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Land Use Department

Ian Cole, LLC

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February 20, 2025

Town of Ledyard
Inland Wetland and Watercourse Commission
Ms. Elizabeth Burdick, Director of Planning
741Colonel Ledyard Highway
Ledyard, CT 06339

RE: WETLAND EVALUATION
PREPARED FOR: C.R. KLEWIN LLC
PROPOSED RESIDENTIAL DEVELOPMENT
19, 29 & 39 MILITARY HIGHWAY
LEDYARD (GALES FERRY), CONNECTICUT

Dear Chairman, DeBrodt and Commission Members:

On behalf of the Applicant, I have performed a wetland delineation and functional evaluation of the jurisdictional freshwater inland wetlands at the above referenced Project Site. This site assessment was completed to provide a basis for determining the potential impacts associated with the proposed development of these parcels. Details of the proposed development are presented in the Stormwater Management Plan, Project Site Plans, and the wetland application.

Proposed Activities

The Applicant is proposing to construct two (2) new residential apartment buildings and includes associated paved parking areas, utilities, and stormwater management. The site will be served by public water and subsurface sewage disposal system. The project will also provide erosion and sedimentation controls during the demolition (existing structures on-site are slated to be removed) and construction periods, as well as long term stabilization of the site. The site has been designed with a conventional drainage system. A landscaping and lighting plan is included as part of the final site restoration following construction.

The proposed development has no direct wetland impact and no activities within the 100-foot upland review area. The wetlands and 100-foot upland review area will be left undistrubed in its existing vegetated state. For more information, please refer to the plans entitled "Proposed Site Plan Documents for C.R. Klewin LLC, Proposed Residential Development, 19, 29, 39 Military Highway, Gales Ferry, Ledyard, New London County, Connecticut" prepared by Bohler Engineering dated February 2025, as amended.

General Site Description

The site consists of approximately 18.95 acres of land. The bulk of the property has been historically used as agriculture which can be seen on the Connecticut Department of Energy and Environmental Protection (CTDEEP) archival air photos dating back to 1934. The property is accessed on the eastern side of Military Highway and is bounded by commercial properties to the east/north. An open space Avalonia Land-Trust parcel and the Harvard Terrace residential neighborhood boarder the site to the south.

Of the overall 18.95-acres the uplands consist of approximately 10-acres is open upland field habitat and roughly 4-acres is a mixed hard wood forest concentrated around the western wooded hillside and periphery of the site. There are two steel building structures located on the 29 Military Highway parcel and an existing building, pavilion and several greenhouses centered in the northwestern portion of 39 Military Highway where the existing site access point is located, and facilities previously utilized by the former Sweet Hill Farms operation.

The southeast +/- 4-acres of the site is covered by a wooded swamp in the low-lying corner of the site. The regulated jurisdictional wetlands and watercourse boundary are well-defined and for all practical purposes closely follows the southern tree line where there is a well-defined topographic break in the slope. The wetland boundary is distinct and closely follows the limits of the wetted perimeter of the flooded wetland, which is partly created by the impoundment of Pine Swamp Brook, which is damned along the roadside at the Brook's roadway crossing point under Harvard Terrace. The pond is man-made and was created by excavation. The impoundment creates a backwater effect on the wetland water levels in the southeastern corner of the site. The wetlands hydrology is prolonged by the presence of active beavers which routinely flood and exacerbate the impounded conditions of Pine Swamp Brook. The wetland systems are described in more detail below.

The southern part of the site is located in a FEMA floodplain Zone AE with an associated flood elevation of 28.1 feet. The entirety of the site drains westerly toward the property line where Pine Swamp Brook, a perennial watercourse flows south across the southeast corner of the property. Pine Swamp Brook is impounded at its crossing with Harvard Terrace. The Brook drains to Thames River at Mill Cove and falls within the Thames River subregional basin (CTDEEP #3000) and the Thames Main Stem Regional Basin – Thames Major Basin.

Generally, the topography across the property is nearly level with slopes ranging from 0-3%, with the exception of the western part of the site where there geological transition

from the outwash landscape to a notable steeply sloping wooded hillside of dense glacial till which rises high above the level sandy fallow farm fields. On the west side of the site elevations rise to 82 ft at the road and drop down to 26 ft at the wetland boundary. The project is slated to drop the grade of the hillside to create a level parking area for the residence.

The upland fields exhibits xenic field habit and are vegetated with dry field species including broomsedge-bluestem grass, autumn olive, multiflora rose, cedar shrubs, and goldenrod. The western wooded hillside has an upland forest community of oaks, hickory, sugar maple, American beech, black cherry and tulip trees. Overall, where the forest community is dominated by large old growth trees the forest shrub stratum is moderately dense and generally consists of witch hazel, low-bush blueberry, green briar, muscle wood. The forest floor ground cover includes species such as Christmas fern, service berry, hay-scented fern, and marginal wood fern. Along the transitional forest ecotone there is a cohort of smaller younger trees from past clearings and the successional upland forest community has a heaver influence of birch, maple and tulip and a thicker undergrowth of Japanese barberry, an echo-signature of past land clearing activities.

The site is not located in aquifer protection zone. Lastly, the site is not located in a CTDEEP designated Natural Diversity Data Base (NDDB) polygon per the CTDEEP 2024 NDDB mapper.

Wetland Delineation

The wetland delineation was completed in accordance with the standards of the Natural Resources Conservation Services (NRCS) National Cooperative Soil Survey and the definitions of inland wetlands and watercourses as found in the Connecticut General Statutes, Chapter 440, Sections 22a-36 through 22a-45 as amended. Wetlands, as defined by the Statute, are those soil types designated as poorly drained, very poorly drained, floodplain or alluvial in accordance with the NRCS National Cooperative Soil Survey. Such areas may also include disturbed areas that have been filled, graded, or excavated and which possess an aquic (saturated) soil moisture regime.

Watercourses means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, vernal, or intermittent, public, or private, which are contained within, flow through or border upon the Town of Ledyard or any portion thereof not regulated pursuant to sections 22a-28 through 22a-35, inclusive, of the Connecticut General Statutes. Intermittent watercourses are defined as having a permanent channel and bank and the occurrence of two or more of the following characteristics: (a) evidence of scour or deposits of recent alluvium or detritus, (b) the presence of standing or flowing water for duration longer than a particular storm incident, and (c) the presence of hydrophytic vegetation.

The regulated wetland boundary was originally delineated by Ian Cole LLC, in 2021. The wetland boundary was again re-flagged and further refined and modified by Ian Cole LLC in 2024 in consultation with the Town of Ledyard's 3rd party reviewing Soil

Scientist, Robert R. Russo of CLA Engineers. The revised 2024 flagged wetland boundary and updated 2025 proposed development layout are shown on the current plans prepared by Bohler Engineering, dated February 2025.

Wetland and Watercourse Description

The wetlands on the subject property are associated with the Pine Swamp Brook wetland system. Pine Swamp Brook is a perennial watercourse that is impounded downstream (off-site) creating a backwater flooded scrub-shrub swamp dominated by Alder shrubs. The wetland occupies the southeastern corner of the property.

The United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapper shows the onsite wetland as part of palustrine and riverine wetland group that classifies the wetland area as a PSS1E, designating the jurisdictional feature as a forested scrub-shrub that is semi-permanently flooded, and notes Pine Swamp Brook and the downstream pond extending to Harvard Terrace as PUBHx which denotes a fresh water unconsolidated bottom (mud, organics and silts) that was excavated (i.e.. man-made). Generally, the wetland boundaries are sharply distinct, marked by an abrupt rise in topography as poorly drained wetland soils quickly give rise to sandy well-drained soils. The overall wetland community exhibits palustrine seasonally flooded wooded swamp wetland vegetation, including:

Trees: Red Maple, shagbark hickory, swamp white oak.

Shrubs: Alder, highbush blueberry, spicebush, winterberry, Japanese barberry, sweet pepperbush, multiflora rose.

Herbaceous: Tussock sedge, sphagnum moss, cinnamon fern, sensitive fern, false hellebore, fringe-sedge, skunk cabbage.

The above is not an exhaustive list, but a sample of commonly encountered vegetation that characterizes the on-site wetland community. Representative photos of the site are attached below.

Soil Types

The soils identified on the site are a refinement of the Natural Resources Conservation Service (NRCS) Websoil survey. The soils onsite occur at surficial geology boundary of stratified outwash that covers the eastern side of the site ranging from fine sandy loams to loamy fine sands and the interface with the opposing dense glacial till and bedrock landscape that defines the western higher elevations on the site.

Wetland Soils

The wetland soils on the property are very poorly drained Timakwa and Natchaug mucks. These wetland soils consist of deep organics over stratified layers of sands and gravels. Inclusions of Raypol silt loams can be found along the wetland transitional zones and exhibit dense dark topsoil layer 6" underlain by 24" + of coarse loamy sand. These soils are derived from parent material of coarse loamy glaciofluvial and meltwater deposits.

Upland Soils

The upland soils that cover the farmland on the property are mapped and classified belonging to Agawam soil series. These well-drained fine sandy loams are commonly found the hillsides of relic outwash stream terraces. The soils associated with the higher elevations of the western limits of the property are mapped and classified as well-drained Hollis and Chatfield sandy loams. These soils are associated with shallow depth to ledge which can be a limiting factor for development. Lastly, minor inclusions of man-made Udorthent soils can be found along the peripheral of the property where disturbances from adjacent developments have encroached.

Rare Species Habitat

Consultation with the Connecticut Department of Energy and Environmental Protection Natural Diversity Data Base mapping indicates the site is not listed as providing critical habitat and there are no state records of known state-listed species. Additionally, because there are no impacts to either the wetland or the 100-foot upland review area, no impacts to wetland dependent wildlife are anticipated as a result of the proposed activities.

Vernal Pool Evaluation

I have been on-site throughout various times of the year including the peak vernal pool breeding season from the end of February through the beginning of May. Over the course of many site investigations extending from 2021 through 2025 I found no evidence of facultative or obligate vernal pool organisms such as but not limited to wood frog, spotted salamander, fairy shrimp or fingernail snails. It is my professional opinion that on-site wetlands are subject to routine inundation and includes fin-fish habitat which by definition excludes viable vernal pool habitat and sustainable vernal pool populations as a result of high predation of fish on amphibian populations.

Wetland Functions and Values

A wetland functional assessment was completed to assist in identifying impacts to the wetlands and the functions and services they provide. An evaluation of the wetlands functions and values was completed using the United States Army Corps of Engineers (USACE) Highway Methodology Workbook for Wetland Functions and Values: A Descriptive Approach, October 1993" ("Highway Methodology") and best professional judgement. This wetland methodology describes the wetland functions and values holistically for the project area.

The USACE Highway Methodology evaluates 13 functions and values assigned to wetlands which include:

1. Groundwater recharge/discharge (GWR/D)
2. Flood flow alteration (FFA)
3. Fish and shellfish habitat (F&SH)
4. Sediment/toxicant/pathogen retention (S&TR)

5. Nutrient removal/retention/transformation (NR&T)
6. Production export (PE)
7. Sediment/shoreline stabilization (S&S)
8. Wildlife habitat (WLH)
9. Recreation (REC)
10. Education/scientific value (ED/S)
11. Uniqueness/heritage (U/H)
12. Visual quality/aesthetics (VO/A)
13. Threatened or endangered species habitat (T&E)

The functions and values of the wetland system is summarized in Table 1. The *Highway Methodology* recognizes 13 separate wetland functions and values. The degree to which a wetland provides each of these functions is determined by one or more of the following factors: landscape position, substrate, hydrology, vegetation, history of disturbance, and size. Each wetland may provide one or more of the listed functions at significant levels. The determining factors that affect the level of function provided by a wetland can often be broken into two categories. The effectiveness of a wetland to provide a specified function is generally dependent on factors within the wetland whereas the opportunity to provide a function is often influenced by the wetland's position in the landscape as well as adjacent land uses. For example, a depressed wetland with a restricted outlet may be considered highly effective in trapping sediment due to the long residence time of runoff water passing through the system. If this wetland is located in gently sloping woodland, however, there is no significant source of sediment in the runoff therefore the wetland is considered to have a small opportunity of providing this function.

The following site specific factors are important to the functional assessment and are listed here to provide context to the later discussion of functions and values.

1. Connecticut protected species are not known to be present on the site per the June 2024 update of the CTDEEP NDDB Mapper.
2. The wetland has glaciofluvial soils around its edges.
3. The wetland is part of a large and broad wetland system containing several wetland types.
4. Fish populations are known to be present in the adjacent downstream man-made impounded segment of Pine Swamp Brook.
5. The proposed development and all activities are located over 100 feet + away from all wetland boundaries.

Wetland Functions and Values	Groundwater Recharge/Discharge	Sediment/Shoreline Stabilization	Floodflow Alteration	Fish & Shellfish Habitat	Sediment/Toxicant/ Pathogen Retention	Nutrient Removal/Attenuation	Production Export	Wildlife Habitat	Recreation	Educational/Scientific Value	Uniqueness/Heritage	Visual Quality/Aesthetics	Listed Species Habitat
WETLAND #1	P	S	P	S	S	S	S	P	S	S	S	S	U

Suitability
P = principal function
S = secondary function
U = function unlikely to be provided at a significant level
N/A = not applicable or unknown

Table:1 Wetland Functions and Values – MILITARY HIGHWAY – GALES FERRY DEVELOPMENT

Groundwater recharge and discharge is a primary function of the wetland system. The wetland shows evidence of variable water levels, and while recharge / discharge of groundwater is a principle function, it is not anticipated that the proposed development will impact the groundwater levels.

Moreover, the Pine Swamp Brook wetland complex was identified to have the additional following principle functions:

1. Flood-flow alteration: the wetland is able to detain large quantities of water during storm and flooding events.

2. Fish and shellfish habitat, there are known fish presence downstream of the project area.

3. Wildlife Habitat: Wetland dependent species such as beaver and waterfowl use of the wetlands.

The proposed activities will not negatively or adversely impact the functionality of the onsite wetlands as described above. These listed functions can be maintained and promoted by maintaining overall on-site drainage patterns, demonstrating a compliant septic system, maintaining erosion and sedimentation controls through construction, stabilizing the bare ground with final vegetative cover and adherence to permit conditions.

Impact Assessment

The site development plans have been designed to provide a feasible residential development while providing a reasonable use of the property with minimal impact on the wetland resources and the environment. The proposed development will be

constructed with no direct impacts to either the regulated jurisdictional wetlands or the 100-foot upland review area.

Short-term impacts during construction can be managed and reduced through measures to control sedimentation and erosion and adherence to BMPs. These controls as well as compliance with permit approvals will ensure that no long-term adverse effects will impact on the natural capacity of the wetlands or detract from the functions and services they currently provide.

Indirect Impacts

Indirect or secondary impacts to a wetland or watercourse can occur as a result of activities outside of the wetlands or watercourses. These impacts can be either short-term (*construction phase*) or long-term (*i.e., change in drainage patterns / whole-sale clear cutting)* and are typically associated with erosion and sedimentation during construction, removal or disturbance of vegetation in adjacent upland areas, alteration of ground / drainage patterns that could affect the flow regime of a watercourse, and the discharge of degraded or insufficiently treated surface or groundwater, which may adversely impact the water quality of the regulate resource.

The potential for any of these indirect impacts to occur at the site as a result of the development depends on the quality of the regulated resources, the sensitivity to said resources, the resource's physical and ecological characteristics, and the degree to which those resources provide recognized functions and values, and the nature of the activities proposed in areas surrounding or which contribute flow (either surface water or groundwater to the regulated resource). These potential impacts are described in detail below.

Erosion and Sedimentation

Short term impacts will be mitigated with standard construction best management practices and adherence to the erosion and sediment control plan. The development respects the watershed hydrology and will not direct discharge to the wetland features without proper treatment. The proposed site plan includes an erosion and sedimentation control plan designed following the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control. Silt fencing, anti- tracking pads, temporary sediment basins, traps, and other E&;S measures are proposed to control sediment from construction activities.

The risk for potential adverse impacts from erosion and sedimentation is considered low to moderate because 1.) A detailed erosion and sediment control plan has been prepared, 2) the site's in-situ undistrubed soils are for the most part low to moderately erosive. 3) the site is vegetated, and topography is easily managed, and 4) there is no need for large scale tree removal to keep the building area envelope to a manageable size. Therefore, it is my professional opinion that with coordination and watchful monitoring and maintenance of erosion and sediment controls until construction is completed and restoration activities have stabilized the ground conditions there will be no anticipated adverse impacts to the regulated resources resulting from sedimentation discharging from the development of the parcel as proposed.

Vegetation Removal and Habitat Loss

Habitat loss associated with land clearing is a consequence of land development which has the potential of impacting wetlands and watercourses. The bulk of the activities and proposed apartment buildings are slated to be positioned over the existing open field habitat. As such no large scale wholesale clearcut or significant landscape conversion is required to facilitate the development. The proposed development will keep clearing limits to a minimum by clearing what is physically needed for facilitating the construction site improvements and associated appurtenances. The conversion of the vegetation cover within the development envelope will not change or diminish the ecological integrity of the upland review area and/or the wetland community. The site clearing planned on the western side of the Project site and grading activities will not de-water nor flood the nearby wetland or alter surface water drainage patterns in a significant manner that exacerbates erosion or causes downstream issues.

Impacts to Wetland Hydrology

The proposed site improvements will not impact overall drainage patterns. The site improvements will not increase the potential for downstream flooding. The stormwater management system for this site has been designed utilizing best management practices (BMPs) to meet or exceed the stormwater management standards in accordance with CT DEEP 2024 Connecticut Stormwater Quality Manual and the Ledyard Zoning Regulations. The proposed project will provide; pollutant reduction by providing via treatment of the water quality volume and water quality flows through stormwater BMPs; peak runoff attenuation through use of stormwater BMPs; and conveyance protection through structural stormwater BMPs.

All runoff from proposed impervious surfaces will be conveyed to an water quality system for detention and treatment. The treated discharge of this stormwater will discharge to the upland review area 100-feet away from the wetland boundary and will beneficially infiltrate in the upland sandy soil recharging the nearby wetland resource baseflow. The proposed development will not holistically alter surface or subsurface flow conditions or directions in a substantially impactful way.

The site has been designed with a conventional drainage system. Catch basins will capture and convey stormwater runoff, via an underground pipe system, to detention and retention basins. Additionally, the proposed drainage allows for stormwater to sheet flow over paved parking areas, through an infiltration trench with level lip spreader, into a vegetated filter strip. All rooftop runoff will be directed to stormwater basins as well.

The runoff volume and pollutant reduction criterion are designed to preserve pre-development hydrology and pollutant loads to protect water quality and maintain groundwater recharge. The proposed stormwater management as designed will provide a decrease in peak rates of runoff for the 2-, 10-, 25- and 100-year design storm events in accordance with the 2024 Connecticut Stormwater Quality Manual and the Ledyard Zoning Regulations. The proposed development results in an improvement from the historic use, improves water quality, and reduces peak rates of stormwater runoff from

the subject site when compared to pre-development conditions for the analyzed storm events.

The project engineer has certified for the record that the proposed stormwater management system as discussed herein and shown on the referenced plans is appropriate for the proposed development on the subject site, is consistent with Town and State requirements, and should not pose any detrimental impacts to the surrounding environment.

Summary

The proposed activities are not likely to have a significant effect on the environment for the following reasons:

1. The proposed activities have no direct disturbance to either the wetland or the 100-foot upland review area and as such the project does not substantially change or negatively inhibit the natural dynamics of the wetland system.

2. The proposed activities have no physical impact to the wetlands and the project will maintain the 100-foot upland review area in its existing pre-development condition, therefore the project will not diminish the capacity of the wetland or upland review area.

3. The erosion and sediment controls will protect the environment from the proposed activities and if appropriately installed, monitored and maintained will not likely cause or have the potential to cause substantial turbidity, siltation or sedimentation in a wetland or watercourse.

4. The proposed stormwater treatment system will collect and renovate stormwater quality and volume generated from the site development and therefore is unlikely to cause or have the potential to cause pollution of the wetland. Additionally, the project is providing a local and state compliant sewage treatment system which by approval is required to meet or exceeds health code requirements which will further eliminate pollution.

5. The wetland features are not unique, nor do they provide demonstrable scientific or educational value.

The 1997 guidance document published by the Connecticut Department of Environmental Protection *Guidelines Upland Review Area Regulations - Connecticut's Inland Wetlands & Watercourses Act* provides the rationale for a 100-ft. upland review area. It states that "*the DEP believes that a 100 foot-wide upland review area is sufficient for reviewing construction activities in areas surrounding wetlands or watercourses because most of the activities which are likely to impact or affect these resources will be located in that area.*" Similar scientific evidence supports the establishment and maintenance of a minimum 100 foot vegetated buffer to protect inland wetlands from non-point source pollution impacts.

In considering feasible and prudent alternatives, the current proposal respects the integrity of the environment, requires no physical impact to either the wetland resources or adjacent 100-foot upland review area and implements best management practices that will protect the regulated areas. It is the most feasible and prudent alternative for the development of this property, giving due consideration to balancing the protection of the inland wetlands and watercourses while fostering reasonable development and use of the site for residential use.

In my professional opinion there will be no significant adverse impacts resulting from the development of the project as currently proposed. The design has avoided all wetland impacts and reduced environmental impacts by:

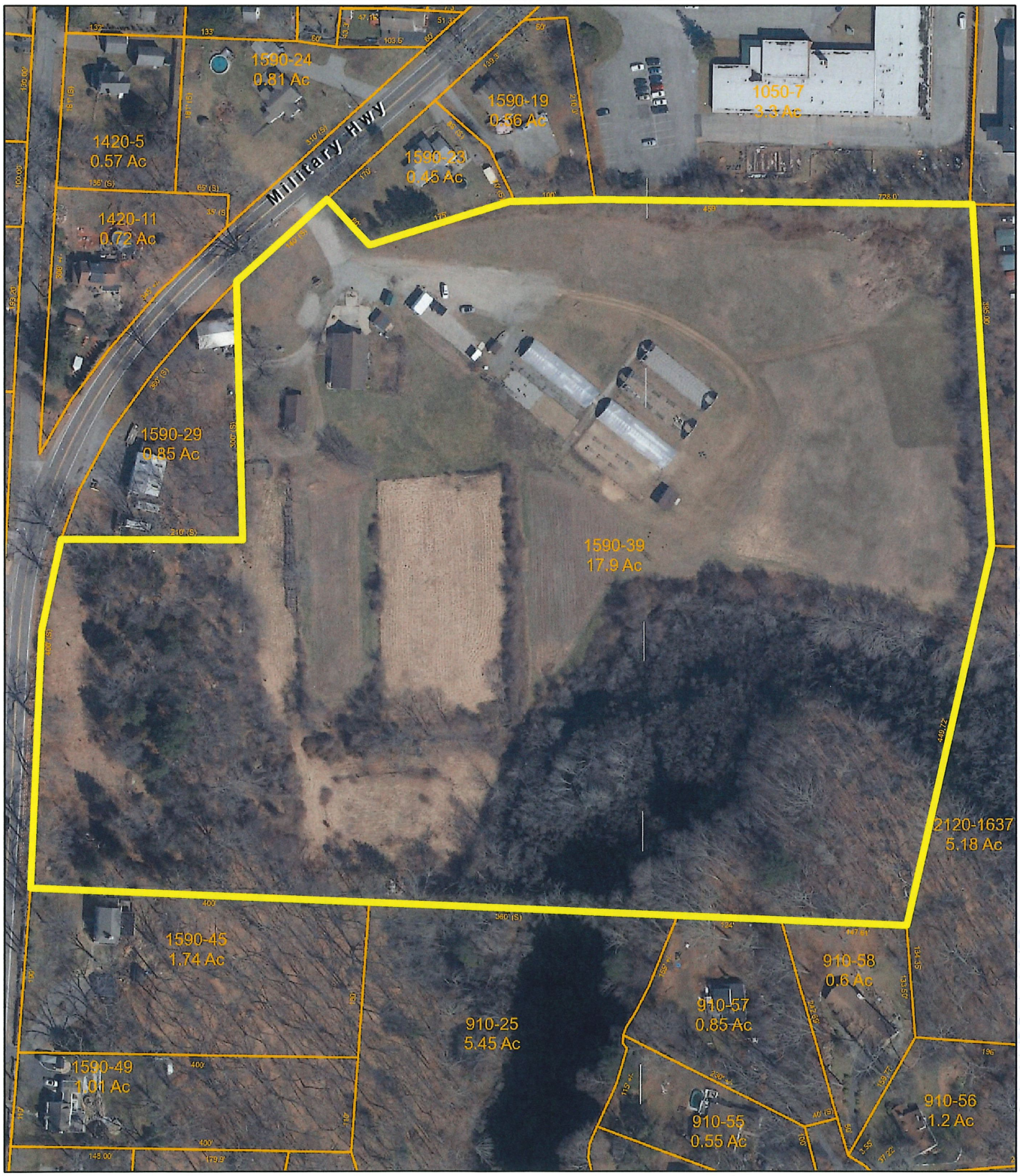
1. Avoiding direct impacts to both the wetland and 100-foot upland review area.
2. Providing and maintaining erosion and sediment controls during construction.
3. Providing stormwater management and treatment.
4. Commitment to adhering to permit conditions and construction industry standard BMPs.
5. Compliance with all regulatory standards.
6. The plans are consistent with and satisfy the statutory factors for consideration provided by Section 22a-41 of the Connecticut General Statutes; and
7. Are consistent with and satisfy the criteria for consideration provided by the Town of Ledyard Inland Wetlands and Watercourses Regulations dated January 25, 2021.

If you have any questions or comments, please do not hesitate to contact me at itcole@gmail.com or (860) 514-5642.

Sincerely,

Ian T. Cole
Professional Registered Soil Scientist
Professional Wetland Scientist #2006

ATTACHMENTS
SITE LOCUS
USFWS NWI
NRCS SOIL MAP
SITE PHOTOS


1590-24
0.81 Ac
1590-19
0.36 Ac
1050-7
3.3 Ac
1420-5
0.57 Ac
1590-23
0.45 Ac
Military Hwy
1420-11
0.72 Ac
1590-29
0.85 Ac
1590-39
17.9 Ac
2120-1637
5.18 Ac
1590-45
1.74 Ac
910-58
0.6 Ac
910-57
0.85 Ac
910-25
5.45 Ac
1590-49
1.01 Ac
910-56
1.2 Ac
910-55
0.55 Ac

Soil Map—State of Connecticut

Map Scale: 1:2,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 21, Sep 7, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 20, 2019—Mar 27, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	3.2	15.1%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	12.6	59.1%
75C	Hollis-Chatfield-Rock outcrop complex, 3 to 15 percent slopes	4.4	20.8%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	1.1	5.1%
Totals for Area of Interest		**21.4**	**100.0%**

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands

February 15, 2025

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

SITE PHOTOS

19-29-39

MILITARY HIGHWAY

LEDYARD / GALES FERRY

CONNECTICUT

Photo 1: General conditions of the wetland habitat along the flagged wetland boundary.

Photo 2: General conditions of the 100-Foot Upland Review Area.

Photo 3: Downstream impounded segment of Pine Swamp Brook at Harvard Terrace

Photo 4: Site entrance and Sweet Hill Farms structures slated to be removed.

Photo 5: General conditions of the sandy fields slated to host the apartment buildings., view looking east.

Photo 6: Existing conditions of field to be developed, view looking west

Photo 7: Area slated to host the associated parking lot and stormwater detention.

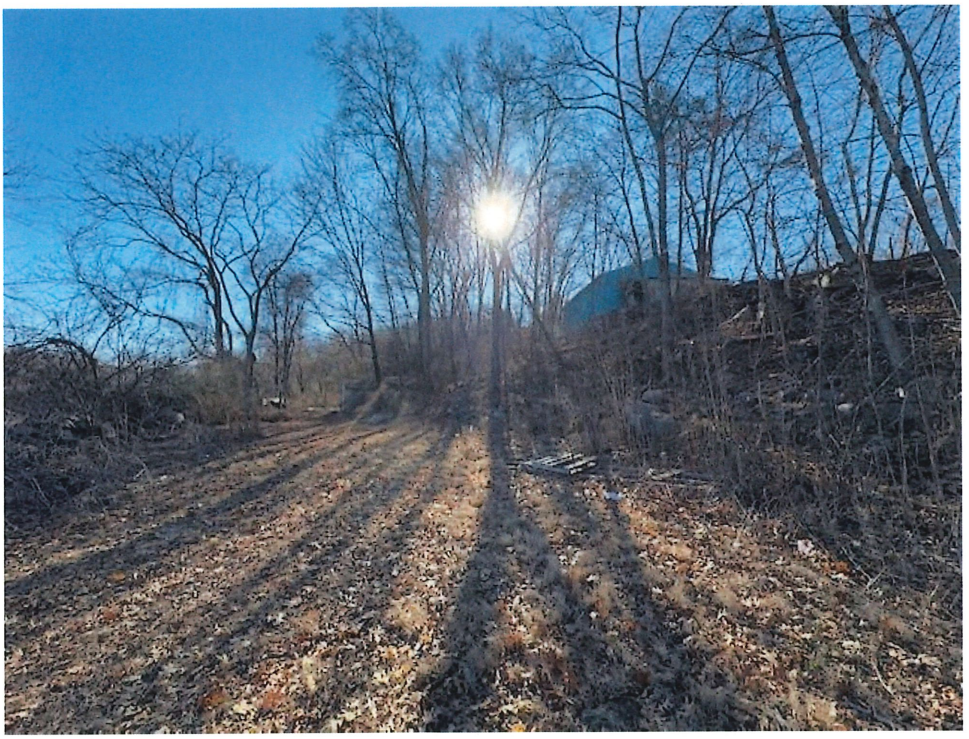


Photo 8: Example of the wooded hillside which will have the grades cut down to provide a level parking lot.

IAN T. COLE, LLC
DELINEATIONS WITHOUT DELAY
Professional Soil Scientist / Professional Wetland Scientist

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Middletown CT 06457
860-514-5643 • itcole@gmail.com

PROFESSIONAL SUMMARY AND ACCOMPLISHMENTS

I have over 24 years of professional environmental experience throughout New England and the Mid-Atlantic states. I have professional certifications as a Registered Professional Soil Scientist (*Society of Soil Scientists of Southern New England*) and Certified Professional Wetland Scientist (#2006- *Society of Wetland Scientists).* I have over two decades of experience delineating wetlands and developing site-specific soil survey assessments. I have significant experience identifying and mapping vernal pools, including cryptic and range restricted vernal pool indicator species including the ability to locate and identify all New England's native amphibians and reptiles.

Over the course of my career I have assisted and lead wetland studies and wildlife studies throughout New England. I routinely support projects with the processes and documentations required to work under Scientific Collectors Permits (including handling and trapping) of state-listed wildlife. I am responsible for the management, coordination and submittal of applications and subsequent state-listed species studies for a range of projects for local commercial and residential development projects. I have extensive experience in species research, plant phenology and am familiar with nuances of listed species and close associations with habitat requirements and time of year survey windows.

Delineations without Delay provides consulting services in the areas of biological, wetland, and soil sciences. In addition to the identification, description, and classification of natural resources, the firm also provides functional evaluation of wetlands and other biological systems, guidelines for mitigation of potential adverse impacts, and permit support through expert testimony and public representation. Services provided revolve around the impact of human activities on terrestrial, wetland, aquatic, and marine resources.

In addition to my biological science foundation , I have a strong working knowledge of local, state and federal environmental permitting process including but not limited to: United States of Army Corps of Engineers (ACOE) (404, 408 Section 10), Connecticut Department of Energy and Environmental Protection (CTDEEP)(401, NDDB, SWPCP), Massachusetts Department of Environmental Protection (MassDEP), as well as the review processes of Massachusetts Environmental Policy Act (MEPA), National Historic Preservation Act (NHPA) -Section 106, and Endangered Species Act (ESA) -Section 107, and Tribal consultations (THPO). I am accustomed to the fast-paced working environment and demands of planning and construction schedules and routinely navigate and provide resolution to complex issues that may arise during project planning keeping projects on critical path forward.

Ian T. Cole • 860-514-5642 • itcole@gmail.com

PROFESSIONAL EXPERIENCE

Ian Cole, LLC, Middletown, CT

Lead Soil Scientist: May 2015-Present

Expert in Wetland Delineation and Soil Science
Rare, Threatened and Endangered species surveys – expert in Botanical, Avian, Amphibian & Reptile focused studies, coordination and participation in invertebrate species.
Manage multiple licensing and permitting consultants to provide environmental services
Develops strategies and permitting approach to secure required environmental permits
Routinely consults with regulatory agencies on a range of permitting (404, 401, 106, 107)
Oversees environmental compliance and mitigation to support construction projects
Supports cross discipline project team including engineering, survey, outreach, planning and vegetation management
Represents projects at public hearings, open houses, conservation meetings.

Kleinschmidt Associates, Essex, CT
Project Scientist: April 2008-May 2015

Project manager responsible for scope, schedule and budgets
Technical lead for terrestrial, wetland and RTE studies
Oversee and mentor junior staff
Wetland mitigation planning and design
FERC compliance liaison for relicensing of hydroelectric facilities
Licensing and permitting specialist

CME Associates, Woodstock, CT
Wetland / Soil Scientist: May 1999 - April 2008

Wetland delineation & evaluations
Wildlife, vernal pool, and vegetation surveys
Soil evaluations and mapping
Supported environmental remediation, civil engineering and land survey divisions

EDUCATION

University of Rhode Island, Kingstown, RI
Bachelors of Science, Environmental Science and Management 1999

Focus on wetland and soil science
Completed additional graduate coursework in wetland and soil studies (24 credits)

TECHNICAL SKILLS

Hands on experience with remote data loggers and software
CT Safe Boating Certificate & familiarity with a range of off-road vehicles
Expert in field identification of wetlands, soils, wildlife, botanical, vernal pool resources.

ASSOCIATIONS

Professional Member Soil Science Society of Southern New England
Society of Wetland Scientist - Certified Professional Wetland Scientist
Connecticut Association of Wetland Scientist
Former commission member of The Town of Ledyard IWWC agency 2005-2012