• Soil & Wetland Studies
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• Expert Testimony • Permitting

VIA E-MAIL & HAND-DELIVERY

April 12, 2021

Town of Vernon
Inland Wetlands Commission
14 Park Place
Vernon, CT 06066

ATTN: Ms. Rachel Stansel, Chairperson

RE: **WETLANDS ASSESSMENT: *Summary of Findings***
The Village at Naek Road
291 & 293 Talcottville Road, 27, 32,37,38, & 46 Naek Road, Vernon, CT
REMA Job #

Dear Ms. Stansel and Commission members:

At the request of the applicant, Naek Construction Company, Inc., REMA ECOLOGICAL SERVICES, LLC (REMA), has prepared this *Wetlands Assessment: Summary of Findings* to be submitted as part of an application before the Town of Vernon Inland Wetlands Commission. This pursuant to the Town of Vernon Inland Wetlands and Watercourses Regulations (effective date: October 8, 2009; amended effective date: April 4, 2013).

1.0 Introduction

The applicant is proposing a multi-family residential development consisting of 18 apartment building on 21.6 acres of land. A total of 70 residential units are proposed, in three building clusters, in addition to a roadway system and other infrastructure improvements, including a stormwater management system. The "site," "the study area" is located east of the Hockanum River, west of Talcottville Road, about a mile north of Interstate-84 (see Figures 1 and 2, Attachment A).

Proposed stormwater management facilities include two infiltration trenches/ basins, two rain gardens, and five below-ground infiltration galleys. Three building clusters are proposed. In the northern cluster, four buildings with 18 units are proposed, along Sophia Way, south of Wetland C (see Figure 3, Attachment A) and north of Naek Road. The central cluster of five buildings, also with 18 units, will be along Nadia Way and south of Naek Road. The western cluster will be comprised of nine buildings with 34 units, along Abdul Way.

For this report, REMA reviewed plans prepared by Gardner & Peterson Associates, LLC of Tolland, Connecticut. The set of plans, dated March 17th, 2021, consists of 10 sheets, and is entitled *"The Village at Naek Road, 291 & 293 Talcottville Road; 23, 32,37, 3, & 46 Naek Road."* The plans show a buffer or setback along the Hockanum River averaging about eighty feet from the disturbance limits to the wetland boundary, with a variable-width additional zone of riparian wetland. The setback to Wetland C, with embedded vernal pool habitat, would average about 100 feet.

This report is a *Summary of Findings* that provides a "description of the ecological communities and functions of the wetlands and the effects of the proposed activity," as required by the Town regulations (i.e., Supplement to Application, 10/22/2020). Wetland boundary delineations and wetland characterization were conducted by George T. Logan, Registered Soil Scientist, in September and November of 2018, and are documented in the REMA *Soils Investigation & Wetland Delineation Report*, dated December 11, 2018, and submitted separately. Additional field investigations of ecological communities, and collection of baseline data, were conducted by both Sigrun N. Gadwa, and George T. Logan, ecologists and professional wetland scientists, on September 19th, October 23rd, 24th, and 27th, 2020. Tony Ianello, natural resources scientist, conducted vernal pool investigations at the site on April 9th, and May 11th, 2019. An additional site investigation of Wetland C, to confirm its vernal pool habitat status, will be conducted in the near future, after this report is submitted as part of the record. The results of that survey will be provided at the upcoming meeting before the Commission of April 20th, 2021.

We note that REMA reviewed a variety of secondary source data, including archival aerial photographs for flight years 1934, 1951, 1965, 1986, 1990, and 2004, as well as more recent aerial photography spanning from 2005 to 2020 (e.g., Google Earth). USGS topographic maps, UConn CTECO Resource Maps, and Soil Survey State of Connecticut (USDA-NRCS)

(attached), Streams Stats, and several CT DEEP GIS-based resource maps (e.g., surficial and bedrock geology), were also reviewed for this report.

Attached to this *Summary of Findings* are several annotated photographs, primarily of the site's regulated resources, as well as other pertinent features (see Photos 1 through 22, Attachment B).

2.0 Overview of On-Site Natural Resources

2.1 Wetlands

The site's major regulated wetland/watercourse resources are associated with the Hockanum River, a south-west-flowing tributary of the Connecticut River (Basin 4500). As shown in Figure 3 (Attachment A), Wetland Units B and 1B are a band of floodplain wetlands, bordering approximately 1,900 linear feet of the Hockanum River, which flows westerly and then southerly along the northwestern and western property perimeter. The break between the two units is a sharp bed in the river, at the site of a former dam and river crossing. The sharp bend in the river is located at a Portland arkose bedrock outcrop, with a section of bank armored by a historic fieldstone wall.

Both Wetland B (downriver of the old dam) and Wetland 1B (upriver of the old dam) have short, very narrow vegetative sections, less than four to five feet wide. They also have much longer segments averaging about 75 feet wide.

Forested, scrub shrub, and wet meadow cover types are all well represented in both these riparian wetland units. Along the river is a well-drained to moderately well drained, higher elevation levee, with soils of alluvial origin, and with mature red maples; the next zone is a poorly drained to very poorly drained floodplain terrace with wet meadow swales. Dense patches of cinnamon fern dominate the wet meadow in Wetland B, and it is traversed by a narrow, poorly drained ditch. In Wetland 1B, the wet meadow cover type extends to the riverbank in several locations, and includes patches of tall, annual floodplain herbs. Patches of wetland shrubs occur throughout both wetland units; winterberry is dominant. Elderberry is limited to the riverbank in Wetland Unit 1B.

Wetland 1B receives active groundwater discharge from the sandy outwash upland soils in the central and northern portions of the site, including an active seepage swale just downgradient of the Naek Road cul-de-sac, and another one in the area of the central swale, below Wetland A (see Figure 3, Attachment A).

At the north end of the site is Wetland C. It contains an embedded vernal pool wetland with a moderate size breeding population of wood frogs (*Lithobates sylvaticus*). It has an aquatic shrub (buttonbush) thicket and a border of diverse native wetland herbs and shrubs. It serves as a groundwater recharge area, supplying water to the Hockanum River via sub-surface seepage, especially in the early part of the growing season, when static water elevations at this wetland are 3 to 4 feet above the level of the river and its adjacent wetlands.

Wetland Unit A is an isolated wetland pocket, located within the site's central low wide moist upland swale, that acts as a surface runoff drainageway to the river. It is dominated by lush native and invasive shrubs and vines.

2.2 Uplands

The site's uplands include invasive-dominated thickets and young woods in the central, severely disturbed area around the Naek Road cul-de-sac. This cover type occupies much of the footprint of the central housing cluster and the large stormwater facility. Formerly an agricultural field, per the 1965 archival aerial photo (see Figure 4, Attachment A), it has been an underused light-industrial area for several decades (see Figure 5, Attachment A). Bulky trash is common, and most of the native species that are present are heavy-seeding opportunists like common cottonwood. Mugwort has not yet arrived, however.

The site's eastern and western uplands support mature, second-growth, mixed evergreen/deciduous forest. The eastern forest was once a pasture, based on the presence of dead red cedars, but the naturally undulating topography, as well as the relatively thin topsoil, shows that it was never tilled (see Figure 6, Attachment A). The eastern uplands are underlain by sandy-gravelly Manchester soils, according to the Web Soil Survey, and are elevated up to about 15 feet above the river terrace, with white and black oak, shagbark hickory, black cherry, and the typical understory species of a mixed oak-hickory forest. Invasive plants are limited to a few burning bush.

At the west end of the site the terrain is somewhat higher, about 25 feet above the river terrace. Throughout, the slopes down to the river terrace are moderate, and include trees of mesic soils, like American elm, red and sugar maple, shagbark hickory, and ironwood. A healthy, mature hemlock forest occupies the western hillside down to the Hockanum River, partially within the 100-year floodplain zone.

In the western uplands, soils are loamy with a till layer, and some areas are shallow-to-bedrock. They are mapped as the Charlton and Chatfield complex per the soils map in the submitted soils/wetland delineation report. The forest community in the footprint of the proposed western housing cluster is unusual. Sedimentary bedrock is near the surface in this area. There is abundant hop hornbeam (a minerotrophic tree, usually sparse), white oak, and maple-leaf viburnum. This area has been logged in the past, based on moderate tree sizes. However, based on the 1934 archival aerial photograph (see Figure 6, Attachment A), the western "highlands," westerly of Wetland A, were maturing forest at the time, in contrast to the balance of the site which was either open fields, or pasture land.

3.0 Regulated Wetland/Watercourse Resources

3.1 Hockanum River

Wetland Units B and 1B encompass the segment of the Hockanum River that borders the site's uplands, as well as adjacent riparian wetlands. According to the National Wetlands Inventory (NWI) classification system, the river itself is classified as R2UB3/2/1: a lower perennial riverine wetland with an unconsolidated bottom (sandy, muddy, and rocky).

The Hockanum River at this site is about fifty feet across, on average, with a steep bank, elevated two to four feet above the water level in mid-October. According to the USGS Stream Stats Program, the Hockanum River has a watershed of 30.6 square miles at this site, with 8.92 percent impervious surface, which is below the generally accepted impairment threshold of 10 percent.

CT DEEP has surveyed the river in 2012 and 2014 for fisheries about 0.85 miles upriver of the site, at Dart Hill Road. In 2014, fish that were observed during the survey included, American eel, blacknose dace, fallfish, longnose dace, rock bass, tessellated darter, white sucker, and brown trout (wild and stocked).

Instream habitat was observed during the October 2020 survey.

- Banks are stable and well vegetated on the inside of the bend, on this site, but the banks across the river, show signs of erosion, especially where trees are lacking (see Photo 7, Attachment B). Hundreds of mature red maple trees on the site's side of the river are providing cooling shade and leaf litter inputs, that support the aquatic food web. The extent of bittersweet infestation of riverside trees is significant only in the river segment between the sharp bend and Wetland B, the drainageway by Naek Road, where tree sizes and densities are also lower than elsewhere along the corridor.

- Woody debris is present in the river, but not abundant. One large tree fall across the river is diversifying instream habitat, though also hindering canoe passage, but it is not impounding water flow.

- Most of the river segment bordering the site would be classified as a "run," several feet deep, flowing quickly, but lacking turbulence due to rocks near the surface. The exception is the shallower riffle at the river's sharp bend at the former dam site (from west-flowing to south-flowing), adjacent to the north trending bedrock formation (Portland arkose). Bedrock is exposed, as fractured, platy rubble, supporting an abundance of minerotrophic ferns (*Dryopteris intermedia, Polystichum acrostichoides*), on the hillside down from the upland, adjacent to this river bend.[1]

Groundwater and surface water are classified by CTDEEP as non-impaired at this location, although groundwater impairment begins a short distance downriver. Percent development is high in the immediate site vicinity, including nine large commercial or industrial buildings. According to USGS Stream Stats, the percentage of developed land in the watershed above this point is 30.7%. Across the river from this site, is a large high-density residential development, with a very narrow shoreline wooded buffer. Just south of this site, another large apartment complex is under construction, with a moderate-width shoreline buffer, comparable to that proposed at the subject site. Downstream of this site, Hockanum River water quality, and that of its adjacent wetlands, are increasingly expected to be influenced by

[1] As noted above, the upland forest community is unusual on the west side of the site, with shallow Chatfield soil, hop hornbeam and maple-leaf viburnum abundant in the white oak forest understory, as the soil is enriched with minerals from the shallow, arkose bedrock. Soil pits showed shallow bedrock, extending several hundred feet southerly, underlying the western housing cluster.

the water chemistry of urban and suburban runoff, which differs from that of groundwater seepage through humus-rich forest soils with its dense networks of nutrient-scavenging tree roots.

3.2 Wetland Units B and B1: Palustrine Wetland along Hockanum River

Both bordering palustrine wetland units includes broad-leaf deciduous forested wetland (PFO1), as well as scrub shrub and persistent wet meadow/marsh components (PSS1/2 and PEM1), per NWI classification system. Water sources for both these linear riparian wetlands include regular overflows of surface water from the river during flood events and seasonal hillside runoff, and seepage from the river. Seepage from the adjacent hillsides is more important for Wetland Unit 1B. The hydrogeomorphic regime of Wetland Unit B1 has a stronger component of "groundwater slope" (see Attachment C for wetland classification definitions). Both Wetland Unit B and 1B have strong "surface water slope" components. Soils along the river are mapped as a frequently flooded fluvaquent-udifluvent complex (mapping Unit 109); the riverside soils are sandy, consistent with the sandy substratum of the dominant soil series in the vicinity.

3.2.1 Levee

In both Wetland B and B1, a somewhat elevated "levee" is next to the riverbank (built up by sand and gravel that drops out quickly during floods). The levee is *moderately well drained* to *poorly drained*, depending on bank elevation (regulated wetland in Connecticut, by virtue of the floodplain soils). It supports mature red maple trees (many over 18" dbh), dense winterberry and round-leaf green briar vines, and, especially in Wetland B, a thick groundcover of cinnamon fern. Immature American elms are also common, and yellow birch and white pines occasional.

Levee vegetation suggests that water quality in the river and the sandy levee soils are not yet nutrient-enriched. Blue-joint grass (*Calamagrostis canadensis)* is dominant in a several low spots in Wetland 1B; this is a common grass of low-nutrient fen habitat, an indicator species. No cattails or *Phragmites* (common reed) was observed; both are indicators of enriched nutrient status. Winterberry (*Ilex verticillata*) is overwhelmingly dominant, also a common shrub in bogs and cedar swamps. Native silky dogwood and spicebush, and common invasive shrubs, such as burning bush, common buckthorn, and Morrow's honeysuckle are present,

but only occasional. Invasive multiflora rose and Asiatic bittersweet are common but mostly *not* dense or highly vigorous. All these shrubs have substantially higher nutrient needs than winterberry. Bittersweet is denser off-site on the other side of the river.

3.2.2 Marsh and wet meadow

Moving back from the river levee, the grade drops to a *poorly to very poorly drained zone* of a *seasonally flooded* to *temporarily flooded* marsh and wet meadow, with much sparser woody vegetation. Characteristic species include sensitive fern, tussock sedge, stout wood reedgrass, and blue-joint grass. The annual floodplain herbs, like stinging nettle, false nettle and clearweed are more prevalent in Wetland Unit 1B. Occasional deeper pockets with *permanently saturated* hydrologic regimes include royal fern, hollow Joe Pye, and turtlehead, and other *Carex* species such as *Carex intumescens* (bladder sedge) are characteristic of Wetland Unit B. Clumps of flood-tolerant winterberry also grow within this zone. Moss covered logs contribute to habitat structure.

This wet meadow cover type extends further upslope in two locations. The first is along the 120-foot-long swale northwest of the Naek Road cul-de-sac, where tussock sedge (*Carex stricta)* is dominant. The second is where the central drainageway corridor (Wetland Unit A) joins the riparian wetlands, just east of the fractured sandstone outcrop. The wet meadow downslope of Wetland flags B5 to 1B5 is about 120 feet wide by fifty feet deep. *Scutellaria lateriflora,* white avens, and jewelweed are also common in this area, which is influenced by seepage through fractured sedimentary bedrock and from Wetland A.

3.2.3 *Upper transition Zone*

Along the base of the hillsides down from the uplands, wetland soil transitions into moist upland soil that is well enough aerated to support diverse trees. Ironwood, shagbark and pignut hickory, American elm, black birch, black cherry, and red maple are common. Oaks, such as red oak, are occasional.

In the western section of Wetland Unit B, a hillside hemlock forest extends into the slope-base zone, downstream (west and south) of the sharp bend in the river. Maple-leaf viburnum is the dominant understory shrub, and bristly dewberry is a common groundcover in the forested transition zone.

Proceeding upriver, just northeast of the sharp river bend, near the arkose rock outcrop and Wetland A, the soil is shallow to bedrock (Chatfield series). The forest understory on the lower hillside is attractive, unusual, and diverse; it includes American hazelnut, witch-hazel, azalea, abundant Christmas fern, and evergreen wood fern. Elm saplings are also common throughout.

3.3 Wetland Unit A: Central Wetland Swale

Dense and diverse wetland shrubs occupy this isolated, *seasonally flooded* to *seasonally saturated* northwest-flowing swale with an old, eroded channel. Its NWI classification is palustrine scrub-shrub (PSS). This wetland passes between the far western and central housing clusters. Native shrubs include spicebush, highbush blueberry, winterberry holly, black raspberry, and nannyberry viburnum. Some invasive shrubs are present as well: Morrow's and Japanese honeysuckle, and winged euonymus (firebush). A full suite of fern species is present in the herb stratum, including royal fern and evergreen wood fern, and other herbs indicative of mineral-rich soils.

4.0 Wetland Functions & Values

Wetland/watercourse functions and **values**[2] were assessed informally, using the rationales of a standardized evaluation methods (e.g., US Army Corps of Engineers' *Descriptive Approach* (1995)), and best professional judgment. Wetland and upland baseline data provide the basis for the assessment, as well as the landscape setting of the site. Table 1 (below) shows the results of the assessment.

4.1 Flood storage / desynchronization and Groundwater discharge-recharge

The site's largest wetland system, with multiple principal functions and values, is associated with the Hockanum River (i.e., Wetland Units B and 1B). In both wetland units *Flood storage / desynchronization and groundwater discharge-recharge,* functions are accomplished by the sandy riverside floodplain terrace, which retains, infiltrates and slowly

[2] Functions are those provided by a given wetland/watercourse that are intrinsic to the resource. That is, they would present regardless of society (e.g wildlife habitat, nutrient removal/transformation). Values are those services that society benefits from (e.g., floodflow alteration, recreation, educational/scientific value. Some "functions" also benefit society, such as sediment/toxicant/pathogen retention.

releases floodwaters, after major storm events. Riverside wetland soils also discharge groundwater into the river, providing valuable baseflow, more so in Wetland Unit 1B.

These two functions are important as well for Wetland C, the eastern depressional vernal pool wetland, which is also underlain by sandy soils. The water level in the pool is low, late in the growing season, coinciding with the fall hurricane season. The deep organic soils in Wetland C absorb water, preventing runoff from reaching the river and vulnerable downriver receptors, though above-ground storage volume is limited.

In all the wetlands and their upland buffers, uptake of water and transpiration of water vapor by foliage substantially reduces the volume of runoff that reaches the river after storms, a key aspect of the wetlands' *flood storage function*.

4.2 Stream Bank Stabilization

This function is accomplished both by the roots of river bank trees and shrubs, and by mats of herbaceous vegetation, but to a lesser extent in Wetland Unit B. Bank-top woody vegetation is less mature and more interrupted in Wetland Unit 1B. Note that fewer trees grow along the river banks on the far side of the river (offsite), which are more eroded. As with flooding, bank erosion is also reduced by the riparian forested buffer, which intercepts and slows down precipitation; roots take up excessive water and leaves transpire water vapor, providing ambient cooling. This function is not present in Wetland C, due to low water velocities, but dense fern and shrub cover do minimize erosion of the channel in the swale in Wetland A, the central swale.

4.3 Nutrient/pollutant Uptake Functions

These wetland functions have protected wetland and watercourse resources in the past at this site, during active farming in the central portion of the site by trapping sediment, and by uptake of nutrients (e.g., from livestock) and pesticides. Currently, commercial and industrial land uses continue to the east of the river corridor, with potential for release of toxicants and nutrients into surface and groundwater that reaches the river corridor. However, the roots and soils of the adjacent forested upland buffer are primarily responsible for attenuating nutrients and pollutants, so that the riparian wetlands will continue to receive high-quality groundwater. Post construction, filtering of air pollution by tree foliage will become more important post-construction, as traffic increases.

4.4 Fish and Shellfish Habitat

The Hockanum River meets multiple criteria for this function: it is a perennial watercourse, more than fifty feet wide, with a natural channel, and shade from riverbank vegetation. Riffle habitat is present in the vicinity of the sharp bend, the bedrock formation is close to the surface. The relatively low proportion of impervious cover is presumed to contribute to the good water quality of the river such that it can support a fish & invertebrate community. In fact, the Hockanum River in Vernon is a Wild Trout management Area, stocked with trout by CTDEEP, open year round for catch & release fishing for trout, using artificial lures and flies.

4.5 Production Export

Production export is another important function of Wetlands Units B and 1B. The forested buffers to be preserved will continue to export leaf litter and woody debris to the Hockanum River, detritus for the food chain base of the aquatic ecosystem, supporting the fisheries function. Because Wetlands C and A lack outlets, they do not export detritus.

However, production export via the food chain is important for all the wetlands on the site. This includes seeds, leafy forage, browse, shrub fruits, pollen, and nectar, from wet meadow and shrub thicket along riparian terraces, swales, and drawdown zones. Tadpoles are a high protein food exported from the vernal pool habitat associated with Wetland C. Forested riparian habitats export nuts, foliage and bark insects, and pollen. Production export via the food chain is especially important during avian migration. Wetland habitats on this site still have most of their native plant diversity and offer a spectrum of foods for wildlife and insects. Note that not only native shrubs, but also invasive ones, export nectar, pollen, and fruit.

4.5 Wildlife Support

This function benefits overlaps with production export, of course, in that the food chain supports wildlife, resident as well as mobile species, and the diversity of food sources from vegetation allows for a variety of fauna with differing phenologies and food needs. The prevalence of meadow habitat in Wetland Units B, 1B, and C (to a lesser extent) is important for seed-eating birds, and for meadow insects, including the skipper group of lepidopterans, which use grasses as a larval host plant. The forb component of wet meadow habitats is a nectar and pollen source. So far there is no sign of the highly invasive weed mugwort, with

negligible functional value, a serious problem in much of the state. It not only entirely lacks food value for wildlife, also outcompetes most other forage plant species.

Landscape structure affects the level of this function; it is diminished by the scant forested habitat on the other side of the river. One USACE rationale for strong wildlife habitat function is a wooded buffer more than five hundred feet wide along 40% of the wetland perimeter. Vernal Pool C is buffered by about 9 acres of offsite forested habitat, extending about 700 feet north of the pool to Hockanum Boulevard, and 250 feet westerly to the river; this increases the likelihood that the vernal pool habitat will be conserved and survive the loss forested habitat to the west, outside the 100-foot vernal pool envelope (VPE). The Hockanum riparian corridor at this site (Wetland Units B and 1B) do not meet this criterion, if one considers both sides of the river. However, there is good connectivity to other wetlands, along offsite preserved forested buffer habitat along the Hockanum River, both upriver and downriver of the site. The river corridor is also a very important wildlife movement corridor, and important for regional genetic exchange, for example, of waterborne plant seeds.

Thicket habitat in Wetland Units A, B, 1B, and C provide wildlife cover and nesting sites for songbirds. The hemlock grove at the western end of the riparian corridor (extending into Wetland B) is valuable as winter cover. In both Wetland B and 1B mature trees with loose bark, for example, shagbark hickories and sugar and red maples, provide winter habitat for dormant insects, and roosting sites for bats. Snags are available for nest-cavity excavation.

Wetland C, which includes the embedded vernal pool habitat, contributes wildlife function by supporting breeding by vernal pool amphibian species; a moderate number of wood frog egg masses were observed in April 2019[3]. The site's other very poorly drained wetlands, such as the swales in Wetlands A and B are expected to support green frogs and several tree frog species.

4.6 Endangered Species habitat

No Connecticut-listed species have been observed on this site or in the vicinity, per the Natural Diversity database. However, moist soils and abundant wet meadow habitat increase the likelihood that the site supports ribbon snake, a Connecticut Species of Special Concern.

[3] Roughly 44 egg masses of wood frogs were observed in April 2019. In May 2019 newly hatched wood frog tadpoles were observed throughout most of the seasonally flooded portion of Wetland C.

Habitat is also suitable for Eastern box turtle and for spotted turtle, also Special Concern species in Connecticut. While the likelihood of these two species occurring at the site is limited, based on regional information, spotted turtle has a better chance of utilizing the site due to Wetland C and the riparian corridor nearby. Rare bats could also use mature trees on the site. The diversity of herbaceous plants also increases the likelihood of rare insects. There is *potential* for this function, but no evidence based on the surveys.

4.7 Human Use Values

Value for *aesthetic enjoyment, recreation,* and *individual nature education* is much enhanced by the existing informal trail along the both wetland units by the Hockanum River, which provide good access all along the western property perimeter. It is a moderately used, minimally maintained trail at present, but still facilitates fishing and hiking. Visitors to the site are also able to explore adjacent to the trail, walking through scenic meadow habitat with wildflowers, between tussocks of graceful ferns, and through the open understory beneath hemlocks and ironwoods.

Fall color was outstanding during the October 2020 survey, especially when reflected in the river. Birdwatching is expected to be especially rewarding during spring and fall migration. The upper (northern) end of Wetland Unit B has particular interest and aesthetic value: the sharp easterly bend at the former dam, with a tall, well-built stone wall, a riffle, and rock outcrops. Evergreen forest and abundant ferns also add to the aesthetic value of Wetland Unit B. However, Wetland Unit B1 likely has more usage, being closer to the informal trail.

Aesthetic value is present but not a principal function for Wetlands A and C. Wetland C is also scenic (masses of blooming buttonbush, views across expanse of open water, fern fringe), and Wetland A has visual appeal from its blooming shrubs. However, enjoyment of both is currently limited by poor access due to lack of trails. These enclaves of natural habitat will, however, provide a forested back-drop and cooling benefits to apartment dwellers, who will also enjoy the wildlife they support.

Potential for *educational and scientific value* is present. All the wetlands on the site have existing value for individual nature study, and it is greater in wetland units B and 1 B with better access. Relatively high biodiversity provides opportunities for individual nature study, and potentially for scientific study. Interesting differences could be studied, between the plant communities found on sandy Manchester soil, versus soil enriched by seepage over

shallow arkose bedrock (comparing slope-base vegetation in Wetland B with that in Wetland 1B). Post-construction, access to Wetland B and Wetland C, will be easier, and it could become a site for vernal pool educational programs. Likewise, shrub and fern diversity are unusually high in Wetland C, such that it is a potential site for a plant identification program.

Safety hazards affect all the human use values. The fact that the informal riverside trail runs at least twenty-five feet back from the riverbank reduces the risk of falling in the river. The 100 to 130-foot setbacks between apartment buildings and the river reduce that risk for unsupervised resident children. Footing in the proposed open space areas is generally good; the ground is usually even both in floodplain terrain and in former farmland. Because ash was a minor forest component, excessive woody debris from trees killed by emerald ash borer (EAB) is not a problem. The site is also nearly free of hazardous junk. Tick density was low along the river, during field surveys, and poison ivy is not abundant.

Table 1 summarizes the functions and values assessment for the site's wetlands.

Table 1: Summary of Wetland/Watercourse Functions-Values Assessment

Function/Value	Wetland B	Wetland 1B	Wetland C	Wetland A
Groundwater Recharge/discharge	**Y**	**P**	**P**	**P**
Floodflow alteration	**P**	**P**	**P**	Y
Sediment/Shoreline Stabilization	**P**	**Y**	N	Y
Sediment/toxicant/pathogen retention	**Y**	**Y**	Y	Y
Nutrient Removal/Transformation	**Y**	**Y**	Y	**P**
Production Export	**P**	**P**	**P**	**P**
Aquatic Habitat	**P**	**P**	Y	N
Wildlife Habitat	**P**	**P**	**P**	**P**
Endangered Species Habitat	N (P)	N (P)	N (P)	N
Visual Quality/aesthetics*	**P**	**P**	**Y**	**Y**
Educational/Scientific Value*	**Y**	**Y**	**Y**	**Y**
Recreation (passive/active)	**P**	**P**	N	N
Uniqueness/heritage	**Y**	**Y**	N	N

Notes: P = Primary function; Y = function present; N = function not appreciably present or absent; (P) = potential

4.8 Uniqueness and Heritage Value

The east side of the riparian corridor along the Hockanum River (Wetlands B and 1B) were determined to have uniqueness and heritage value. They are unusually scenic and have exceptional potential value for recreation. The sandstone ridge exposure at the sharp bend,

with the associated stone wall at the former dam, is a unique geologic and historic feature. This river corridor segment has high diversity of native plant species, and invasive infestation is not far advanced. This appears to be the last segment of this river with water quality that is not yet impaired by excessive drainage from urban land uses.

5.0 Overview of Potential Wetland/Watercourse Impacts

5.1 Direct Wetland/Watercourse Impacts

Very minimal direct wetland impacts are proposed for the proposed residential community. Approximately 200 square feet of direct wetland disturbance is proposed at the outlet of the existing stormwater outfall of the drainage system within Naek Road. At present the discharge from the 24-inch RCP has eroded a channel all the way to the edge of the Hockanum River. The proposal is to provide a rip-rap energy dissipator (modified pad/plunge pool). This is considered a significant improvement over the existing condition, which will be protective of the Hockanum River.

5.2 Indirect Wetland/Watercourse Impacts

Indirect or secondary impacts to a wetland or watercourse can occur as a result of activities *outside* of wetlands or watercourses. Such impacts can be *short-term* or *long-term*, and are typically associated with erosion and sedimentation, mostly during the construction period, the removal or disturbance of vegetation in upland areas but adjacent to wetlands or watercourses, the alteration of wetland hydrology or the flow regime of a watercourse, and the discharge of degraded surface water or groundwater, which may adversely impact the water quality of the regulated resources.

The potential for any of these indirect impacts to occur at the site as a result of the proposal depends on the regulated resources themselves, their environmental sensitivity, and their ecological and physical characteristics. These potential impacts are discussed below.

5.2.1 Erosion and Sedimentation

The potential for soil erosion and subsequent deposition in wetlands or watercourses exists at every construction site that involves soil disturbance. At this site the risk or the potential for adverse impacts from erosion and sedimentation is considered to be *low-moderate.* The primary reasons for this assessment are as follows: (1) appropriate erosion and sedimentation

controls have been proposed, consistent with the CT DEEP's *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*; (2) the dominant soils in the areas to be exposed or excavated during the construction phase have *low* to *low-moderate* erodibility; and (3) slopes are generally gentle to moderately sloping in few areas that are subject to soil disturbance. Diligent monitoring and maintenance of erosion and sedimentation controls is necessary to ensure that the regulated resources are protected during the construction phase.

5.2.2 Removal of Native Vegetation and Habitat Loss

Habitat loss associated with land clearing is an unavoidable consequence of land development, which has the potential of impacting wetlands and watercourses. At the subject site, however, the proposed development will not severely impact existing vegetated buffer to wetlands, and most importantly to the Hockanum River riparian corridor and to Wetland C, which contains the embedded vernal pool habitat. While the buffer to Wetland A is somewhat limited, this is not a high functioning wetland. Nevertheless, buffer plantings are proposed on the graded slope to the west. To the east, the proposed water quality/detention basin will in itself provide buffering from the proposed buildings to the east. It should be noted that this basin will be landscaped with native plant species. The landscaping plan (i.e., implementation notes and planting materials tables) are provided under separate cover.

A sufficient buffer is being provided for Wetland C, and its embedded vernal pool habitat, by avoiding, for the most part grading within this wetland's upland review area (URA), and by maintaining connectivity with both on-site and off-site wetland and upland habitats. Since this habitat only supports wood frogs, the maintained upland habitat will result in a vernal pool habitat that is considered conserved.

5.2.3 Potential Impacts to Wetland Hydrology and Stream Flow

The hydrologic and flow regimes for all of the site's wetlands and the Hockanum River will be preserved. The riparian system is mostly fed by surface flows generated within its watershed. The hydrology of the adjacent riparian wetlands, to the extent that they are presently supported by seasonal groundwater discharge, will maintained, since the primary best management practice (BMP) employed for at the site is infiltration. For instance, Wetland A, the small isolated wetland, centrally located between two clusters of buildings, would be fed through infiltration that will be afforded in the adjacent and upgradient water quality basin.

The proposed activities will not result in any appreciable hydrologic changes (i.e., overall or localized) to the regulated wetlands. Therefore, no impacts to wetland hydrology are anticipated.

5.2.4 Potential Water Quality Impacts

Stormwater runoff from impervious surfaces of development (e.g., commercial, residential) sites has the potential of degrading the water quality (i.e., surface and groundwater) of regulated resources. Generation of potential pollutants on impervious surfaces typically results from vehicular traffic over them. The more the "axle-miles" or the movements of vehicles over impervious surfaces, the higher is the potential loading of runoff constituents, including sediment, nutrients, heavy metals, and the like.

However, at this site, all stormwater runoff generated from impervious surfaces will be treated on site through properly sited, configured, and sized, above ground, primary treatment systems, in accordance with the guidelines set forth in CT DEEP's Stormwater Quality Manual (2004) ("the Manual").

Moreover, as can be seen in the Stormwater Management Report, dated October 8, 2020, by Gardner & Peterson Associates, LLC, the stormwater treatment systems have been sized per the Manual, including the water quality volume (WQV) criterion. Additionally, since the major component of stormwater runoff is infiltration to the ground, this site also meets the groundwater recharge volume (GRV).

Based on the proposed stormwater management system, we can conclude that the proposed development will be protective of the water quality of the regulated resources, especially of the Hockanum River.

We should note that the efficiency of the proposed above-ground stormwater systems (i.e., detention/water quality basins, rain gardens), also depends on the proposed vegetative cover types. REMA will be providing, under separate cover, a robust planting plan for these best management practices.

6.0 Conclusion

It is our professional opinion that the proposal represents the feasible and prudent alternative with regard to indirect, short-term and long-term physical impacts to wetlands and watercourses. There will not be a significant or adverse impact to the site's regulated wetlands, or to off-site wetland resources, including the Hockanum River.

Please call us if you have any questions on the above.

Respectfully submitted,

REMA ECOLOGICAL SERVICES, LLC

George T. Logan, MS, PWS, CSE
Professional Wetland Scientist
Registered Soil Scientist

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

Attachments: A: Figures 1 – 6
B: Annotated Photographs (1 – 22)
C: Wetland Classification & Characterization Definititions

Attachment A

Figures 1 through 6

FIGURE 1: Site Locus; The Village at Naek Road, Vernon, CT

FIGURE 2:

The Village at Naek Road, Vernon, CT
(as seen on a September 2019 aerial)

FIGURE 3: WETLAND UNITS FOR DESCRIPTION & EVALUATION

NOTES:

1. THIS MAP AND SURVEY HAVE BEEN PREPARED IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300b-1 THROUGH 20-300b-20. THIS IS A DATA ACCUMULATION PLAN BASED ON A DEPENDENT RESURVEY CONFORMING TO HORIZONTAL ACCURACY CLASS A-2 AND TOPOGRAPHIC ACCURACY CLASS T-3.
2. BEARINGS DEPICTED ON THIS PLAN ARE BASED THE CONNECTICUT STATE PLANE COORDINATE SYSTEM NAD 83 PER THE MAP REFERENCED IN NOTE 3.A. ELEVATIONS DEPICTED ON THIS PLAN REFER TO THE NAVD 88 DATUM.
3. MAP REFERENCES:
   A. "PROPERTY & TOPOGRAPHIC SURVEY PREPARED FOR THE RASHID HAMID FAMILY, LLP 291 TALCOTTVILLE ROAD VERNON, CONNECTICUT" BY GARDNER & PETERSON ASSOCIATES, LLC. DATE: 03-01-2019.
4. THESE PARCELS ARE LOCATED IN THE PLANNED DEVELOPMENT ZONE (PDZ): GERBER FARM AREA.
5. 291 TALCOTTVILLE ROAD IS IN FAVOR OF AN EASEMENT OVER A PORTION OF 243 & 253 TALCOTTVILLE ROAD FOR THE RIGHT TO PASS AND REPASS BY FOOT OR BY VEHICLE AS DESCRIBED IN VOL. 2540, PAGE 129 IN THE VERNON LAND RECORDS.
6. TOPOGRAPHY DEPICTED ON THESE PLANS WAS PROVIDED BY GOLDEN AERIAL SURVEYS.
7. WETLANDS DEPICTED ON THESE PARCELS WERE DELINEATED BY REMA ECOLOGICAL SERVICES, LLC.
8. THESE PARCELS ARE NOT LOCATED WITHIN THE LEVEL A AQUIFER PROTECTION AREA AS DEPICTED ON THE ZONING MAP VERNON, CT DATED 7/31/2020.

NAD83

LAND OF THE RASHID HAMID FAMILY, LLP PARCEL 'B' 291 TALCOTTVILLE ROAD 54,638± Sq.Ft. 1.25± Acres

CLOSING LINE N44°22'53"E 449.47'

Wetland 1B

Wetland C

Wetland A

Wetland B

SEEPAGE SWALE

WETLAND SEEP

N/F THE TOWN OF VERNON 90 HOCKANUM BOULEVARD

HOCKANUM RIVER

1215± ALONG CENTERLINE OF RIVER

LAND OF THE RASHID HAMID FAMILY, LLP PARCEL 'A' 291 TALCOTTVILLE ROAD 427,154± Sq.Ft. 9.81± Acres

LAND OF THE RASHID HAMID FAMILY, LLP 37 NAEK ROAD 172,265 Sq.Ft. 3.95 Acres

N/F THE RASHID HAMID FAMILY, LLP 46 NAEK ROAD

N/F THE RASHID HAMID FAMILY, LLP 38 NAEK ROAD

N/F THE RASHID HAMID FAMILY, LLP 32 NAEK ROAD

N/F THE RASHID HAMID FAMILY, LLP 26 NAEK ROAD

N/F THE RASHID HAMID FAMILY, LLP 29 NAEK ROAD

N/F THE RASHID HAMID FAMILY, LLP 27 NAEK ROAD

N/F 327 TALCOTTVILLE, LLC 327 TALCOTTVILLE ROAD

N/F MARCIA L. JULIANO 321 TALCOTTVILLE ROAD

N/F THE RASHID HAMID FAMILY, LLP 309 TALCOTTVILLE ROAD

N/F SAMUEL J. & PAULETTE A. BELSITO 295 TALCOTTVILLE ROAD

N/F TALCOTTVILLE VERNON DEVELOPMENT, LLC LOT 'B' 243 TALCOTTVILLE ROAD

N/F TALCOTTVILLE VERNON DEVELOPMENT, LLC LOT 'A' 273 TALCOTTVILLE ROAD

APPROXIMATE LOCATION OF RIGHT OF WAY EASEMENT IN FAVOR OF MARIANIST SOCIETY INC. AND ITS SUCESSORS

NAEK ROAD

TALCOTTVILLE ROAD - ROUTE 83

WETLAND REGULATED AREA

100' REGULATED AREA

LEGEND

- PROPERTY LINE
- IRON PIPE/PIN FOUND
- MONUMENT FOUND
- EASEMENT
- UTILITY POLE
- SANITARY SEWER
- 490 EXISTING CONTOUR
- x492.3 EXISTING ELEVATION
- TOWN MAP WETLANDS
- DELINEATED WETLANDS

THE WETLAND SOILS ON THIS PROPERTY WERE IDENTIFIED IN THE FIELD USING THE CRITERIA REQUIRED BY CONNECTICUT P.A. 72-155 AS AMENDED BY P.A. 73-571 AND ARE ACCURATELY REPRESENTED ON THIS PLAN.

GEORGE T. LOGAN, MS, PWS
Registered Soil Scientist

60 30 0 60 120 180
GRAPHIC SCALE 1"= 60'

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

ERIC R. PETERSON — L.S. 23430 REGISTRATION NO.

STATE OF CONNECTICUT ERIC R. PETERSON No. 23430 LICENSED LAND SURVEYOR

REVISIONS

DATA ACCUMULATION PLAN
WETLANDS REDESIGNATION PLAN
RASHID HAMID FAMILY, LLP
291 & 293 TALCOTTVILLE ROAD
27, 32, 37, 38 & 46 NAEK ROAD
VERNON, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP NO.
E.R.P.	1"=60'	03-17-2021	1 OF 1	5768-W

G:_VPlot\5768\Wetlandredesignation\03-17-2021\5768-W.pdf
5768B \Dwg\5768B.dwg

FIGURE 4: The Village at Naek Road, Vernon, CT; as seen on a 1965 aerial

CT Environmental Conditions Online

FIGURE 5: The Village At Naek Road, Vernon, CT
(as seen on a 2004 aerial photograph)

Legend

- Parcels for Protected Open Sp
- Geographic Names7
- Geographic Place 3
- Airport
  - Airport
  - Heliport
- Railroad
- Streets
  - Interstate Highway
  - US Highway
  - State Highway
  - Primary limited-access
  - Ramp
  - Street
  - Ferry crossing
- County Line
  - State Boundary
  - County Boundary
  - Coastline
- County Name
- Town Line
  - State Boundary
  - Town Boundary
  - Coastline
- CT Town Name
- Waterbody Line 7

Notes

0.1 0 0.07 0.1 Miles

THIS MAP IS NOT TO BE USED FOR NAVIGATION

This map is intended for general planning, management, education, and research purposes only. Data shown on this map may not be complete or current. The data shown may have been compiled at different times and at different map scales, which may not match the scale at which the data is shown on this map.

FIGURE 6: The Village at Naek Road, Vernon, CT; as seen on a 1934 aerial

Attachment B

Photos 1 through 22

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 1: Facing easterly. Wetland B1, the northern wetland with vernal pool habitat, when water level is very low. Buttonbush shrub swamp in background at left.

Photo 2. Westerly view. Wetland C; buttonbush shrub swamp at right. 100-feet of the upland mixed hardwood forest at left rear is to be preserved.

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 3: Southwesterly view of wet meadow fringe of eastern vernal pool, Wetland B, and of the adjacent upland with maturing, post-agricultural mixed hardwood forest.

Photo 4. Northeastern floodplain terrace (Wetland B) with a mosaic of red maple clumps and wet meadow, including sensitive fern and blue joint grass.

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 5: Mid-October view of wet meadow on the river terrace, with shrubs and trees in background, closer to the river. Trail in foreground.

Photo 6. Floodplain herbaceous vegetation includes tall, heavy-seeding annual forbs, that often grow on the riverbank. Stinging nettles are shown here.

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 7: *Sambucus canadensis,* common elderberry bordering meadow habitat, at the top of the riverbank, eastern section of the Hockanum riparian terrace.

Photo 8. Facing northeasterly. A stand of trees, mostly red maples is on the higher elevation river levee, with wet meadow further back from the river.

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 9. Mid-October view of sedge-dominated meadow in a wetland swale downgradient of the Naek Road cul-de-sac. Tussock sedge in foreground. 10-22-20.

Photo 10. Downgradient of the swale draining from the sandstone ridge (Wetland C), the floodplain wet meadow has different species. *Scutellaria lateriflora* (mad dog skullcap) is common. 9-19-20.

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 11. Wetland A, the central swale, has dense, diverse shrub cover. Southeasterly view.

Photo 12. Ferns comprise a high percent of groundcover along the base of the forested slopes, in the southwestern portion of the site, extending onto the wet meadow terrace (Wetland B) in the floodplain.

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 13. Southeasterly view upslope through mixed hardwood forest on the upland slope below the Naek Road cul-de-sac.

Photo 14. Westerly view downslope from the oak–hop hornbeam forest op top of slope, through the hillside forest of E. hemlock, in the southwestern portion of the site.

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 15. View upstream at the northeastern end of the site of low-gradient in-stream river habitat (Wetland 1B). Substrate is silty, river is moderately well shaded.

Photo 16. Close-up of bank vegetation showing trees rooted along banktop, about 75% cover of herbs and woody debris on the bank, and dense vine and shrub cover.

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 17. View downriver from the wall at the river's sharp bend to the south, where it crosses the sandstone ridge. Platy boulders in water, riffle in distance. 9-19-20.

Photo 18. Close-up of riffle at the sharp bed in the river. Well oxygenated water and rocky substrate is cleared of silt by turbulence. This area is potential fish spawning habitat.

Photo 19. Wetland B, continued. Seedlings germinating on rocks within river channel, at the sharp bend; presence of moss indicates good water quality.

Photo 20. Further downriver, a large, recent treefall nearly blocks the river channel, and creates protected sub-habitats. Note that the substrate is rocky.

The Village at 27 Naek Road, along the Hockanum River, Vernon, CT
Photos taken by REMA Ecological Services, LLC on 9-19 & 10-22-2020

Photo 21. Wetland B, continued. Forested buffer is mostly narrow and sparse on the far side of river, across from this site.

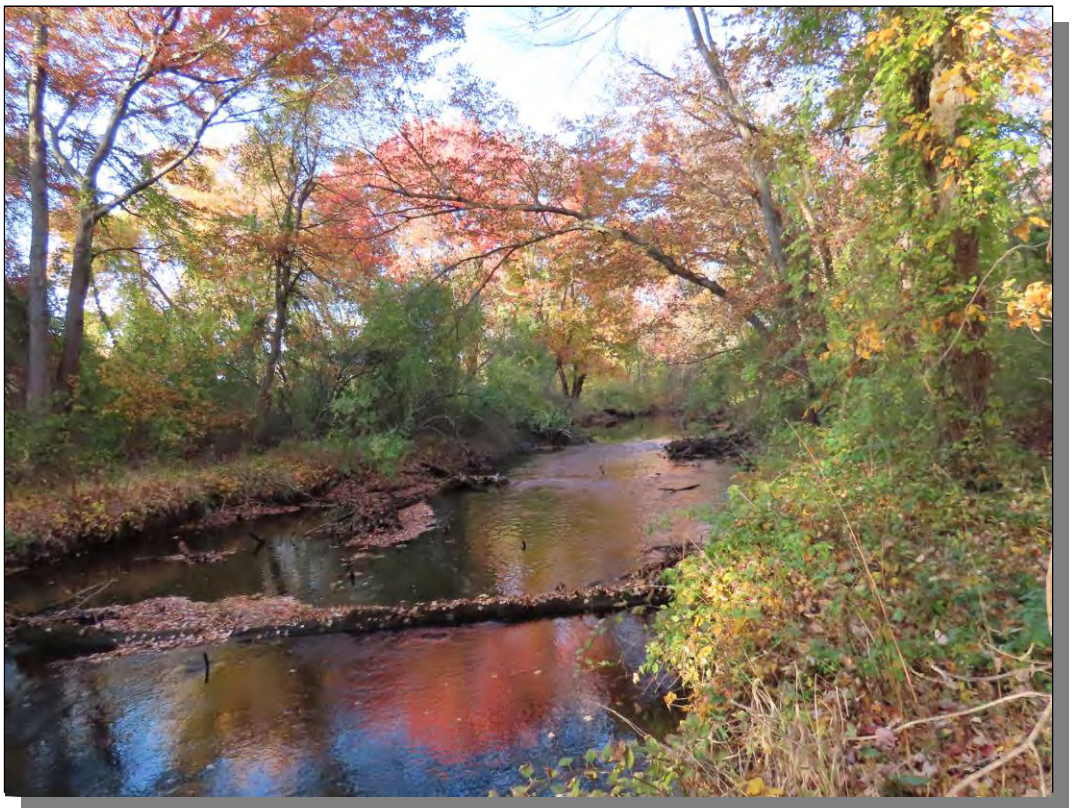


Photo 22. Aesthetic and recreational values are already high, along this section of the river; a formalized riverside trail would increase them further.

Attachment C

Wetland Classification & Characterization Definitions

WETLANDS: *The Physical Environment*

WETLAND HYDROGEOMORPHIC CLASSIFICATION

Surface-Water Depression Wetlands: In these wetlands, precipitation and overland flow (surface runoff) collect in a depression where there is little or no groundwater discharge. Water leaves the wetland principally by evaporotranspiration and infiltration (groundwater recharge). The wetland hydrologic system lies above the local or regional groundwater system and is isolated from it by an unsaturated zone; thus, it is said to be "perched." In the glaciated Northeast, surface-water depression wetlands are most likely to form over bedrock or till deposits in topographically elevated areas of landscape; however, they may develop in lowland kettles or ice-block basins that formed in glaciolacustrine or fine-textured glaciofluvial deposits.

Surface-Water Slope Wetlands: These wetlands are located along the edge of stream or lake or on the sloping surface of a floodplain. They may occur on till or stratified drift but are commonly found on alluvium. While precipitation and overland flow also feed these wetlands, the principal source of water is the overflow of the adjacent water body. The sloping surface of the wetland permits water to drain readily back to the lake or river as its stage falls. As was the case with the previous class, the wetland surface usually lies well above the local water table, so groundwater discharge to the wetland is negligible or nonexistent. Groundwater recharge from the wetland is possible, depending on the permeability of underlying surficial deposits.

Groundwater Depression Wetlands: These wetlands occur where a basin intercepts the local groundwater table, so that groundwater discharge as well as precipitation and overland flow feed the wetland. Classic groundwater depression wetlands have no surface drainage leaving the site; however, occasional streamflow out may occur form basin overflow. Groundwater inflow may be continuous or seasonal, depending upon the depth of the basin and the degree of fluctuation of the local water table. During periods when the wetland water level is higher than the local groundwater table (e.g., after major precipitation events in dry season), groundwater recharge may occur. Groundwater may enter the wetland basin from all directions, or it may discharge in one area and recharge in another. In the glaciated Northeast, groundwater depression wetlands are most likely to occur in stratified drift, particularly in coarse-textured glaciofluvial deposits where relatively rapid movement between groundwater and surface water can occur.

Groundwater Slope Wetlands: These wetlands occur where groundwater discharges as springs or seeps at the land surface and drains away as streamflow. Most commonly, these wetlands occur on hillsides over till deposits or at the base of hills where stratified drift and till come into contact. Headwater wetlands are typically groundwater slope wetlands. The local water table slopes toward the wetland surface. Where groundwater flow is continuous, the soil remains saturated. At many sites, however, groundwater inputs cease during late summer or early fall as evaporotranspiration depletes soil moisture in the root zone, in which case the soil is only seasonally saturated. Permanent ponding of water is prevented by the sloping land surface, but water may collect temporarily in isolated depressions. Precipitation and overland flow provide additional water to the wetland on an intermittent basis. Groundwater recharge may occur in the wetland after such events, but amounts are likely to be negligible, especially where wetland soils have formed over dense lodgment till deposits. Where such deposits are present, groundwater slope wetlands may be fed primarily by shallow groundwater systems perched above the regional system.

Reference:

Golet, C.G., A.J.K. Calhoun, W.R. DeRagon, D.J. Lowry, and A.J. Gold. 1993. Ecology of Red Maple Swamps in the Glaciated Northeast: A Community Profile. USFWS. Biological Report No. 12

WETLANDS: *The Physical Environment*

SOIL DRAINAGE CLASSES

Excessively drained: Brightly colored; usually coarse-textured; rapid permeability; very low water-holding capacity; subsoil free of mottles

Somewhat excessively drained: Brightly colored; rather sandy; rapid permeability; low water-holding capacity; subsoil free of mottles

Well drained: Color usually bright yellow, red, or brown; drain excess water readily, but contain sufficient fine material to provide adequate moisture for plant growth; subsoil is free of mottles to a depth of at least 36 inches.

Moderately well drained: Generally any texture, but internal drainage is restricted to some degree; mottles common in the lower part of the subsoil, generally at a depth of 18 to 36 inches; may remain wet and cold later in spring; generally suited for agricultural use.

Somewhat poorly drained: Remain wet for long periods of time due to slow removal of water; generally have a slowly permeable layer within the profile or a high water table; mottles common in the subsoil at a depth of 8 to 18 inches.

Poorly drained: Dark, thick surface horizons commonly; gray colors usually dominate subsoil; water table at or near the surface during a considerable part of the year; mottles frequently found within 8 inches of the soil surface.

Very poorly drained: Generally thick black surface horizons and gray subsoil; saturated by high water table most of the year; usually occur in level or depressed sites and are frequently ponded with water.

Reference:

Wright, W. R., and E. H. Sautter. 1979. Soils of Rhode Island landscapes. R.I. Agric Exp. Station Bull. 429. 42 pp.

WETLANDS: *The Plant Community*

WETLAND CLASSES AND SUBCLASSES IN THE GLACIATED NORTHEAST

WETLAND CLASS	WETLAND SUBCLASS
Open Water	(OW-1) Vegetated (OW-2) Floating-leaved (OW-3) Non-vegetated
Deep Marsh	(DM-1) Dead Woody (DM-2) Shrub (DM-3) Sub-shrub (DM-4) Robust (DM-5) Narrow-leaved (DM-6) Broad-leaved
Shallow Marsh	(SM-1) Robust (SM-2) Narrow-leaved (SM-3) Broad-leaved
Meadow	(M-1) Ungrazed (M-2) Grazed
Shrub Swamp	(SS-1) Sapling (SS-2) Bushy (SS-3) Compact (SS-4) Aquatic
Wooded Swamp	(WS-1) Deciduous (WS-2) Evergreen
Bog	(BG-1A) Compact Shrub (BG-1B) Bushy Shrub (BG-2) Wooded (BG-3) Emergent

Note: Subclass (OW-2) has replaced (SM-4)
Seasonally Flooded Class (SF-1 & SF-2) has been removed

Reference:

Golet, F.C., and J.S. Larson. 1974. Classification of freshwater wetlands in the glaciated Northeast. USFWS Resour. Publ. 116. 56 pp.

WETLANDS: *The Physical Environment*

COMMON WATER REGIMES OF NORTHEASTERN WETLANDS

Seasonally flooded: Surface water is present for extended periods, especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.

Temporarily flooded: Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the season.

Seasonally saturated: The soil is saturated to the surface, especially early in the growing season, but unsaturated conditions prevail by the end of the season in most years. Surface water is absent except for groundwater seepage and overland flow.

Semi-permanently flooded: Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land surface.

Permanently flooded: Water covers the land surface throughout the year in all years. Vegetation is composed of obligate hydrophytes.

Saturated: The substratum is saturated to the surface for extended periods during the growing season, but surface water is seldom present. This water regime applies to permanently saturated, non-flooded wetlands such as bogs.

References:

Golet, F. C., A. J. K. Calhoun, W. R. DeRagon, D. J. Lowry and A. J. Gold. 1993. Ecology of Red Maple Swamps in the Glaciated Northeast: A Community Profile. U. S. Dep. Int. Fish Wild. Serv. Biol. Rep. 12, 152 pp.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U. S. Fish Wild. Serv. Biol. Serv. Program FWS-OBS 79/31. 103 pp.

STAFF COMMENTS

TOWN OF VERNON

55 West Main St., VERNON, CT 06066-3291
(860) 870-3640
gmcgregor@vernon-ct.gov

OFFICE OF THE
TOWN PLANNER

MEMORANDUM

TO: Inland Wetlands Commission

FROM: George K. McGregor, AICP, Town Planner

SUBJECT: IWC 2021-05, Village at Naek Road

DATE: April 20, 2021

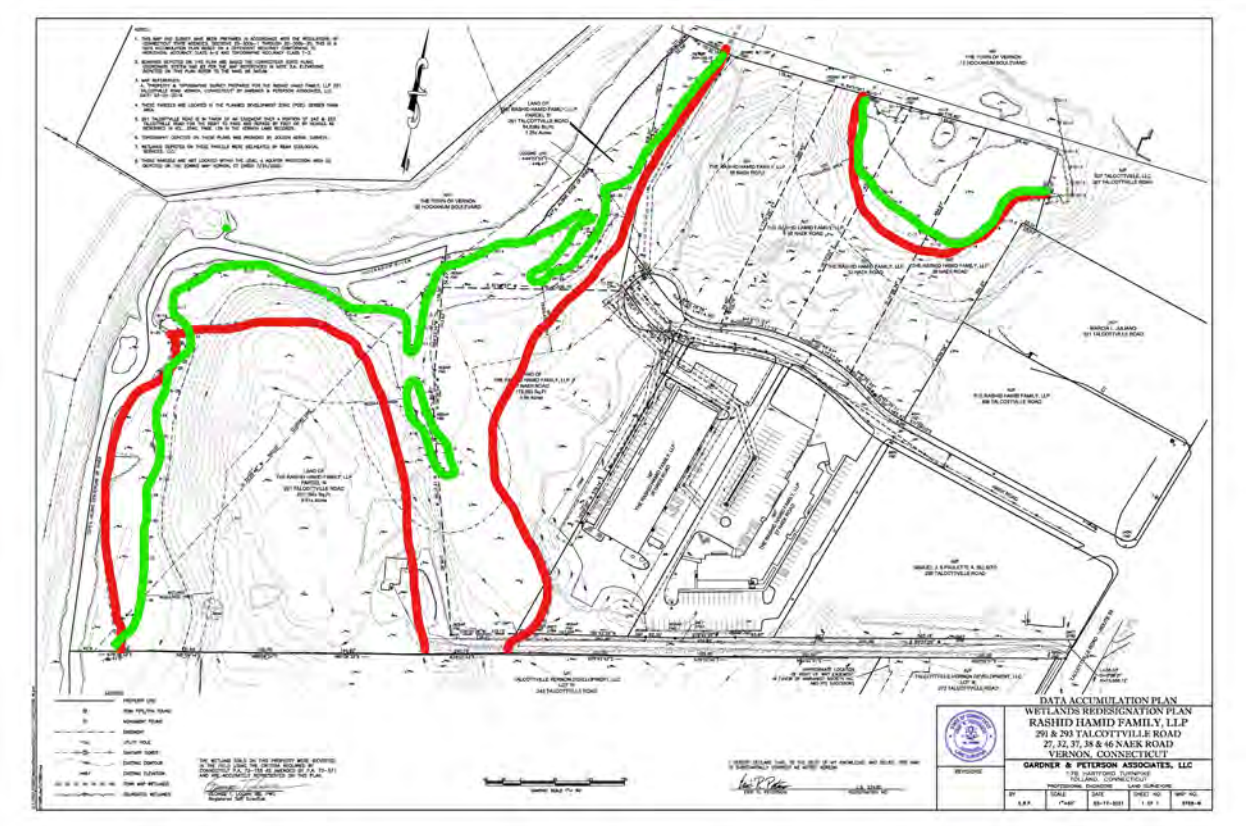
Request

Application **IWC-2021-04**, of Rashid Hamid, for a Wetlands re-designation and a Wetlands permit by Commission, for the development of a +-70-unit townhouse residential project, at 291 and 293 Talcottville Rd. (Assessor ID: Map 3 Block 4 Parcels 9A & 9E) and at 27, 32, 37, 38, and 46 Naek Rd. (Assessor ID: Map 3 Block 4 Parcels 008-8, 7,4, 6, 5). The cumulative size of the parcels, when combined, is 21.6 acres. The property is zoned Planned Development Zone Gerber Farm (PDZ) and will require site plan and special permit approvals from the Planning and Zoning Commission after IWC review.

Village at Naek Road Location

Wetlands Re-designation plan

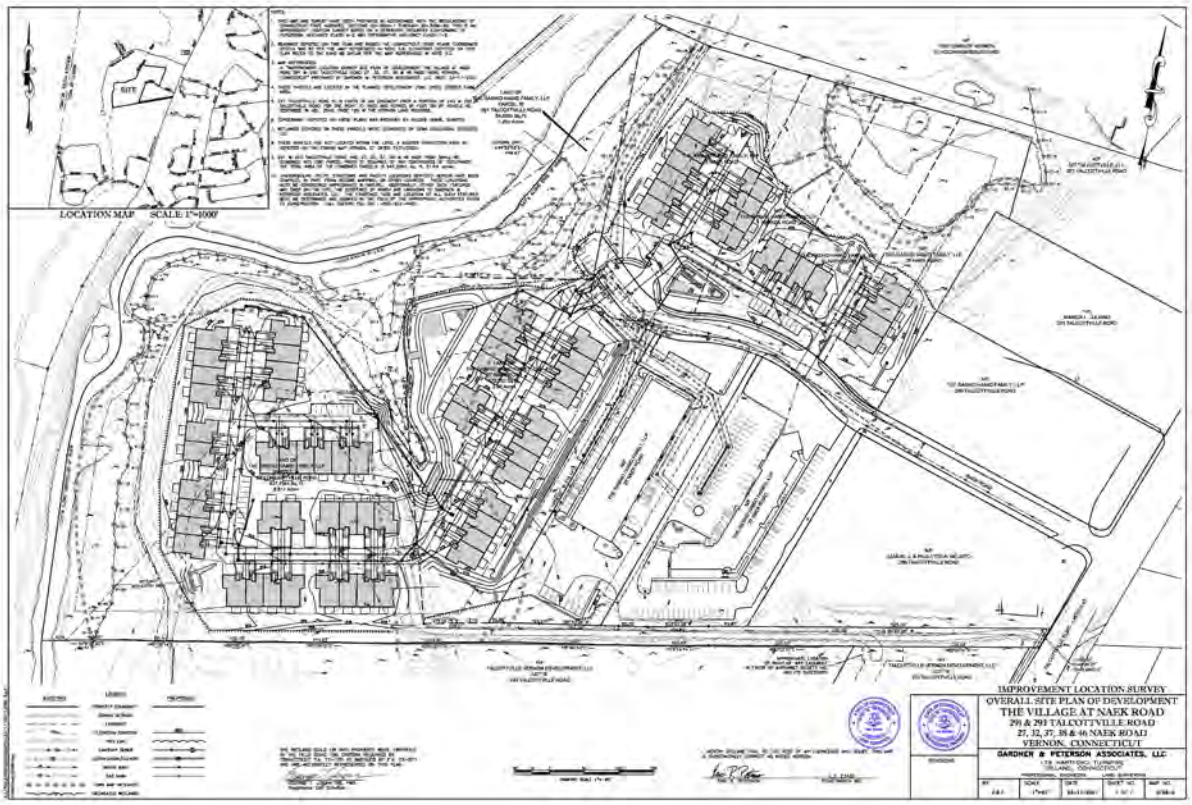
The applicant has submitted a re-designation plan, prepared by Gardner & Peterson, in conjunction with Rema Ecological Services, based upon a field identified soil investigation. The report is included in the applicant submission. Staff has added color to the submitted map in order to depict the changing condition (existing Town Wetland boundary in red; field located wetlands in green):



Wetlands Permit by Commission/Site Plan

The applicant has submitted a site plan set showing the wetlands impacts, primarily regulated activities within the Upland Review Area. The application indicated 4 acres of disturbance in the Upland Review Area and includes such items as driveways, drainage, stormwater management site preparation and grading, and residential unit construction. A Wetlands Assessment, featuring an analysis of functions and values, also prepared by Rema, is included in the packet. Staff will provide a review of this document at the meeting as it was received just prior to publication of the report.

Village at Naek Road Combined Plan



Staff Comments

Staff has identified several outstanding issues:

1. **Assessment/Functions & Values**. The initial application did not include a justification contained in the soil scientist's report related to the impacts on the wetlands and upland review area. A Functions and Values statement was submitted on April 15, 2021 and is included in the packet. However, Staff has not had the time to review and report. We will update the Commission at the hearing.

2. **The Trail**. The plans show a future trail extension to the Hockanum Linear Park, although only as a line on the map. Staff recommends a conceptual design and location be included so the trail can be approved as a part of this wetlands permit request. This is in the best interest of the applicant and the Town, we find. It may be that additional work with the Town and the Linear Park Committee may be necessary. It is expected that the applicant would construct the trail during site work. Access locations for the residents of Naek Village should also be identified. Continued discussion is necessary.

3. **Proximity to the Wetlands.** There are several locations where site development comes within 20 to 40 feet of the designated wetland and watercourse. An explanation and justification of the impacts on the riparian corridor is important and Staff has requested such of the applicant. Consideration of increasing the buffer and limited disturbance may improve this condition.

4. **Drainage and other site observations**. In their respective referrals, The Town Engineer and the Town Wetlands Agent identified a number of items related to site development which required clarification or revision (including, but not limited to, drainage, invasive species, road design, and phasing). The Applicant has provided a response to those items received by Staff on April 15, 2021. It is included as an attachment to this memo, although Staff has not had the opportunity to review and will report out at the IWC meeting on Tuesday.

Draft Motions

Draft Motions were not available at the time of publication.

GKM

Attachments
1. Wetland Agent Comments dated 4/6/21
2. Town Engineer Comments dated 4/8/21
3. Town Planner Comments dated 4/8/21
4. Applicant Response Letter dated 4/15/21

APPLICATION REVIEW COMMENTS

FROM: cperry@vernon-ct.gov

TO:

DATE: 04/06/2021

APPLICANT: HAMID FAMILY LLP THE RASHID

PROJECT: RASHID HAMID

LOCATION: 291 TALCOTTVILLE RD

My comments in regard to the application submitted to the Inland Wetland Commission (IWC) and/or Planning & Zoning Commission (PZC) are:

_____ NO COMMENT

_____ COMMENTS ATTACHED

_____ PLEASE NOTE THE FOLLOWING COMMENTS:

COMMENTS PER SITE PLANS DATED 3-17-21:

WETLANDS REDESIGNATION PLAN:
- Why is there such a drastic change in wetlands boundary?
We typically do not see a big change in a re-designation of a prior delineation.

- The wetland located in the northeast portion of the property has been previously defined as a Vernal Pool. I think this information should be noted on the site plan in order to have a better understanding of the site conditions and to properly protect it.

SOIL SCIENTIST REPORTS:
Additional Wetlands Assessment and Impacts Analysis is needed to address such items as the requirements in sec. 10.2 of the wetland regs. ex. environmental impact, short and long term impacts, irreversible and irretrievable losses, impacts to the off-site wetlands, function and values assessment.

SITE PLANS:
- Reference page 5 of 10; Development within the northwestern portion of the property is in close proximity to the wetlands and watercourse (approx. 25-35 ft.) in 2 areas.
I think a more feasible and prudent alternative would be to increase the separation distance between the proposed development and the wetland areas. There have been several studies done over the years that stress the importance of the Riparian (or Buffer) areas.

- It appears the storm drainage for Naek Rd. may dump directly into the Hockanum River. I think this would be a good time to improve this condition as an offset to the proposed development.

From: Smith, David
To: McGregor, George
Cc: Perry, Craig
Subject: IWC 2021-04
Date: Thursday, April 8, 2021 10:25:53 AM

George –

I looked over the Hamid plans yesterday and have a few comments. Some may not be strictly IWC related, but we might as well raise them now, since it is likely this or some similar form of the proposal will go forward to PZC. Additionally, I expect that some of my comments may overlap with your's or Craig's.

- It is a little unclear which lots are actually part of this project. Lot #27 is listed in the title block but does not appear to be part of the application. Another unnumbered lot does appear to be part of the project. Will these lots be merged into a single parcel? Existing pins and monuments as well as proposed pins/monuments should be shown. I believe that the 'temp' cul-de-sac should be considered permanent at this point. The property line should be adjusted and the 'cheeks' be conveyed to the Town of Vernon. Nadia and Abdul Ways are actually private access drives and will not be Town Roads, correct? Storm water drainage runs from the Naek Road runs northerly from the cul-de-sac. Is that in an easement? IF not, it should be together with a right of access for maintenance and an unrestricted right to drain. Likewise, if the existing sewer pipe is not an actual easement it needs to be.
- Will this construction be phased? It may make difference on how the sedimentation and erosion control plan is implemented. What is the total area of disturbance?
- Drainage Calculations? Does this proposal provide zero increase in run-off. The retention ponds also appear to have a component of recharge. Yard drains and infiltration units are proposed, are those associated with rain gardens? Would the applicant consider recharge of the roof water?
- I recommend that the #18 block (Abdul Way) be shortened by one unit on the easterly end to eliminate the need to grade right up to the Wetland limit.
- Will there be any shade trees, shrubs planted in the vicinity of the recharge basins?
- There is an existing Recreation Easement shown, who does this benefit? The proposed trail easement should be in favor of the Town of Vernon.
- Are there any invasive plants/trees in the project area? They should be eliminated before the site is cleared and grubbed to prevent their spread to other areas. There are several areas of disturbance in close proximity to the wetlands limits. If mature trees are damaged or removed in this area, a plan for replanting suitable shade trees and habitat shrubs should be provided.

That's it for now, but I will take a look at any revised plans and supplemental information as soon as it is available, and comment accordingly.

Thank you

From: McGregor, George
To: "Eric Peterson"
Cc: Perry, Craig; Smith, David
Subject: IWC 2021-04 Naek-Town Planner, Wetlands Agent, Town Engineer comments
Date: Thursday, April 8, 2021 11:08:00 AM
Attachments: Town Engineer Comments 4-8-21.pdf
Wetland Agent comments 4-6-21.docx

Mr. Peterson:

Find attached comments from Mr. Smith and Mr. Perry. My comments below:

1. The issue of the trail needs to be flushed out a little. What are the developer's intention with regard to the Hockanum Trail?
    a. Easements limits should be better articulated and defined.
    b. A Trail conceptual may help showing the extent, the connections to other segments and how it fits with the network.
    c. I suggest that the developer design, permit, and construct the trail (with design/permit a part of the wetlands permit and construction a part of the PZC approval. Makes sense to permit it all now?
    d. How specifically will residents of the Naek Village get to the trail?
2. The easement should be clearly defined and it would be nice to see draft easement language as soon as possible. I assume this would also include the public gravel lot?
3. Since the project owner also owns the lot to the east (309 Talcottville) I'd suggest extending the sidewalk along that frontage as well.
4. The site disturbance gets very close the Hockanum. I recommend reviewing opportunities to pull this back and increase the riparian corridor.
5. The project is quite dense (some of the decks are very close

together and there is little internal open spaces which are usable and no common open space. It is hard to get perspective without vegetation or landscaping (and I understand this is a wetlands review), but that swm area at the entrance for instance, what does is actually look like. Not always the best place for this type of facility.

6. A full size scaled exhibit showing the entire project would also help.

Might be best to do a call Monday or Tuesday to discuss with Craig and Dave. Let us know when your team is available.

George

George K. McGregor, AICP
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Vernon, CT. 06066-3291
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April 15, 2021

Mr. George McGregor, AICP
Town Planner
Town of Vernon
55 West Main Street
Vernon, CT 06066

RE: The Village At Naek Road
Naek Road & Talcottville Road
Responses to comments from George McGregor, Town Planner; David Smith, Town Engineer; and Craig Perry, Wetlands Enforcement Officer

Dear Mr. McGregor:

At the request of the applicant for the above-referenced matter, Gardner & Peterson Associates, LLC (G&P) provides the hereon responses to the referenced staff comments.

Responses to Comments from George McGregor:

1) We have reached out to the Hockanum River Linear Park committee to determine their preferred location of a future path/trail that would run through this property and connect to existing trails located on properties to the north and the south. We hope to have a conversation with representatives from the HRLP committee shortly. We will be updating the plans to depict a future trail location with indications as to the various surface treatments that will be used for construction.
2) The plans depict an easement that will be in favor of the Town of Vernon for the use, maintenance and possible construction of the trail. The easement will be clarified on the plans and does include the future parking area associated with the new trail/path.
3) The construction of a sidewalk along the frontage of 309 Talcottville Road is not within the wetlands or upland review area, therefore we intend to resolve this comment during the Planning & Zoning Commission review.

4) George Logan or Rema Ecological Services, LLC will address the riparian corridor in his impact analysis report.
5) We will revise the plans to include proposed vegetation in the vicinity of the stormwater management areas and the wetland fringes. A landscaping planting plan will be provided for the PZC application.
6) Future revisions of the submitted plans will include a full-size plat of the entire project.

Responses to Comments from David Smith:

1) The plans depict a type-o in the title block where 26 Naek Road and not 27 Naek Road is part of this application as indicate on the submitted application form. If this project is approved and constructed, all 7 parcels will be combined into one parcel. Future revisions of this plans will depict pins and monuments to be set along the merged property boundary as required in the "Standards for Surveys and Maps in the State of Connecticut". The applicant is agreeable to deed the 'cheeks' of the cul-de-sac at the end of Naek Road to the Town, thereby making the cul-de-sac permanent, as long as we determine that buildings 6, 8 & 9 can be moved southerly so that building 6 complies with the new front yard zoning setback. Our search of the land records determined that the existing sanitary sewer and storm drain of the end of Naek Road are both with easements granted to the Town.
2) It is our expectation that this project will be constructed in three phases, which will of course be driven by the future market conditions. The first phase will be the portion of the project located on the north side of Naek Road, including buildings 1 through 4, the utilities servicing those buildings, and stormwater management on the north side of Naek Road. The second phase will consist of buildings 5 through 9, the utilities servicing those buildings, and stormwater basin adjacent to buildings 5 & 7. The remaining portion of the project will be constructed in a third phase. The site disturbance depicted on the plan totals 12 acres.
3) Drainage calculations have been submitted that indicate that there will not be an increase in runoff due to this project. We conducted numerous test pits on this property to determine where soils exist that are suitable to recharge groundwater. The testing concluded that these soils exist on the north side of Naek Road and generally on the easterly portion of the site located to the south of Naek Road. The stormwater management for this project includes stormwater recharge within both stormwater basins, in two raingardens and in 6 sets of unground chambers.
4) The submitted plans depict a blanket be installed to stabilize the slope at the end of the roadway in the vicinity of unit 18F. Future revisions of the plans will depict new vegetation and plantings in this area to help with stabilization and provide shade to the wetlands.
5) George Logan will address the planting of trees/shrubs in the vicinity of the stormwater basins.
6) A recreation easement over 46 Naek Road has been granted to the Town of Vernon for the purpose of passive recreation for the Hockanum River Linear Park.
7) George Logan will address invasive species in his forthcoming report.
8) George Logan will address the planting of trees/shrubs along the fringes of the wetlands and riparian areas.

Responses to Comments from Craig Perry:

George Logan will address all comments raised by Craig Perry in his forthcoming report except for Mr. Perry's last comment.

The existing storm drainage system for Naek Road currently discharges into the wetlands approximately 65-feet from the Hockanum River near the northerly boundary of this project. The discharge from this pipe has overtime created an eroded channel to the Hockanum River. The applicant will install a rip rap plunge pool at the outlet to this system that will reduce the velocity of the runoff and reduce the potential of any future erosion in this vicinity.

Yours truly,

Eric R. Peterson, P.E., L.S.