Water Quality of the Quinnipiac River*. M. Tyrell, C. Cappannari, D. Galt, S. Gadwa, L. MacMillan, R. Walters. Report to the Steering Committee of the Quinnipiac River Watershed Partnership. Q.R.W.P. Water Quality Workgroup, New Haven, CT. 19 pp.
- Winter 2003. *Management of Invasive Plants: On-Site Open Space Management*. The Habitat 15(2):3-4. Connecticut Association of Conservation and Inland Wetland Commissions, Inc.
- Spring 2003. *Management of Invasive Plants: Protecting Open Space and Wetlands, Tools for Land Use Boards and Town Staff*. The Habitat 15(3):4-5. CT Association of Conservation and Inland Wetland Commissions, Inc. July 2003.
- Interpreting Quinnipiac Songbird Surveys: Effects of Landscape Setting on Avian Community Composition*. The Connecticut Warbler 23(3): 81-114
- June 2004. *Connecticut's Turtles of Special Concern*. Quinnipiac River Watershed Association. Illustrations by Tony Ianello. *Educational Brochure*.

Curriculum vitae: *(continued)*

Sigrun N. Gadwa, MS, PWS

Ecologist/Botanist/Wetland Scientist

PUBLICATIONS, cont. :

Fall 2005. S. N. Gadwa. *Preliminary Assessment of the Habitat & Historic Resources in North Cheshire, West of Route 10 & Recommended Protection Measures*. Cheshire Land Trust & Quinnipiac Watershed Partnership.

October 2011 S. N. Gadwa & G.T. Logan. *The Scientific Basis for Wetland & Watercourse Buffer Zones*. 23 pp. White Paper. Rema Ecological Services, LLC.

Spring 2014. Sigrun N. Gadwa. *The Invasive Threat to Connecticut's Upland Critical Habitats*. 3pp. Connecticut Botanical Society Newsletter 41: 1.

Spring 2020. Sigrun N. Gadwa. *Gabbro Habitats in Southeastern Connecticut*. Connecticut Botanical Society Newsletter 47: 1.

Fall 2020. Connecticut Botanical Society Ecology and Conservation Committee. *Recommendations for Electrical Utility Right-of-Way Vegetation Management*. See also website: www.caryaecological.com.

Fall 2023. Sigrun N. Gadwa. *The Role of Shade along Forest Edges in Limiting Invasive Colonization*. Connecticut Botanical Society Newsletter 50: 2.

WORKSHOPS & CONFERENCES

ESA Mid-Atlantic Chapter Symposium, Blacksburg, Virginia.
Lessons for Mitigation Design from Shoreline Seedling Colonization Patterns. April 12-14, 2012. *(Poster presentation based on MS thesis)*

New England Invasive Plant Summit, Framingham Massachusetts: *Wetlands permitting – a potentially powerful tool to control invasive plants*. September 19-20, 2003. *(Poster Presentation)*

Environmentally Sensitive Development along the Ten Mile River. Riverside Landscaping Conference. June 1998. Rivers Alliance of CT. *(Guest Lecturer)*

Water Quality in the Quinnipiac River: A Symposium on the Impact of Non-Point Source Pollution in the Quinnipiac River Watershed. Nov. 1998. *(Presenter)*

October, 2014. *Documenting and Conserving Eastern Box Turtles in Central Connecticut: 19 years of Citizen Monitoring*. Berlin Land Trust and Nature Center. Evening Membership Program. *(Guest Lecturer)*

October 2016. Sigrun Gadwa, MS & Todd Mervosch, PHD. Connecticut Invasive Plant Working Group (CIPWG) Symposium, UConn College of Agriculture, Health, & Natural Resources. *Artemisia vulgaris (Mugwort): Overlooked Infiltrator of Meadow Habitats*. *(Poster Presentation)*