

INLAND WETLANDS
COMMISSION
Telephone (203) 563-0180
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TOWN HALL
238 Danbury Road
Wilton, Connecticut 06897

APPLICATION FOR A SIGNIFICANT REGULATED ACTIVITY

For Office Use Only:

Filing Fee \$ _____	WET# _____
Date of Submission _____	Wilton Land Record Map# _____
Date of Acceptance _____	Volume # _____ Page # _____
	Assessor's Map # _____ Lot# _____

APPLICANT INFORMATION:

Applicant Old Driftway LLC
Address 36 Sinal Hill Road
Wilton, CT 06897
Telephone 917 609 1687
Email mnogid@yahoo.com

Agent (if applicable) Aleksandra Moch
Address 44 Lewelyn Road
Stamford, CT 06902
Telephone 203 550 9373
Email aleksandra_moch@yahoo.com

PROJECT INFORMATION:

Property Address 0 Mountain Road (Lot 25-2)
Acres of altered Wetlands On-Site 0.07
Linear Feet of Watercourse 0
Linear Feet of Open Water 169 feet
Sq. Ft. of proposed and/or altered impervious coverage _____

Site Acreage 2.83
Cu. Yds. of Material Excavated _____
Cu. Yds. of Material to be Deposited _____
Acres of altered upland buffer _____
Sq. Ft. of disturbed land in regulated area _____

APPLICATION REQUIREMENTS:

Is The Site Within a Public Water Supply
Watershed Boundary? NO ☒ YES* ☐

Is The Site Within 500 Feet of a Town Boundary?
NO ☒ YES* ☐

* If the answer is yes, then the applicant is responsible for notifying the appropriate water authority and/or adjoining community's Wetlands Department. Instructions for notification are available at the office of the commission.

Project Description and Purpose: Construction of a single-family residence with a driveway (plus 1,300ft long access way),
a swimming pool, a pool house, a storm water detention and a septic system (for more details see the environmental report)

In addition, the applicant shall provide eleven (11) collated copies of the following information as well as an electronic submission via email to mike.conklin@wiltonct.org & elizabeth.larkin@wiltonct.org **

- ☒ A. Written consent from the owner authorizing the agent to act on his/her behalf
- ☒ B. A Location Map at a scale of 1" = 800'
- ☒ C. ***A Site Plan showing existing and proposed features at a scale not to exceed 1" = 40'*** accurate to the level of a A-2 property and T-2 topographic surveys
- ☒ D. Sketch Plans depicting the alternatives considered
- ☒ E. Engineering Reports and Analysis and additional drawing to fully describe the proposed project
- ☒ F. Sedimentation and Erosion Control Plan, including the Construction Sequence
- ☐ G. Names and addresses of adjoining property owners
- ☒ H. A narrative describing, in detail
 - a. the proposed activity
 - b. the alternatives considered
 - c. impacts
 - d. proposed mitigation measures
- ☒ I. Soils Report prepared by a Certified Soil Scientist and Wetlands Map prepared by a Registered Land Surveyor
- ☒ J. A Biological Evaluation prepared by a biologist or other qualified professional
- ☒ K. Description of the chemical and physical characteristics of fill material to be used in the Regulated Area
- ☒ L. Description and maps detailing the watershed of the Regulated Area
- ☒ M. Envelopes addressed to adjacent neighbors, the applicant, and/or agent, with **certified** postage and no return address

****Application materials shall be collated and copies of documents more than two pages in length shall be double sided.**

See Section 7 of the Wetlands and Watercourses Regulations of the Town of Wilton for a more detailed description of applications requirements.

The Applicant or his/her agent certifies that he is familiar with the information provided in this application and is aware of the penalties for obtaining a permit through deception, inaccurate or misleading information.

By signing this application, permission is hereby given to necessary and proper inspections of the subject property by the Commissioners and designated agents of the Commission or consultants to the Commission, at reasonable times, both before and after a final decision has been rendered.

Applicant's Signature: _____ Date: 10/24/23

Agent's Signature (if applicable); A. Moch Date: 10/24/23

ALEKSANDRA MOCH

SOIL & WETLAND SCIENTIST
CERTIFIED PROFESSIONAL IN SOIL EROSION
AND SEDIMENT CONTROL
GEOLOGIST/HYDROGEOLOGIST
LANDSCAPE DESIGNER



October 23, 2023

To: Michael Conklin, Director of Environmental Affairs

From: Aleksandra Moch, Environmental Consultant

Re: 0 Mountain Road – resubmitted application

As per the directions given to us by the Commission and Staff we are re-submitting our application for the above site. In this new application we would like to include the material which was provided for the last meeting with exception of the access drawings. These drawings were revised and submitted on October 22, 2023. These maps showing: the entire driveway, southern section of the driveway and northern section of the driveway are the most current ones which should replace the ones received in previous submissions.

On October 22, 2023 were also submitted copies of deeds and associated map. Please add them to the new file.

We are also including a new application form with new dates and revised third page of the environmental assessment report which corrects the ownership of the access.

Thank you for all your help. We are looking forward to working with you on the project resolution.



ENVIRONMENTAL ASSESSMENT OF THE WETLANDS & WATERCOURSES

LOCATED AT

MOUNTAIN ROAD (LOT #25-2) IN WILTON, CT



PREPARED BY:

ALEKSANDRA MOCH

SOIL & WETLAND SCIENTIST
GEOLOGIST/HYDROGEOLOGIST
LANDSCAPE DESIGNER
CPESC

JULY 30, 2023

revised

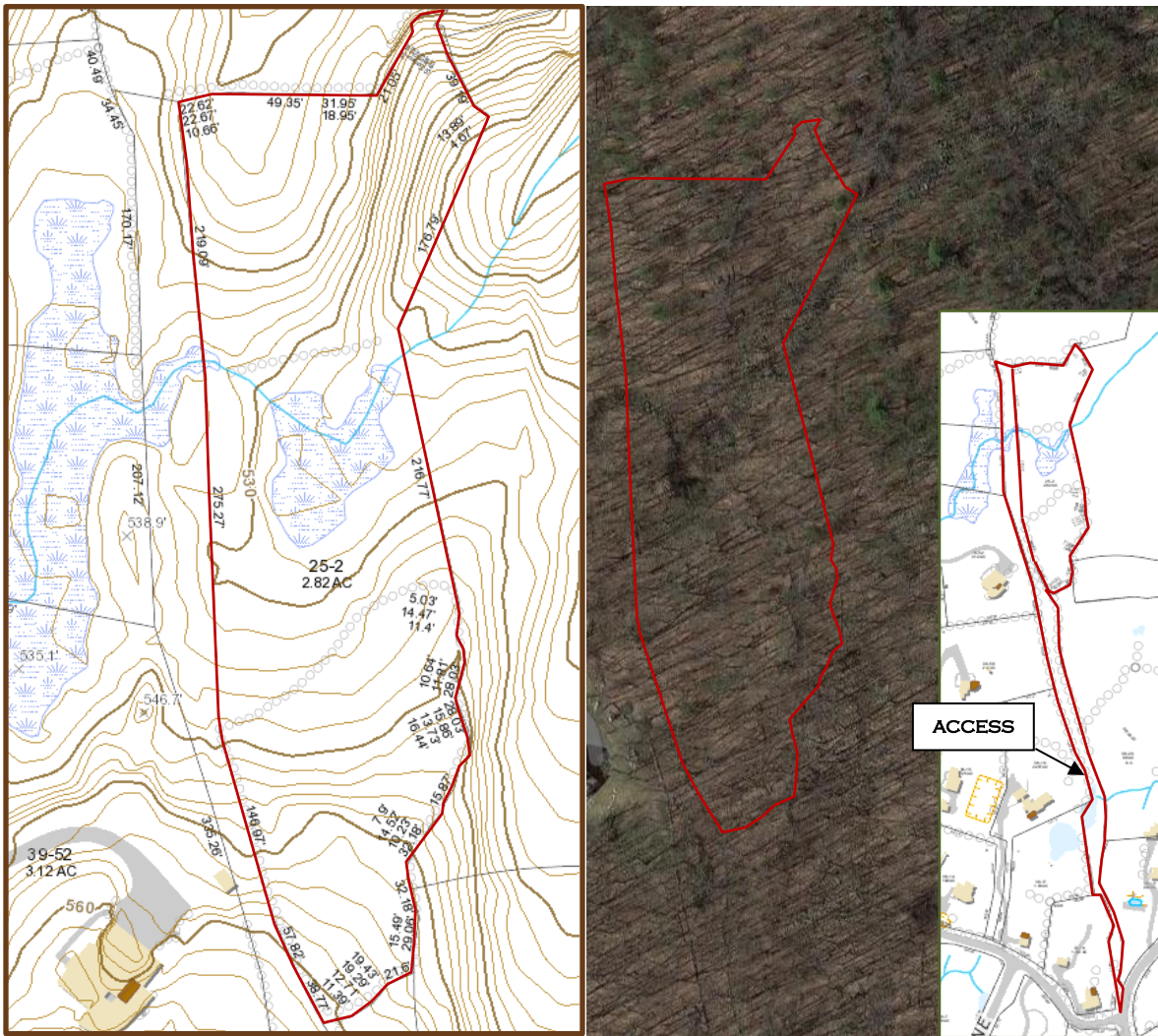
OCTOBER 23, 2023

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LOCATION AND SITE PHYSICAL CHARACTERISTICS

The property is a vacant lot with an access via a right-of-way connecting the lot to Mountain Road. This 2.82-acre fish-shaped site consists of a vacant wooded lot. The area on both sides of the lot slopes towards a wetland corridor bisecting the area. The entrance to the accessway is located on the northern side of the intersection of Indian Hill Road and Mountain Road. The access way follows a historic cow path used in the past by farmers. The parcel is situated within R-2 residential zone and the Norwalk River Watershed. The western neighborhood consists of a single-family development, while the eastern and the northern property line is surrounded by a wooded terrain owned by the State.



New England GEO Systems

Google, aerial photograph 2023.

WETLAND/WATERCOURSE AREAS

The wetland/watercourse areas were delineated by Aleksandra Moch, Soil and Wetland Scientist on March 10, 2023. The areas flagged in the field, consist of two different

systems. The first of them crosses the access way and consists of a pond and an intermittent watercourse. The second system bisects the property and contains a red maple swamp with a perennial stream cutting through the area.

The wetland/watercourse system located within the accessway is a corridor initiated by a pond located off-site to the west. This man-made pond is bordered by an old farmer's road. The road dams the pond placing it topographically higher than a smaller pond located below the road. The lower pond is located within the access way leading to the lot. The lower pond overflows into an intermittent watercourse conveying the flow off-site to the east. This wetland/watercourse system is nestled within a wooded area.

The wetland/watercourse corridor located at the site is initiated at the southwest by two springs feeding intermittent stream channel. This initially intermittent channel develops perennial flow after exiting a red maple swamp located off-site, along the western property line. At the site the stream continues through the area of another red maple swamp before runs off-site in a single channel. This wetland/watercourse system is also located within a large wooded area.

SOILS AND HYDROLOGY

Wetland soils at the site were characterized as consisting of Ridgebury, Leicester, and Whitman that are extremely stony. This soil series occurs in depressions and/or drainage ways. These poorly drained soils are underlined by a restrictive layer (hardpan) at varying depths. Approximately 9% of the surface is covered with cobbles, stones or boulders. The parent material for these soils is a coarse-loamy melt-out till derived from granite and/or gneiss. The slopes in this area range from 0 to 5% and the depth to the groundwater table can be found anywhere between 0 and 18 inches. No ledge outcrops were noticed at the site.

The area is underlined by a ledge formation consisting of gneiss interrupted by granitic and pegmatitic intrusions. Granite and pegmatite are igneous rocks formed from molten rock originated from deep Earth. Gneiss is a metamorphic rock which started out as granite or sandstone and it was subjected to high heat and/or pressure and/or hot mineral-rich fluids. Ledge at the site is not limited to the deeper layers, there is a large number of boulders densely covering the ground. Among them are super large erratics. Erratics as well as smaller stones/boulders were transported to the site by ice from elsewhere during the last glaciation. The glacial deposit is enhanced by the stone and boulders originating from the erosion of the local ledge. Ledge outcrops are present within the northeastern section of the site and along the accessway.

Wetland hydrology in this area relies on natural springs feed by groundwater. Rain and melted snow infiltrate into the soil rising the groundwater level which then intercepts the soil at the toe of the slope at a couple of locations yielding surficial flow feeding local streams and wetlands. Ground water also controls the wetness of the swamp and the amount of water detained in the pond.

VEGETATIVE COVER

Site investigation performed on March 10, 2023 and July 14, 2023 focused on wetland/watercourse areas. The pond was examined first. The pond sits within an elongated depression which expands between an old farmer's road to the west and a cow path with a dry-stone wall stretching to the east. The edges of the pond are supported by wooded vegetation which provides a deep root system stabilizing the edges. The canopy offers shade and moderates the water temperature during the summer months. Dense cover helps to filter storm water shedding from the surrounding upland areas.

Vegetated cover found with the edge of the pond consisted of:

- Trees: Red Maple (*Acer rubrum*), Tulip tree (*Liriodendron tulipifera*) Sweet birch (*Betula lenta*), Yellow birch (*Betula alleghaniensis*) Black tupelo (*Nyssa sylvatica*), American elm (*Ulmus americana*), Swamp oak (*Quercus palustris*), Norway maple (*Acer platanoides*), Eastern hemlock (*Tsuga canadensis*) and American beech (*Fagus grandifolia*). American beeches have been suffering from beech leaf disease which stripped them off their leaves.
- Shrubs: Sweetpepper bush (Sweet pepper bush), Elderberry (*Sambucus*), Muliflora rose (*Rosa multiflora*) Burning bush (*Euonymus alatus*), Japanese barberry (*Berberis thunbergia*), and Allegheny blackberry.
- Vines: Virginia creeper (*Parthenocissus quinquefolia*), Poison ivy (*Toxicodendron*) and Wisteria.
- Herbaceous ground cover: Skunk cabbage (*Symplocarpus foetidus*), Japanese knotweed (*Reynoutria japonica*), Wood aster (*Eurybia* spp.), Japanese stiltgrass (*Microstegium vimineum*), Christmas fern (*Polystichum acrostichoides*), Jack-in-the-pulpit (*Arisaema triphyllum*), variety of mosses, Trillium (*Melanthiaceae* spp.), NY fern (*Amauropelta noveboracensis*), Cinamon fern (*Osmunda cinnamomea*) and Eastern star sedge (*Carex radiata*).

The red maple-hardwood swamp detected in the central portion of the site supports a variety of vegetated cover. The top of this well-vertically stratified forest starts with tree canopy underlined by shrubby layer and finished at the bottom with herbaceous ground cover. The smallest plants found at the site include mosses, lichens and duckweed floating in the water. The richness and diversity of this plant assembly is driven by varying depths of water and seasonal changes. The wetness in the area is controlled by the presence of hollows (micro-depressions) and hummocks (mounds) typical to the swamp setting. The central portion of the swamp supports a perennial flow confined to a single channel cutting through the area. The outer areas have their micro-depressions seasonally flooded, while the hummocks and the edges of the swamp exhibit a varying level of saturation and may even dry periodically. The swamp is located over a slightly sloping area which supports steady flow, moderates flooding and keeps a consistent water level throughout the season.

Red maple swamp located at the site supports a deciduous wetland forest associated with a sparse understory growth dominated by Space bush, Sweet pepperbush, viburnums and dogwoods. Skunk cabbage and a variety of mosses grow within the hollows while grasses and sedges prefer drier areas of hummocks. The hydrologic regime and the water/soil chemistry determines the variety of species thriving in this environment. The duration and frequency of flooding make red maple dominate the area as one of not many trees tolerating the wetness. Yellow birches, and swamp oaks are more sensitive to flooding so they grow along the edges or over the hummocks where flooding is less severe and short in duration.

Plant species dominating the area of the swamp consist of:

- Trees: Red Maple (*Acer rubrum*), White ash (*Fraxinus americana*), Shagbark hickory (*Carya ovata*), (Tulip tree (*Liriodendron tulipifera*)) Sweet birch (*Betula lenta*), Yellow birch (*Betula alleghaniensis*) Black tupelo (*Nyssa sylvatica*), American elm (*Ulmus americana*), Swamp oak (*Quercus palustris*), Norway maple (*Acer platanoides*), Eastern hemlock (*Tsuga canadensis*), Pignut hickory (*Carya glabra*) and American beech (*Fagus grandifolia*).
- Shrubs: Sweetpepper bush (Sweet pepper bush), Arrowwood viburnum (*Viburnum dentatum*), Gray dogwood (*Cornus racemosa*), Spice bush (*Lindera benzoin*), Multiflora rose (*Rosa multiflora*) Burning bush (*Euonymus alatus*), Japanese barberry (*Berberis thunbergia*), Highbush blueberry (*Vaccinium corymbosum*), Swamp azalea (*Rhododendron viscosum*), Common winterberry (*Ilex verticillata*), and Buttonbush (*Cephalanthus occidentalis*).
- Vines: Virginia creeper (*Parthenocissus quinquefolia*) and Poison ivy (*Toxicodendron*).
- Herbaceous ground cover: Skunk cabbage (*Symplocarpus foetidus*), Sensitive fern (*Onoclea sensibilis*), Wood aster (*Eurybia* spp.), Japanese stiltgrass (*Microstegium vimineum*), Christmas fern (*Polystichum acrostichoides*), Jack-in-the-pulpit (*Arisaema triphyllum*), variety of mosses, NY fern (*Amauropelta noveboracensis*), Lady fern (*Athyrium filix-femina* ssp.), Clearweed (*Pilea pumila*), Smartweed (*Persicaria lapathifolia*), Cudweed (*Gnaphalium*), Common blue violet (*Viola sororia*), Spotted touch-me-not (*Impatiens capensis*), Holbers leaf tearthumb (*Persicaria arifolia*), Tall meadow rue (*Thalictrum pubescens*), Tussock sedge (*Carex stricta*), Bladder sedge (*Carex intumescens*), Cinamon fern (*Osmunda cinnamomea*), and Eastern star sedge (*Carex radiata*).

WETLAND/WATERCOURSE HABITATS

Similarly, to plant inventory, wildlife study was performed on March 10, 2023 and July 14, 2023. The work included evaluation of plant communities, their structure and stratification, water availability, soil types, presence of cavities, woody debris, boulders, and other natural features. Occurrence of wildlife was determined by visual observations, listening to calls, locating wildlife tracks, and detecting other signs revealing wildlife

presence. The netting done within the pond area provided evidence to classify the pond as a vernal pool. Based on the presence of indicator species of wood frog eggs observed in March and tadpoles found within the water column in July. In addition, the spotted salamander larvae were seen in the pond in July.

Two wetland/watercourse areas identified within the subject site (vernal pool and red maples swamp) are classified as palustrine ecosystems.

Vernal pools are shallow wetlands which form in winter and early spring from snow melt and rainfall. These shallow depressions are also being supported by ground water. In case of the pond located within the access way, the water stays throughout most of the year making it a semi-permanent pool. The success of this pool is ensured by the lack of perennial stream feeding the area; therefore, no fish presence.



A panoramic view of the vernal pool from the east.

The vernal pool is nestled within a low-lying area. A larger permanent pond is located to the west above a farmer's road separating both watercourses. The eastern surrounding drops down steeply as soon as it passes the cow path. The overflow from the vernal pool enters the slope forming a deeply eroded channel cutting through an opening in a stone wall running along the eastern edge of the cow path. The stream heads downslope to a small wetland located off-site. Like the farmer road, the cow paths had not been used for a long time. Over time the farmer's road had overgrown with shrubs and trees while the cow path stays clear of vegetative cover. The edges are dominated by Burning bush taking advantage of sun light penetration along the clearing. It is unclear how the ponds formed. It appears the upper pond (off-site) is man-made, while the lower pond (vernal pool) appears to use the naturally formed depression which most likely was an old wetland which overflow became restricted by the existing old access ways.

Because of the ephemeral nature of the vernal pool cycle, vertebrate and invertebrate organisms residing in it must complete key stages in their life cycles, particularly larval stages, during the spring/early summer. The species include aquatic life found in perennial ponds except for fish and species which are limited to the vernal pool environment (indicator species). The indicator species found within the vernal pool at the site include Spotted Salamander (*Ambystoma maculatum*) and Wood Frog (*Rana sylvatica*). These

species dependent on this vernal pool for their reproduction, including courtship, egg fertilization and deposition, larval development, and metamorphosis to the terrestrial stage.

New generations are bound to the same pool for their future reproduction. Juvenile wood frogs and spotted salamanders disperse through the woodland. The new population does not travel far and utilize areas close to the pool which provides the shelter and moisture required for their survival. Nearby wetland edges and intermittent streams are their primary choices.

Mature amphibians travel long distances from the vernal pool. Spotted salamander's movement ranges up to 386ft. while wood frog can reach distance up to 3835ft. (Windmiller 1996, Semlitsch 1998; Berven and Grudzien 1990). MCA Technical Paper Series No. 5 – *Best Development Practices Conserving Pool-Breeding Amphibians in Residential and Commercial Development in the Northeastern US* recognizes the need for vernal pools protection which includes the terrestrial areas surrounding the pool. The surrounding had been divided into 100-foot vernal pool envelope and 750 feet wide area of critical terrestrial habitat. The reference recommends excluding development and minimizing disturbance within the vernal pool envelope and limiting development within the critical terrestrial habitat to the time outside of the vernal pool breeding period and by applying the recommended by the reference management measures. The recommended measures were considered as a guide during the site plan design.

Vernal pools contain a wide range of insects and other invertebrates. These organisms have the benefit of adaptation to life in a body of water which, because of the lack of perennial stream connection, lacks fish populations—their principal predators. Invertebrates seen in the pool include oligochaete worms, water fleas (*Daphnia*), copepod crustaceans, fairy shrimp (restricted to vernal pools), ostracods (seed shrimp), isopods (*Asellus*), water mites, mosquito larvae (*Culex*), dragonfly nymphs (Odonata), caddisfly larvae (*Ptilostomis*), diving beetles (*Rhantus*), water scavenger beetles (*Hydrophilus*), water bugs (*Lethocerus*), chironomid midges (*Mochlonvx*), water striders (*Gerris*), clam species, and snails (*Physa* , *Gyraulus*).

The characteristic of the upland and wetland area surrounding the vernal pool is important to the success and survival of species breeding in the water. Vernal pool is a web of life housing amphibians and insects which are important food source to the terrestrial life. The food production is driven by decaying leaves and other plant parts fallen into the bottom of the pond. Juvenile amphibians emerging from the pool become a prey to snakes, turtles, birds and small mammals. To escape predation, they like to find a moist safe cover near the pool. The existing stone wall offers cavities used for shelter. Fallen trees, logs, stones and leaf litter serve well as a place to hide. The intermittent watercourse provides the moisture, and sufficient water flow for the juvenile amphibians to settle.

Other vertebrates using the vernal pool include Wild Turkey (*Meleagris gallopavo*), observed digging in surrounding dry leaf litter to find acorns, and White-tailed Deer (*Odocoileus virginianus*), which drinks from the pond. Birds most likely breeding near the

vernal pool include Eastern Screech-Owl, Downy, Hairy and Pileated Woodpecker, Great Crested Flycatcher, Eastern Phoebe and Eastern Wood-Pewee, Red-eyed Vireo and Yellow-throated Vireo, Black-throated Green Warbler, Ovenbird, Black-and-white Warbler, Worm-eating Warbler, Brown Thrasher, and Wood Thrush. Also seen in the pond and the surrounded area were Eastern painted turtle (*Chrysemys picta*), Spring peeper (*Pseudacris crucifer*), Pickerel frog (*Rana palustris*), Bullfrog (*Rana catesbaiana*), Eastern garter snake (*Thamnophis sirtalis sirtalis*). The pond most likely is also visited by Eastern box turtle (*Terrapene Carolina*) detected by others and listed as a species of special concern in CT.

Red maple swamp is situated in the central portion of the site. The area is intersected by a perennial stream providing a steady water supply to this system. Large hummocks and hollows within the innermost portion of the swamp reflect prolonged flooding. The most severe flooding occurs in spring. This flood coincides with breeding of the aquatic species. High water levels deliver the signal to the organisms to lay eggs, hatch, or metamorphose. Flooding provides new nourishment crucial to the offspring development. Newly flushed insects, bugs, and worms from the land in to the swamp bottom becomes a food source for aquatic organisms. Phyto- and zoo-plankton residing in the stream feed on broken down organic matter. Storm water runoff, carries dead brush and leaves into the swamp, adding structure to the habitat. Dense ground cover along the flooded edges are used by frogs, turtles and snails looking for moist areas preserved underneath leaf piles, stones and logs.

Based on vegetative cover, this swamp is utilized by a variety of wildlife that is known to use the existing plants as their primary food source. Red maple that dominates the vegetated cover provides flowers that are pollinated by variety of bees, flies, and moths. The fruits provide food for squirrels and many other rodents. Rabbits and deer eat the shoots and leaves while the seeds are enjoyed by gray squirrels, eastern chipmunks, voles, and white-footed mice.

The understory growth is dominated by spicebush that is an excellent source of nectar for butterflies and other pollinators in early spring. In addition, this shrub provides cover and nesting site as well as red berries to various birds. Buttonbush found densely populating the edge of the channel is one of the last native shrubs to leaf out in the spring. The leaves provide food for the larval stage of several local moths. Flowers emerging in early to mid-July attract bees, hummingbirds, and butterflies collecting their nectar. This plant is important because it flowers when many other plants aren't. Fruits persist through winter. Waterfowl including mallards, and other birds eat them. Wood ducks use the plant to protect their nests. Sweet pepperbush are most values for its flowers. A wide variety of bees and butterflies visit the plant collecting both nectar and pollen.

The herbaceous plant cover is dominated by skunk cabbage, which is the first source of pollen in spring for honeybees. The leaves of skunk cabbage are eaten by slugs, which feed also on the spathes. The amber snail grazes on the foliage. During summer and fall, rotting leaves attract tiny flies and moths. Caterpillar of the ruby tiger moth uses skunk cabbage leaves as its primary food source.

Tussock sedge is almost equally popular within the low ground cover of the swamp. This clump-forming sedge is adapted to grow in water and contributes to hummock formation. It spreads by rhizomes to form colonies and contribute to hummocks formation. As the old leaves die, they build up around the living plant, making a little hill. Tussock sedge provides habitat for a variety of wildlife, including frogs, toads, salamanders, ducks, herons, rails, snipes and sparrows. Birds use its leaves and stems to build nests and feed on its seeds. Tussock sedge is a host plant for a several butterfly and moth larvae.

The existing microtopography of the swamp floor created by the hummocks and hollows is further enhanced with the presence of structural features created by fallen branches, dead woody vegetation and decaying logs. Snags, logs and woody debris found within the swamp influence the micro ecology in, around, and under its decomposing trunks and branches. Snags and fallen trees provide nesting for the squirrel population and raccoons. Branching limbs are used for perching by hunting birds like hawks and owls. The dead barks nurture insects attract and feed woodpeckers and other insect-loving birds. The fallen limbs create understory cover and food for turkey resting underneath the falling canopy.



The number and variety of birds in a swamp area depend on the age of trees, thickness of the shrubby vegetation, size and wetness of the wetland. Generally, the bigger the area the greater the number of birds visiting the forest. The swamp is situated within the forest interior, so the area is supported with large terrestrial buffer housing other wetland/watercourse areas. There are four most common forest interior species that include Veery (*Catharus fuscescens*), Northern Waterthrush (*Seiurus noveboracensis*), Black-and-white Warbler (*Mniotilta varia*), and Canada Warbler (*Wilsonia canadensis*) that are expected to occur. Other common to swamps song birds include Gray catbird and Northern Waterthrush.

No mammal limits its life to the wetland area; they utilize both the wetland and the upland in search for food and shelter. The subject wetland/watercourse corridor is most likely visited by white tailed deer, which feeds in swamps and uses them for refuge. Small mammals most likely are represented by shrews, moles, squirrels, voles and mice. It is expected Ground beetle (*Badister transversus*), Species of Special Concern resides in this environment.

SPECIES OF SPECIAL CONCERN

- Ground beetle (*Badister transversus*) State Special Concern was recorded at the site or the vicinity by others. This invertebrate prefers habitat of red maple swam and river floodplains. Such habitat is provided by wetland/watercourse system cutting through the lot.
- Eastern box turtle (*Terrapene carolina carolina*) is another State Special Concern specie recorded at the site by others. This terrestrial turtle inhabits a variety of habitats, including woodlands and stream banks. Typically, however, box turtles are found in well-drained deciduous forests. During the hot summer days, they wander to springs and seepages where they can burrow into the moist soil. During summer they are active in mornings and evenings, with little to no nighttime activity, except for egg-laying. Box turtles have home range ranging from 0.5 to 10 acres. Box turtles hibernate from November to April by burrowing into loose soil, decaying vegetation, and mud.

WETLAND/WATERCOURSE VALUES AND FUNCTIONS

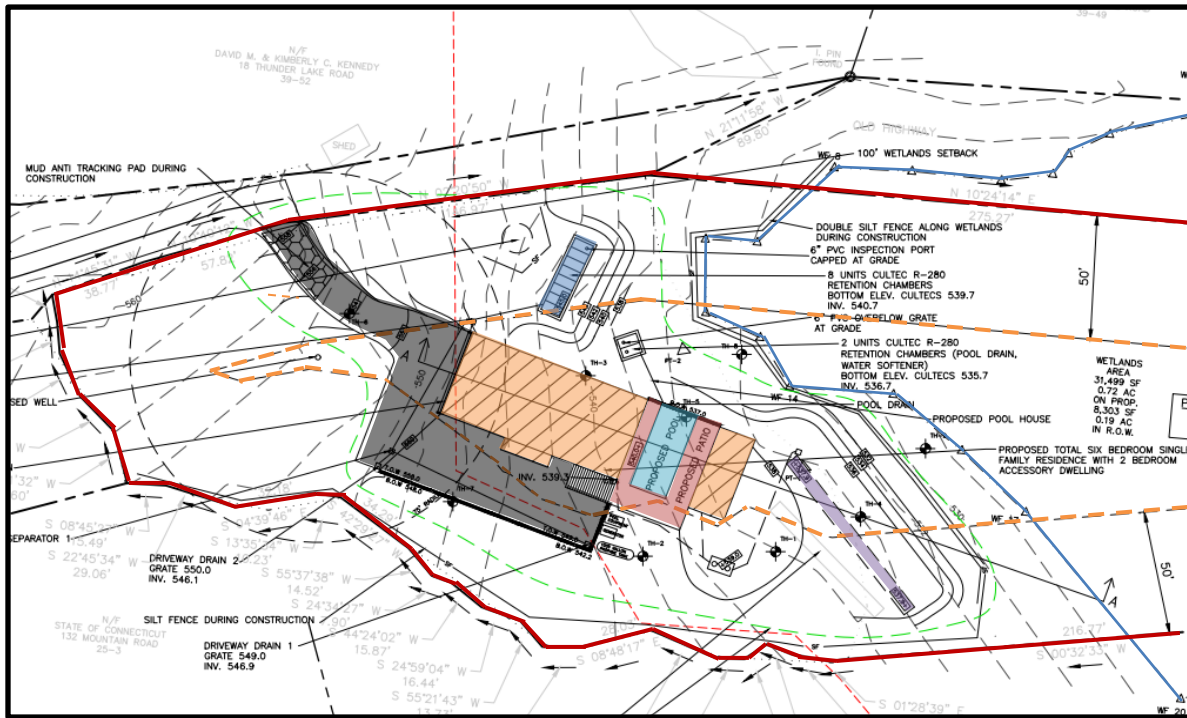
The Highway Methodology Workbook – Supplement was used to evaluate the wetland/watercourse functions and values at the site. The workbook was prepared by US Army Corps of Engineers – New England District. Both wetland/watercourse systems were evaluated using the same eight functions and five values.

Vernal pool system scores highly in the areas of: groundwater recharge/discharge, sediment retention, production/export, nutrient removal/retention/transformation, wildlife habitat and Significant Natural Communities
Lower score goes to: floodflow alteration, shellfish habitat, educational/scientific value, uniqueness/heritage and visual quality/aesthetics
The area does not support: fish habitat and recreation.

Red maple swamp system scores highly in the areas of: groundwater recharge/discharge, sediment retention, production/export, nutrient removal/retention/transformation, wildlife habitat and Significant Natural Communities
Lower score goes to: fish and shellfish habitat, floodflow alteration, educational/scientific value, uniqueness/heritage, visual quality/aesthetics and recreation.

PROPOSED SITE IMPROVEMENTS

The application is being made for the construction of a single-family residence with a driveway, a swimming pool, and a pool house. The proposed site development will be associated with the installation of a septic system, designation of a septic replacement area, installation of an in-ground infiltration system and grade modification. The access to the site will be gained via an old cow path which is located on the town owned land. This approximately 1,300 feet long way will be paved and connected to the new driveway installed at the site. The access will require a wetland crossing.



The proposed site plan.

There are several challenges when it comes to the site design. The lot shape and associated zoning setback result in a narrow construction envelope. The residence is situated in the central portion of the available upland area. Gravity flow desired for a septic system locates the leaching fields to the northeast of the residence. Due to the shallow ground water table the system must be raised and supported by fill. Grading over the septic area brings the edge of disturbance as close as 10 feet to the wetland edge. A similar situation exists within the proposed in-ground infiltration system which will also be installed in fill. The rear of the residence is the only location left for the swimming pool and the pool house. To comply with zoning requirements the pool terrace is connected to the house foundation aiming to keep the pool house away from the wetland edge. The proposed driveway has a large parking area, but most of the proposed blacktop is located outside of the 100-foot upland review area. This area is needed for the parking and sufficient space for the vehicle maneuver.

POTENTIAL IMPACTS

Soil disturbance, site clearing, and introduction of impervious surface may result in potential short- and long-term impacts.

Potential short-term impacts include removal of the existing vegetative cover, soil disturbance, movement of fill resulting in generation of dust and soil erosion. Lack of storm water detention in the early stages of development may result in rain water flowing over the disturbed land carrying sediment downslope towards the low-lying areas. Introduction of sediment to the aquatic and wetland environment could make it difficult for aquatic

organisms to find food; after the sediment settles to the bottom of the wetland. Sediment can bury tiny plants and animals and alter the natural functions of the wetland community.

Lost tree canopy may expose the cleared land to sun and increase the temperature and change the chemistry of the soil and storm water runoff. Removal of leaf litter and moisture holding debris may result in desiccation of moisture sensitive species during their time of dispersal. Vegetation provides a large biologically active surface which absorbs water, provides food and shelter to wildlife and generates oxygen. Their loss will eliminate these functions. Movement of heavy machines through the site will compact the soil and may negatively affect soil organisms and soil permeability. New physical barriers created by soil disturbance may impact wildlife movement by potential entrapment and increased exposure to predation. Movement of heavy equipment may result in collisions with wildlife resulting in wildlife mortality.

Potential long-term impacts include an introduction of impervious surface. The natural storm water infiltration and absorption by the existing vegetative cover will be replaced with hard surfaces generated by roofs, driveways, patios and walkways. New residence will be associated with the new land use and human activities resulting in noise and light pollution. New landscaping will most likely consist of a large lawn area needing regular treatment of pesticides and fertilizers. These mostly synthetic chemicals will travel with storm water runoff into the receiving wetlands and watercourses increasing their nutrient levels potentially causing algae blooms and an oxygen-depleted environment. Road salt and other winter conditioning may impact the natural wetland/watercourse communities. More pavement results in less soil absorption; therefore, increases the amount of storm water runoff. Pavement may create a heat island effect which increases the temperature of the storm water runoff and has a negative impact on the local microclimate. Tree clearing leads to creation of a new forest edge which once disturbed attracts invasive species and allows sun penetration in once moist and shaded woodland.

MITIGATION MEASURES

The proposed site development will be conducted over an environmentally sensitive wooded area containing two wetland/watercourse systems. In addition to the regulated areas, the site is recognized by CT DEEP as containing a habitat for species of special concern: box turtle and ground beetle. The crossing of the access driveway will run along the edge of a vernal pool and across the wetland and intermittent stream. A careful planning and mitigation measures are provided to minimize any potential impacts to this fragile environment.

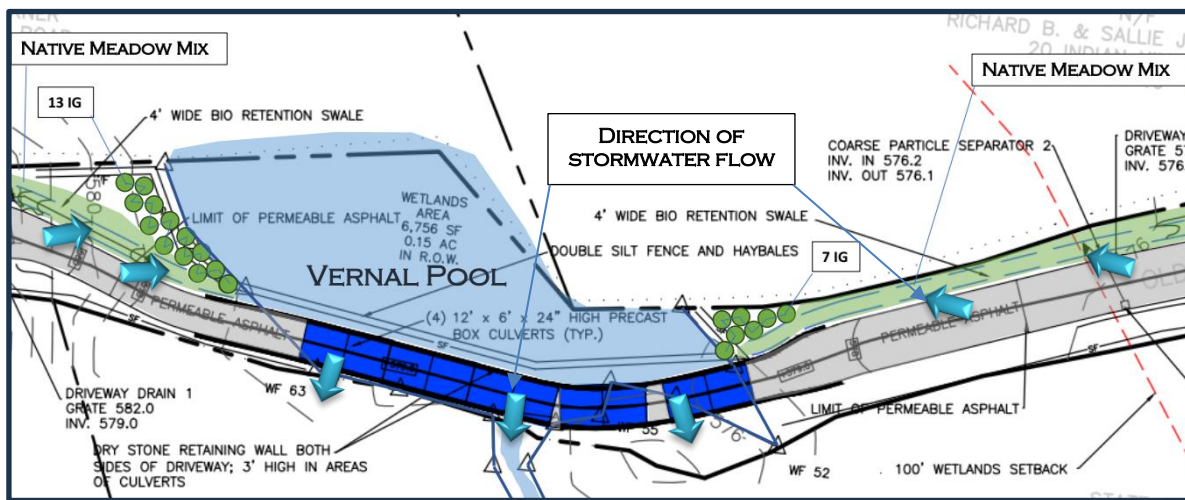
Short-term impacts – during the site development phase

Vernal pool: To minimize the impact of the driveway crossing the image of the site plan provided below offers the following measures:

- Bioswales to filter the storm water runoff collected from the driveway. Before the storm water reaches the vernal pool, it will flow through a dense filter or a native meadow. An additional filter formed by the proposed native shrubs will catch larger debris and provide additional storm water absorption. The plants will also alleviate

the negative impact of the light pollution generated by cars at night. Native meadow mix proposed to be seeded within and around the bioswales will increase biodiversity and keep the edge of the driveway stable.

- Five double box culverts will be installed at the driveway crossing to allow collision free wildlife passage. The culverts will preserve the wetland soil underneath allowing extra space for the vernal pool to expand during the wet season. The middle culvert will accommodate pool overflow to the intermittent channel.



Driveway crossing

- To protect the water quality within the vernal pool, the surface of the driveway will be slightly tilted away from the vernal pool to allow the area to drain to the eastern side, away from the vernal pool. Catch basins will be eliminated from the vernal pool buffer. Catch basins may trap amphibians during their migration. The driveway apron will be permeable; therefore, the stormwater will be filtrated through the gravel bed before reaching the vernal pool area and/or ground water. This design will ease the need for driveway conditioning during the winter. Porous asphalt eliminates puddling and surface icing. In addition, the snow cover lasts much shorter than over a conventional asphalt.
- Dry stone retaining wall proposed on both sides of the wetland crossing will have openings allowing the wildlife movement and flow of water. The wall will help to direct the wildlife into the culverts and away from the driveway preventing their exposure to car traffic and desiccation. Cavity created between the boulders used in stone wall will offer moist hiding spaces for the juvenile amphibians in their way to their terrestrial habitat.
- The installation of the wetland crossing will be done outside of the vernal pool breeding season (March 1- July 1) and during the hibernation time of the box turtles (April 1 – November 1). The best time to conduct the work will fall between in late fall when the ground water is still recovering, and the soil is not frozen.

Red maple swamp:

To minimize the impact of the proposed development within the property boundaries the following measures will be applied:

- The major site disturbance (excavation and stockpiling) will be done during the box turtle hibernation (April 1- November 1).
- The area of disturbance will be fenced in and totally enclosed during the construction activities. The access to the site will be limited to a single entrance and blocked for the night to prevent box turtles entering the disturbed area. The enclosure will be checked for their presence in the morning prior to any construction activities. The daily inspection will be performed by the project manager trained on the turtle spotting and removal techniques. Exclusionary fencing will be at least 20-inch-tall, and it will be secured to and remain in contact with the ground. Regular maintenance of the fence will be enforced by the site monitor (bi-weekly and after major weather events).
- All construction personnel working within the turtle habitat will be apprised of the species description and their possible presence in the area. Any turtles encountered within the immediate work area will be carefully moved to an area outside of the construction envelope and fencing adjusted as needed.
- Tree clearing within the construction envelope will be kept to the necessary minimum. Trees selected to be preserved within the construction envelope will be protected with an orange snow fence to protect their root system and soil from compaction.
- The area of the proposed in-ground infiltration system and the septic will be protected with an orange snow fence. The fence will prevent soil from being compacted by the heavy machinery.
- Carpooling for the contractors will be arranged to minimize the number of vehicles driving through the area. Heavy equipment once brought to the site will remain within the designated construction envelope until the work is completed.

Long-term impact may occur after the construction activities are completed. To address this potential the following measures are being offered:

- An in-ground infiltration units will be provided to address the increase in storm water runoff. Discharged into the ground runoff will have ample time to cool and infiltrate into the ground water. When passing through the soil profile the water born pollution will be absorbed by the soil particle providing water renovation service.
- The lost trees will be replaced by the new landscaping which not only will enhance the edges of the wetland/watercourse buffers, but they will restore the

environmental functions of the lost trees. Higher plant density will provide a better protection to the wetland area needed to adjust to the new land use.

- The new landscaping will provide screening from the human activities such as noise and light pollution. New plant material, especially the native ones planted within the buffer will enhance the plant diversity, provide new food sources for wildlife, filter the storm water and support storm water management at the site. The new edge of the forest will be softened by the gradual transition from the tall trees to the herbaceous ground cover. Such buffer will alleviate the sun penetration, preserve the moisture and create new shelter and cover for the local wildlife.
- Permeable driveway will promote storm water infiltration and filtration.
- The proposed lawn area will be kept to minimum. An organic lawn treatment will promote healthy soil avoiding the overuse of nutrients and harmful chemicals.
- The negative heat island effect created by large areas of pavement will be minimized by a very limited tree clearing. All trees which do not directly interfere with the proposed access will be preserved. Their large canopy will shade the new driveway keeping the area cooler.

PROPOSED ALTERNATIVE

The property contains 2.82 acres. The original plan accommodates all elements of the proposed development within the southern portion of the site. The reason behind it was to minimize the impact to the wetland area and avoid additional wetland crossing. This plan however, limits the use of the property and restricts its full enjoyment. The owner desires the recreational areas to be able to embrace the entire property. Having a swimming pool and pool house removed from the vicinity of the main residence will allow for a usable backyard year-around. Having the pool and the pool house moved to the other side of the wetland would allow a better separation between active enjoyment of the pool and quiet surrounding of the residence. This separation would be appreciated by elderly grandparents sharing the residence with more dynamic grandchildren. In addition, the alternative setting will allow the main house to have a deck which has been sacrificed on the original plan for the pool. The access to the pool and the pool house is showed to be accomplished by a gravel path or stepping stones and a foot bridge used for the stream crossing.

The **environmental pros** of this design:

- Wider buffers between the wetland and the structures.
- Seasonal use.
- Two smaller instead of one large landscape envelope the wildlife has to navigate around.

The **environmental cons** of this design:

- More intensive forest fragmentation
- Need for two separate septic systems
- Larger area of disturbance
- Activities within the wetland/watercourse corridor
- More intensive light and noise pollution entering the wetland from both sides.
- Deeper penetration of the site development activities into the mature forest area

SUMMARY

The proposed site development will be conducted within the wooded area supporting two wetland/watercourse areas and two species of special concern. The access to the site will be achieved via a long driveway crossing a sensitive area of a vernal pool. The high environmental values of this site made the planning of this development a long and careful process. All potential short- and long-term impacts had been identified and addressed using the best management practices to their furthest extent. The design and planning provide a delicate balance between the owner's property rights and needs; and the protection of the natural resources. If properly executed, the proposed development should have no impact on the wetland area, a minimal impact on the vernal pool and maintain the species of special concern intact.

