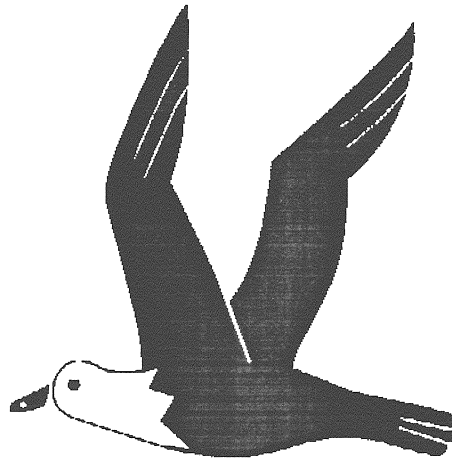


# MADISON LANDING

Active Adult Housing Development

Madison, Connecticut



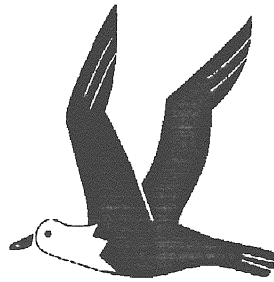
## King's Mark Environmental Review Team Report

King's Mark  
Resource Conservation and Development Area, Inc.

# **MADISON LANDING**

## **Active Adult Housing Development**

**Madison, Connecticut**



**Environmental Review Team Report**

**Prepared by the  
King's Mark Environmental Review Team  
of the King's Mark  
Resource Conservation and Development Area, Inc.**

**for the  
Planning and Zoning Commission  
Madison, Connecticut**

**June 2002**

**CT Environmental Review Teams  
1066 Saybrook Road, P.O. Box 70  
Haddam, CT 06442  
(860) 345-3977**

## Acknowledgments

This report is an outgrowth of a request from the Madison Planning and Zoning Commission to the New Haven County Soil and Water Conservation District (SWCD). The SWCD referred this request to the King's Mark Resource Conservation and Development Area (RC&D) Executive Council for their consideration and approval. The request was approved and the measure reviewed by the King's Mark Environmental Review Team (ERT).

The King's Mark Environmental Review Team Coordinator, Elaine Sych, would like to thank and gratefully acknowledge the following Team members whose professionalism and expertise were invaluable to the completion of this report.

The field review took place on Wednesday, April 10, 2002

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*\*Report not yet received, anticipated*

I would also like to thank Marilyn Ozols, p&z administrator, John Bowers, Madison health department, Stewart McMillan, town engineer, Tom Cody and Keane Callahan, Robinson & Cole, Glenn Johnson, Fred Greenberg and John Mancini, BL Companies, Brad Egan and Lou Marquet, Leyland Development, Michael Klein, soil scientist/environmental consultant, and other town officials and residents for their cooperation and assistance during this environmental review.

Prior to the review day, each Team member received a summary of the proposed project with location and soils maps. During the field review Team members were given additional plans and technical information. Some Team members unable to attend the scheduled field review made visits on their own. Following the review, reports from each Team member were submitted to the ERT coordinator for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site plans or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project - all final decisions rest with the town and landowner. This report identifies the existing resource base and evaluates its significance to the proposed use, and also suggests considerations that should be of concern to the town. The results of this Team action are oriented toward the development of better environmental quality and the long term economics of land use.

The King's Mark RC&D Executive Council hopes you will find this report of value and assistance in the review of this proposed active adult housing development.

If you require additional information please contact:

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CT ERT Program  
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# Introduction

## Introduction

The Madison Planning and Zoning Commission has requested assistance from the King's Mark Environmental Review Team in reviewing a proposed active adult housing development.

The ±42 acre site is located on Route 1 in the eastern part of Madison. The parcel is currently known as the Griswold Airport and is still operational with private planes using the facility. It is surrounded to the east, west and south by land owned by the State of Connecticut, to the southeast by land owned by Shore Chemical Company, to the west by residential properties and the north by Route 1. The Hammonasset River abuts a portion of the property to the southeast and tidal wetlands cover approximately 10 acres of the site.

The site currently is developed with an asphalt runway, airplane hangers, and other airport structures. A large grass field is used as an ultralight runway.

The Madison Landing development application is for an active adult residential community. The design is based on traditional neighborhood design principles. 192 homes are proposed which include 70 single family homes, 39 townhouses, and 83 multifamily units. The project also includes community facilities and public access provided by a walkway and canoe/kayak launch area.

The project will include a community subsurface sewage disposal system and public water supply system.



## Objectives of the ERT Study

The commission has asked for ERT assistance with the review of this project to provide an outside, objective evaluation of the proposed development. The ERT is asked to look at potential general and specific impacts to the site and the surrounding area, to review the adequacy of systems and mitigation measures proposed and to provide recommendations and guidelines to minimize adverse impacts.

Major concerns focus on impacts to coastal resources, stormwater management, sewage disposal, wildlife and fisheries habitat, archaeological resources, land use and site design, traffic and access, open space and recreational opportunities.

## The ERT Process

Through the efforts of the Madison Planning and Zoning Commission, this environmental review and report was prepared for the town of Madison.

This report provides an information base and a series of recommendations and guidelines which cover the topics requested by the town. Team members were able to review maps, plans and supporting documentation provided by the applicant.

The review process consisted of four phases:

1. Inventory of the site's natural resources;
2. Assessment of these resources;
3. Review of plans and identification of problem areas; and
4. Presentation of planning and land use guidelines and recommendations.

The data collection phase involved both literature and field research. The field review was conducted on Wednesday, April 10, 2002. The emphasis of the field review was on the exchange of ideas, concerns and recommendations. Being on site allowed Team members to verify information and to identify other resources. Some Team members made separate and/or additional site visits.

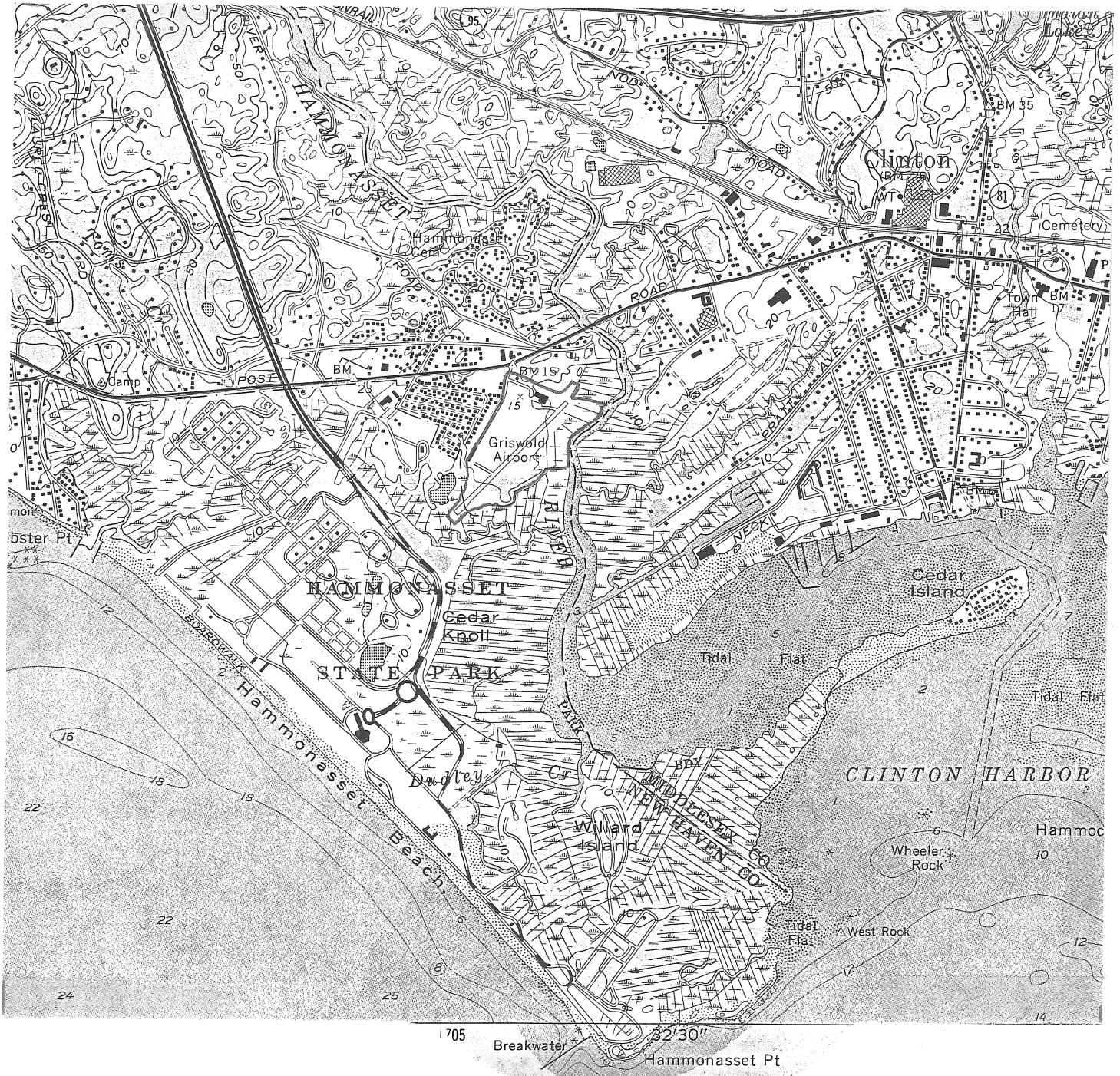
Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. Individual Team members then prepared and submitted their reports to the ERT coordinator for compilation into this final ERT report.

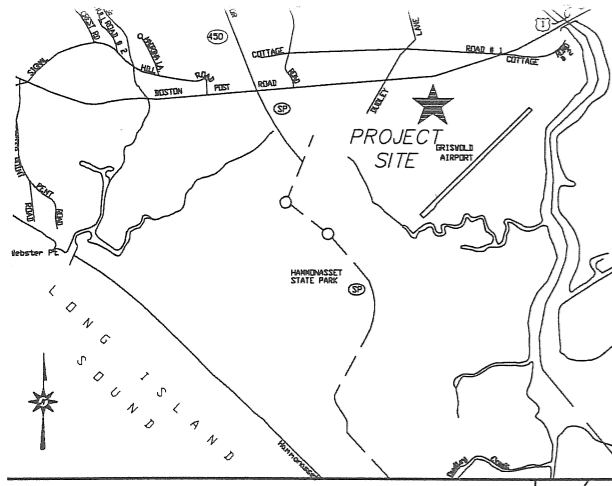
Figure 1



Approximate Location Map

Scale 1" = 2000





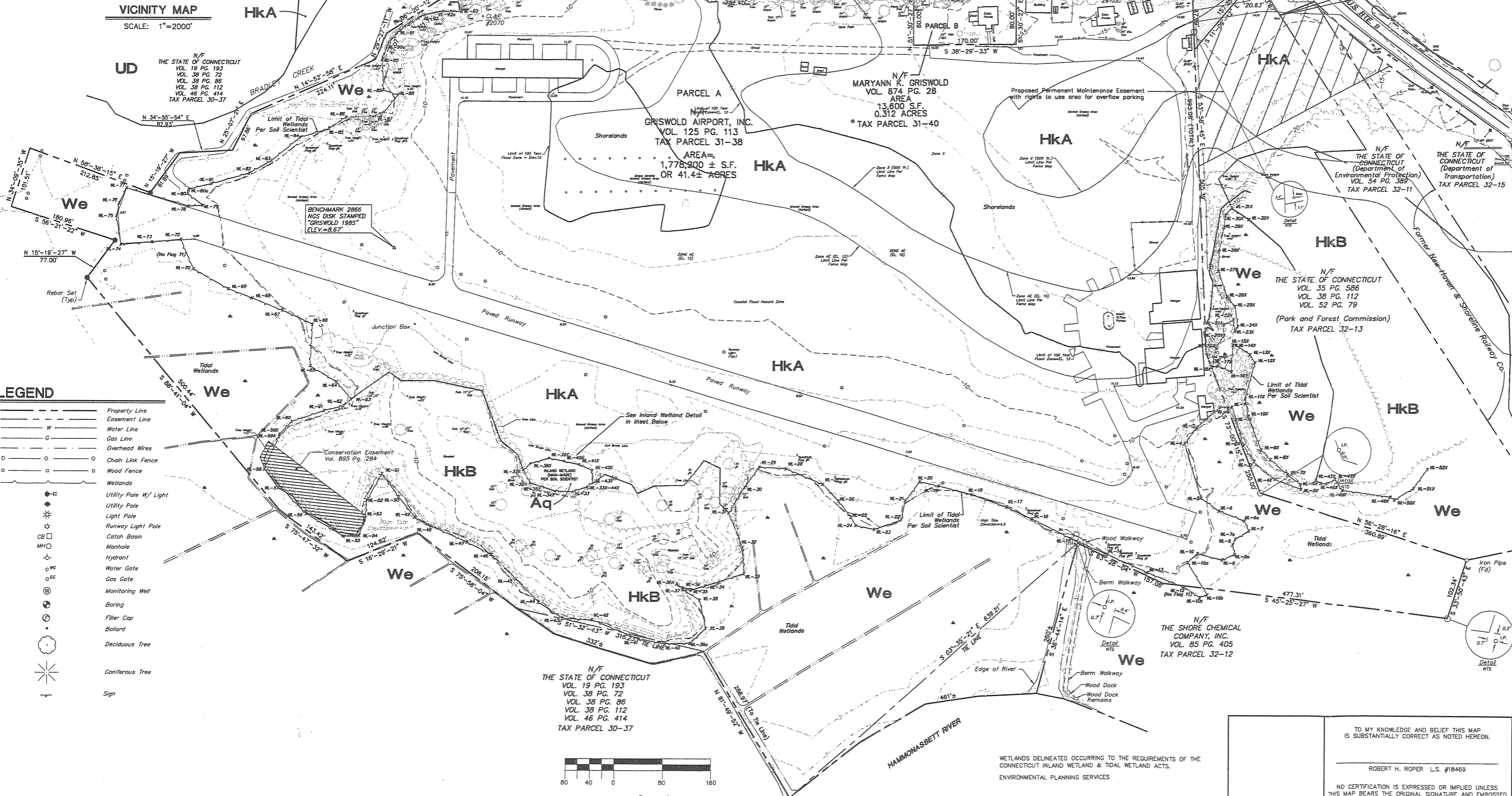
VICINITY MAP  
SCALE: 1"=2000'

- THIS MAP HAS BEEN PREPARED IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-302a-1 THROUGH 20-302a-20 AND THE STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT ENFORCED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. SEPTEMBER 28, 1995.
- THIS PLAN CONFORMS TO HORIZONTAL ACCURACY CLASS A-2 AND TOPOGRAPHIC ACCURACY CLASS 1-2.
- BOUNDARY DETERMINATION OF PERIMETER PROPERTY LINES IS BASED UPON A RESURVEY.
- THE TYPE OF SURVEY PERFORMED IS A PROPERTY AND TOPOGRAPHIC SURVEY AND IS INTENDED TO DEPICT THE POSITION OF THE BOUNDARIES WITH RESPECT TO ADJACENT PROPERTY, STRUCTURES, EASEMENTS, ENCROACHMENTS, VISIBLE UTILITIES, ROADWAYS AND CONTOURS.
- NORTH ARROW AND BEARINGS REFER TO MAP REFERENCE "C".
- ELEVATIONS REFER TO THE NATIONAL GEODETIC VERTICAL DATUM (1929) AND ARE BASED ON G.L.S. MONUMENTS 2727 AND 2728.
- PARCEL "A" IS SUBJECT TO THE FOLLOWING:
  - EASEMENT IN FAVOR OF SOUTHERN NEW ENGLAND TELEPHONE AS RECORDED IN VOL. 179 PG. 916 OF THE MADISON LAND RECORDS.
  - RIGHT OF WAY IN FAVOR OF PARCEL "B" AS RECORDED IN VOL. 84 PG. 326 OF THE MADISON LAND RECORDS.
  - CONSERVATION EASEMENT IN FAVOR OF THE STATE OF CONNECTICUT AS RECORDED IN VOL. 285 PG. 284 OF THE MADISON LAND RECORDS.
- PARCEL "B" IS TOGETHER WITH AN EASEMENT FOR INGRESS AND EGRESS AS RECORDED IN VOL. 84 PG. 326 OF THE MADISON LAND RECORDS.
- PARCELS "A" & "B" ARE TOGETHER WITH AN EASEMENT FOR INGRESS AND EGRESS AS RECORDED IN VOL. 892 PG. 294 OF THE MADISON LAND RECORDS.
- THE MAJORITY OF THIS PROPERTY IS LOCATED IN A DESIGNATED FLOOD HAZARD ZONE AS SHOWN ON F.L.R.M. MAP NO. 09078-0014D DATED: AUGUST 2, 1995 & F.L.R.M. MAP NO. 09078-0012D DATED: AUGUST 2, 1995.
- THIS PROPERTY IS LOCATED IN A COASTAL AREA MANAGEMENT ZONE.
- THE WETLAND LIMITS SHOWN ARE BASED UPON FIELD LOCATIONS PERFORMED BY BARRAGOS-LANDINO DESIGN GROUP AND FLAGGED BY ENVIRONMENTAL PLANNING SERVICES.
- THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED THOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF EXCAVATION.
- NO ISLAND WETLANDS WERE SHOWN ON THE TOWN OF MADISON INLAND WETLANDS BOUNDARY MAP.

**SOIL TYPE LEGEND**

**WETLAND SOILS:**  
**AQ** - AQUIC  
 THIS IS A POORLY TO VERY POORLY DRAINED SOIL WHERE 2 OR MORE FEET OF THE ORIGINAL SOIL SURFACE HAS BEEN FLOODED OR OTHERWISE SATURATED BY WATER FOR A SEASONAL TO PROLONGED PERIOD. UNDERGROUND TABLE AND OTHER SUPPORT ARE CAPABLE OF SUPPORTING WETLAND VEGETATION.  
**HKA** - HIGHLY DRAINABLE SANDY LOAM, 0 TO 3 PERCENT SLOPES  
 THIS IS A NEARLY LEVEL, EXCESSIVELY DRAINED SOIL IS ON OUTWASH TERRACES OF STREAM VALLEYS.  
**HKB** - HIGHLY DRAINABLE SANDY LOAM, 3 TO 8 PERCENT SLOPES  
 THIS IS A NEARLY LEVEL, EXCESSIVELY DRAINED SOIL IS ON OUTWASH TERRACES OF STREAM VALLEYS.  
**Nn** - MINOR FINE SANDY LOAM  
 THIS IS A NEARLY LEVEL, MODERATELY WELL DRAINED SOIL IN SLIGHTLY DEPRESSIONAL AREAS OF BROAD OUTWASH TERRACES AND NARROW STREAM VALLEYS.  
**UD** - UNSATURATED MUCKY PEAT  
 THIS IS A NEARLY LEVEL, VERY POORLY DRAINED ORGANIC SOIL IS IN TIDAL MARSHES ALONG THE EAST OF LONG ISLAND SOUND.

**SHORELANDS**  
 UPLAND AREAS AT ELEVATIONS IN EXCESS OF THE 100 YEAR STILL WATER LEVEL AND LOCATED WITHIN THE COASTAL BOUNDARY.



**BL**  
**Companie**  
 ARCHITECTURE  
 ENGINEERING  
 PLANNING  
 LANDSCAPE ARCHITECTURE  
 LAND SURVEYING  
 ENVIRONMENTAL SCIENCE  
 ANALYTICAL SERVICES

355 Research Parkway  
 Meriden, CT 06450  
 (203) 630-4495  
 (203) 630-2615 Fax

**MADISON LANDING**  
**LEYLAND DEVELOPMENT, L.L.C.**  
 1362 BOSTON POST ROAD (GRISWOLD AIRPORT)

Figure 2

Overall Property/Topographic Survey

**BS-1**

Sheet No.

**BL Companies**  
 ARCHITECTURE  
 ENGINEERING  
 PLANNING  
 LANDSCAPE ARCHITECTURE  
 LAND SURVEYING  
 ENVIRONMENTAL SCIENCES  
 ANALYTICAL SERVICES

355 Research Parkway  
 Meriden, CT 06450  
 (203) 630-1406  
 (203) 630-2815 Fax

**MADISON LANDING**  
**PROPOSED ACTIVE ADULT HOUSING DEVELOPMENT**  
 1362 BOSTON POST ROAD (GRISWOLD AIRPORT)

Figure 3

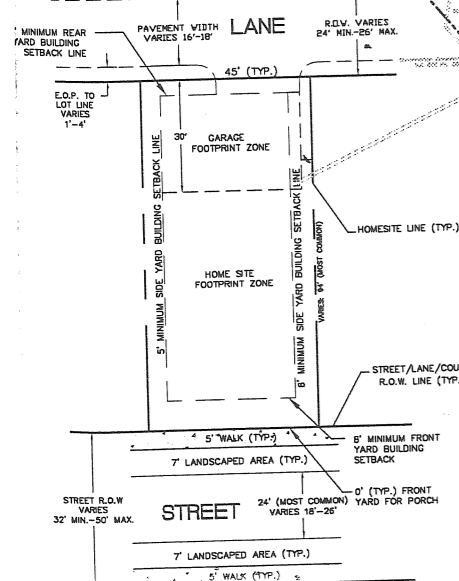
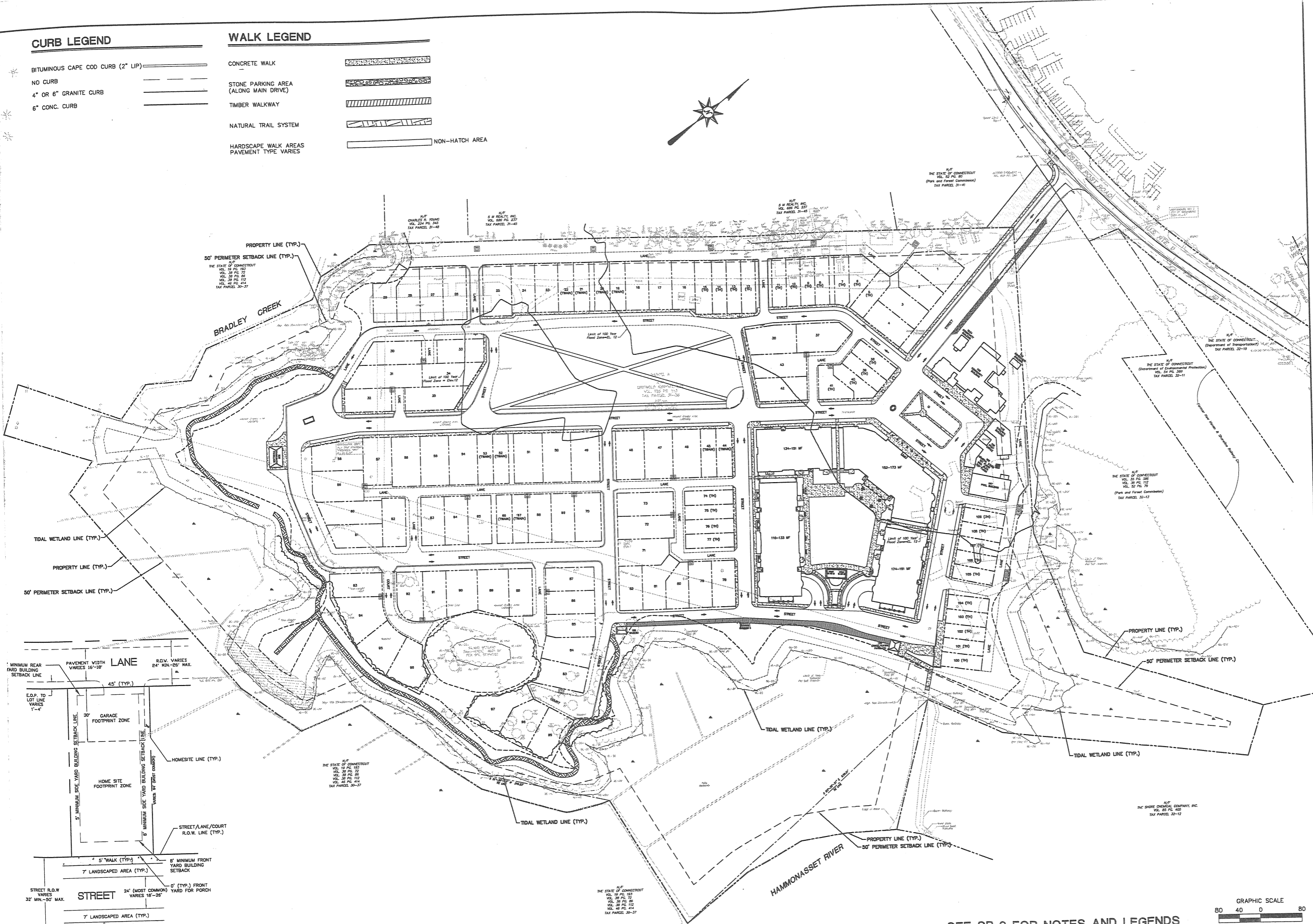
Overall Site Plan

**CURB LEGEND**

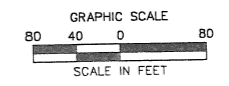
BITUMINOUS CAPE COD CURB (2" LIP)	—————
NO CURB	—————
4" OR 6" GRANITE CURB	—————
6" CONC. CURB	—————

**WALK LEGEND**

CONCRETE WALK	—————
STONE PARKING AREA (ALONG MAIN DRIVE)	—————
TIMBER WALKWAY	—————
NATURAL TRAIL SYSTEM	—————
HARDSCAPE WALK AREAS PAVEMENT TYPE VARIES	—————
NON-HATCH AREA	—————



SEE SP-6 FOR NOTES AND LEGENDS



REVISIONS

No.	Date	Desc.

Designed \_\_\_\_\_  
 Drawn \_\_\_\_\_  
 Checked \_\_\_\_\_  
 Approved \_\_\_\_\_  
 Scale \_\_\_\_\_  
 Project No. \_\_\_\_\_  
 Date \_\_\_\_\_  
 CAD File \_\_\_\_\_

Title  
**OVERALL SITE PLAN**

Sheet No. \_\_\_\_\_

**OSP**

## DEP Office of Long Island Sound Programs

### Assessment of Potential Environmental Impacts

#### High Tide Line

The elevation of the high tide line (HTL) as stated in the plans and reports is too low. The National Oceanic and Atmospheric Administration (NOAA) has recorded recent tidal elevations (Bridgeport station data corrected for Madison) of 5.5 ft NGVD, which is higher than the 4.9 ft NGVD reported in the Site Engineering Report. The HTL, the landward limit for the jurisdiction of the DEP Office of Long Island Sound Programs (OLISP), is the highest annual reach of the tide that is not caused by a hurricane or other intense storm. One method of approximating the HTL is to use the one-year frequency tidal flood elevations published in 1988 by the Army Corp of Engineers (ACOE), and this may have been the method used by Leyland Development.

OLISP has found a discrepancy between the Army Corp of Engineer's one-year flood elevations and the current position of the one-year flood level. The data that ACOE used to estimate the one-year flood level is based on 19 years of tidal observations ending in 1978. Due to effects of rising sea level, this data now results in one-year flood elevations that are lower than observed in the field. OLISP therefore recommends the use of field characteristics as described in the HTL definition of the Structures, Dredging and Fill in Tidal, Coastal or Navigable Waters statute (C.G.S. 22a-359(c)). The on-site HTL at Griswold Airport should be re-assessed through studies conducted during spring high tides.

### **Tidal Wetland boundaries**

Based on observations made during the site visit, there are unmapped tidal wetlands on the north and south sides of the end of the existing runway. The marsh grasses there are mowed so low to the ground that they are not readily identifiable. Tidal wetlands in this area should be re-mapped in the summer before mowing commences.

### **Stormwater Treatment**

Given that the HTL may be at least 5.5ft NGVD, part of the proposed earthen berm around biofilter basin #1 (to be located at the end of the existing runway) is within the regulated jurisdiction of the State of Connecticut. A Structures, Dredging and Fill permit would be needed to construct the biofilter basin as proposed. Additionally, the design of biofilter basins, as outlined by Milone and MacBroom, Inc. and as reprinted in the Environmental Impact Statement, calls for the bottom elevation of basins to be at least 2 to 4 feet above the seasonal high groundwater table. The bottoms of the proposed biofilter basins, except for #3, are 5.5 ft NGVD, an elevation that does not provide the recommended separation. To achieve the desired separation for optimum functioning, the biofilter basins should be located further landward. Furthermore, as sea level continues to rise, the overtopping of the biofilter basins by tides will become more frequent, and the basins would eventually lose their intended function for stormwater treatment.

The subsurface infiltration pipes also do not have the recommended separation from the seasonal high groundwater elevation. The proposed location of the infiltration pipes and the nature of the soils will not allow enough time for filtering pollutants through the soil. Given these conditions,

the proposed plans will cause an adverse impact to water quality (C.G.S. 22a-93(15)(A) and therefore are not consistent with state policy.

### Impervious Cover

Total impervious cover after construction would be 38.3% compared to the existing 10.1% or, excluding tidal wetland acreage, 50.5% versus 13.3%. Even with using best management practices (BMPs) at this site, there will likely be impacts from nutrient enrichment and metals contamination since no BMP is 100% effective. Research has shown that negative impacts to coastal waters occur when the impervious cover of a watershed exceeds 10% (Beach, 2002 and references therein). The proposed development would exceed the threshold of negative impacts. The site would have more than three times the impervious cover than what is known to have negative impacts on aquatic life. Even though this one site does not mean that the entire watershed will be at 38% impervious cover, it will contribute to the overall coverage, and may have more significant impacts since it is directly adjacent to the Hammonasset River and a tributary creek. In addition, one recent study shows that impacts from nitrogen associated with development can occur at much smaller scales, not just at the watershed level (Bertness et al., 2002).

Although the developer has made a good faith effort to use state of the art best management practices, these may not be sufficient to protect sensitive or common coastal resources due to the intensity of the proposed development and location directly adjacent to coastal waters. The recent Pew Oceans Commission report on coastal sprawl states that abundant research over the past three decades has proven that if impervious coverage exceeds 10% of a watershed, even with the use of BMPs on a site by site basis, aquatic ecosystems will become degraded (Cohn-Lee and Cameron, 1992). Thus, BMPs alone will not mitigate the impacts from a dense development in the coastal zone.



## Nitrogen

Excess nitrogen can have numerous negative impacts on coastal resources including favoring Phragmites growth, and degrading water quality which can cause losses of eelgrass and associated fish and shellfish. Nitrogen inputs to the adjacent marshes and tidal waters would come from the proposed on-site sewage treatment and disposal system (OSSTDS), via a leaching field, and from fertilizers used on lawns, gardens and the central green, pet waste, and vehicle emissions. If the OSSTDS performs at optimum efficiency, then inputs of nitrogen to the leaching field will be approximately 2.6 Kg/day or 959 Kg/ year (5.9 lbs/per day or 2,153 lbs/year) based on a design of 70,500 gallons (266,871 liters) per day treated sewage at a concentration of 10mg/liter. It was noted at the 4/10/02 meeting that the marshes would act as "buffers" to the tidal waters and would provide further "polishing" of the effluent. However, since groundwater levels and the interaction with tides and the sewage effluent from the leaching field have not been modeled, we do not know where the leaching field effluent will come in contact with the marsh and the tidal waters. Appropriate modeling should be done to assess the nitrogen load to the marsh and tidal waters. Also, tidal marshes are nitrogen limited systems, so inputs of excess nitrogen cause undesirable changes to the system. The intent to rely on the tidal marshes to further treat sewage effluent is not appropriate in light of State policy to preserve tidal wetlands and prevent their despoliation (C.G.S. Section 22a-92(b)(2)(E))

Stormwater best management practices, if cited and designed properly, may remove up to 80% of nitrogen in surface runoff. Research has shown, however, that while BMPs lessen impacts, they do not mitigate them altogether and that when impervious cover of a watershed passes the 10% mark, nitrogen levels begin to exceed back ground levels (Schueler and Holland, 2000). Possible impacts from nitrogen in groundwater and surface runoff would include degradation of the tidal marsh through favoring

growth of *Phragmites australis* at the expense of a more biologically diverse high marsh plant assemblage (Bertness et al., 2002). In addition, eelgrass, which provides habitat for fish and shellfish, may also be negatively effected. Nitrogen enrichment can cause increases of phytoplankton and algae growth, which shade out eelgrass.

The presence or absence of eelgrass beds can be excellent indicators of water quality (Dennison *et al.*, 1993). Inventories of eelgrass distribution and abundance function as long-term monitoring tools of an estuary's health. For example, studies conducted in the Chesapeake Bay indicated that nutrient enrichment and increased turbidity were associated with a decline in eelgrass as well as other submerged aquatic vegetation (Kemp *et al.*, 1983 and Batiuk *et al.*, 1992). In Massachusetts, a study found housing developments and increased groundwater nitrogen loading resulted in a significant decrease of eelgrass habitat (Short and Burdick, 1996).

Eelgrass is found in Connecticut's coastal waters from Stonington to Clinton. The western half of the state does not have water quality sufficient to support eelgrass. Eelgrass in the Hammonasset River, the western-most location of eelgrass in the state as of 1994, is already in a poor condition. This would indicate impaired water quality already exists in the Hammonasset River. Indeed, Koch et al. (1994) described the eelgrass as "stressed" because blades were stunted and narrow and beds were sparse. The town of Madison is under a consent order from DEP to monitor and maintain existing septic systems due to elevated levels of non-point source nitrogen and coliform bacteria from these systems. Non-point source nitrogen is the most likely cause of eelgrass declines in the Hammonasset River. The proposed development is expected to exacerbate that problem by increasing nitrogen loads. With regards to eelgrass, State policy is to protect, enhance and allow natural restoration of eelgrass flats (C.G.S. Section 22a 92(c)(2)(A). To protect water quality and the remaining eelgrass in the river, it is recommended that

the amount of effluent discharged each day from this development be reduced, a goal which can be readily achieved through reducing the density of the development.

### Freshwater Impacts

The engineering report indicates that there will be 70,500 gallons of fresh water per day to be treated and released through the sewage treatment system on site. It was noted that this figure was the design volume, and that the actual volume would be less. Increasing freshwater input to the tidal marshes could negatively effect the distribution of marsh grasses by lowering salinity, particularly in the root zone, which favors Phragmites growth. In addition, post-construction freshwater runoff will be increased since impervious coverage will increase from an existing 10.1% to 38.3%. Water that would normally be taken up by vegetation under existing conditions will instead be directed to catch basins for treatment and eventual discharge on site. The sewage effluent combined with the stormwater runoff will greatly increase the amount of freshwater inputs to the adjacent saltmarsh and coastal waters. This situation has a high potential to degrade water quality through significant alteration of salinity levels (C.G.S. 22a-93(15)(A) and to degrade existing natural drainage patterns (C.G.S. Section 22a-93(15)(D). Maintaining pre-construction rates and volumes of freshwater runoff and reducing the volume of sewage effluent through modifying the proposed development would minimize such impacts.

### Sea-level Rise and Planning for the Long-term

It is critical that sewage and stormwater treatment systems are designed with the knowledge that sea level is rising. Since 1856 the average mean sea level has increased by an average of 2.7mm/year, with the annual rate varying between 1mm/yr and 4.8mm/yr (Donnelly and Bertness, 2001). The lower rate

of lmm/yr occurred in the 19<sup>th</sup> century, from 1856-1878. In the 20<sup>th</sup> century, the higher rates of mean sea level rise were recorded. By the year 2100, it is predicted that mean sea level will have increased by 1 ft to 2.9ft. The coastline and upper edges of tidal wetlands will continue to migrate landward as sea level continues to rise.

The interaction of the sewage and stormwater treatment systems with sea level rise will have important implications for protection of coastal resources at this site over the coming decades. The engineer for Leyland Development LLC used an August 2000 measurement to determine baseline groundwater levels. Since August usually has low rainfall relative to other months of the year, determining baseline groundwater elevations from measurements taken in late summer may not give an accurate level. It would also not be accurate to assess levels during the current drought conditions. If the groundwater level were actually higher than that reported, there would be less separation between the sewage effluent in the leaching field and the groundwater than is outlined in the engineer's site report. Questions to be addressed include at what point, given a conservative estimate of a one-foot sea level rise by 2100, would the sewage effluent be in direct contact with the groundwater. Also, how would daily tides, spring high tides and one-year and 10-year storms effect the functioning of the sewage treatment system now and in the future as sea level continues to rise?

The issue of rising sea level also has important implications for the long-term health of the 10 acres of tidal wetlands on site. Plans for this development include extensive grading and filling very close to the edge of the tidal wetlands. The marsh along the property would be squeezed between the earthen berms of the biofilter basins and rising sea level. This scenario would result in dramatic changes in the marsh such as conversion to a monoculture *S. alterniflora* marsh and then subsequent drowning and elimination of the habitat altogether. Loss of the *S. patens* high marsh would eliminate foraging

and breeding areas for fish and for saltmarsh sharp-tailed sparrow, a species listed as “special concern” in the state and which is known to breed in the area. In the face of unprecedented rates of sea-level rise, it would be prudent to have a greater buffer width between the tidal wetlands and the development both for the protection of tidal wetlands and the long-term protection of the roads and buildings.

### Summary and Recommendations

The high density of dwelling units combined with close proximity to coastal resources gives this site a high potential for negative impacts, particularly from nitrogen and freshwater runoff to the coastal area. Although BMPs have been proposed, all research indicates BMPs alone are not sufficient to prevent continued degradation of coastal waters and associated living resources. Also, the nature of this intense development at a waterfront location leaves the designers of the sewage and stormwater systems very little room for error in designing these systems to protect the adjacent natural resources. Their designs have not taken into consideration rising sea level and how that will impact the tidal wetlands, or the long-term functioning of the sewage and stormwater systems.

To minimize impacts there are a number of recommended actions that may be taken.

- Reduce the density of development.
- Reduce the overall impervious coverage
- Maintain a minimum 100-foot no disturbance setback from the tidal wetlands.
- No grading within the 100-foot setback.
- Maintain pre-construction rates and volumes of freshwater runoff

- Model groundwater flow and nitrogen loads to evaluate the impact of the proposed development on tidal wetlands, estuarine water quality and eelgrass beds.
- Designs of sewage and stormwater treatment systems should allow for at least one foot, or preferably two feet, of sea-level rise.
- Locate the biofilter basins beyond the 100-ft setback from tidal wetlands, and have them discharge into vegetated buffer zones. Wooded buffer zones are the most effective natural filters of nutrients and other pollutants, however native shrubland or grassland can also provide the necessary organic soil and litter layer. Turf grasses are not recommended for the vegetated buffer zone due to low efficiency of slowing runoff and filtering nutrients.

### Literature Cited

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## The Proposal's Consistency with the Policies and Standards of the Connecticut Coastal Management Act

The following comments primarily relate to the proposal's consistency with the policies and standards of the Connecticut Coastal Management Act (CCMA) [CGS Sections 22a-90 through 22a-112, inclusive], which provides the framework for all of the reviews conducted by the DEP OLISP Coastal Planning Section.

CCMA policies and standards were formulated to better manage a number of land use and planning issues in the coastal boundary in addition to balancing environmental impacts with sound economic growth. This review focuses exclusively on the potential beneficial and adverse impacts on coastal resources. The Madison Landing application has been referred by the Madison Planning and Zoning Office to this Office for coastal site plan review. Our Office will provide additional detailed comments directly to the Madison Planning and Zoning Commission regarding all applicable policies and standards of the CCMA including water-dependency, visual quality, and coastal flood hazard areas that are not addressed in this ERT review.

### Coastal Resource Impacts

The property contains and is adjacent to a large tidal wetland complex. Tidal wetlands are one of the most biologically productive ecosystems in the world. However, they are very susceptible to degradation caused by changes in the balance between saltwater and freshwater inputs. The proposed development will include a substantial increase in freshwater discharges from both the community septic system and the stormwater management system to the groundwater. The stormwater infiltration pipes and the biofilters in particular are located very close to the tidal wetlands. Since the subsoil is highly permeable, the travel time between the stormwater discharge points and the tidal wetlands



is dramatically less through the onsite soil than it might be on other sites with less permeable soils. Accordingly, we are concerned that the volume and rate of discharges of both stormwater along the perimeter of the site and the effluent from the proposed sewage treatment system could contribute to the degradation of the tidal wetlands over time.

Our Office guidelines regarding tidal wetland buffers recommend that municipalities revise their zoning regulations to require 100-foot wide buffers to tidal wetlands. If a 100-foot buffer were established for this project, three primary benefits would result. First, tidal wetlands would be allowed to naturally migrate landward in response to increasing sea level rise. Next, locating the public access path within the buffer would provide significant separation between the residential and public access components on the site. Finally, since all stormwater discharges would be further than 100' from tidal wetlands, potential adverse coastal resource impacts would also be reduced.

### **Stormwater Management System**

The stormwater management plan uses a series of stormwater best management practices (BMPs) to treat stormwater runoff generated by site development. The primary features include Vortech's gross particle separators, infiltration piping, and biofilter basins that treat runoff that must bypass the infiltration system during heavy rainstorms. Vortech's units are very effective in retaining coarse to medium sediment and floating debris. To a lesser degree, they trap floating hydrocarbons and heavy metals that adhere to suspended solids (mostly soil particles) that may become trapped. However, these units are not designed to remove fine sediments that, because of their high surface area to volume ratios, transport a disproportionately higher amount of heavy metals and other pollutants than larger soil particles. The units are also not designed to treat dissolved stormwater constituents nor to moderate temperature.

The Vortech units have been incorporated as pretreatment devices to remove some stormwater pollutants prior to discharge to the infiltration system. Our Office consistently recommends such pretreatment as necessary prior to the infiltration into the soil where further treatment should occur prior to stormwater reaching groundwater. To increase the units' effectiveness in containing hydrocarbons, we generally recommend fitting each unit that will receive stormwater runoff from parking areas and roads with passive skimmers. The filter media contained within the passive skimmers either absorb or adsorb petroleum hydrocarbons and other chemicals. We are available to assist the applicant with identifying appropriate passive skimmers.

We also generally recommend separating runoff sources to the maximum extent practicable using design features that limit curbing and piping of stormwater, particularly for sources that are likely to transport significantly different pollutants. For example, runoff from roads and parking areas typically contain significantly more total suspended solids (TSS) and petroleum hydrocarbons than runoff from rooftops. Therefore, we generally recommend that the two sources be discharged to separate stormwater BMPs. Since roof runoff typically does not require the same level of pretreatment prior to infiltration, we generally recommend discharging roof runoff directly to lawn and garden areas, drainage swales, depression storage areas, and drywells wherever possible to retain the runoff on each building lot within subdivisions. Diffusing stormwater also reduces the need for more costly structural solutions that require more continuous maintenance to ensure their long-term effectiveness. There is insufficient detail regarding how roof runoff would be treated. However, it appears that the drainage calculations used to size the Vortech units include the runoff generated by the entire development including all roof runoff.

Alternative designs could increase infiltration via overland flow by minimizing the amount of curbing and discharging roof runoff to lawn and garden areas,

swales, depression storage areas, and drywells (where appropriate). The current design does not appear to take full advantage of the permeable soils onsite.

The proposed infiltration system is to be installed in HkA-Hinkley gravelly sandy loam, (0-3 percent slopes). According to the Soil Survey of New Haven County, HkA soils are excessively drained. Permeability is rapid at the surface and very rapid in the subsurface as evidenced by the falling head tests provided by the applicant. Because the soil is so permeable, effective erosion and sedimentation control measures should be easily implemented. However, due to its high permeability, we are concerned that stormwater may not reside in the soil for a sufficient time to allow pollutants to be attenuated. For less permeable soils, we recommend that infiltration be considered only when sufficient separation distance (greater than 4 feet as recommended by EPA) between the bottom of the infiltration trench and the seasonal high water table can be achieved. In this proposal, the separation distance for the infiltration area adjacent to the boardwalk is about 6 inches and the system located adjacent to proposed lots 88-92 is less than 6 inches. These distances are far too narrow to provide any significant stormwater treatment, particularly given the rapid permeability of the soil. As a result, it appears that the system would result in unacceptable adverse impacts to water quality as defined in the CCMA as stated below.

“Adverse impacts on coastal resources” include ... (A) Degrading water quality through the significant introduction into either coastal waters or ground water supplies of suspended solids, nutrients, toxins, heavy metals, or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen, or salinity [CGS Section 22a-93(15)(A)].

With the existing infiltration design, the infiltration elevation occurs approximately 6' below grade. Adding the minimum recommended 4-foot gap

within the soil, the minimum grade that can support this infiltration design would be located 10' above the seasonal high water table. Using the existing groundwater level as mapped by BL Companies of approximately 5.3' through the middle of the non wetland area of the site, infiltration pipes would have to be located in areas where the proposed elevations are above 15.3'. However, this elevation does not include the impact that discharges from the community treatment system would have on groundwater elevations. In addition, the infiltration area would have to be located at the lowest point of the drainage system prior to any discharge to biofilters. Therefore, it appears that this design is not feasible at this site given the site topography.

Finally, EPA recommends that drainage time for the design storm should be a minimum of 12 hours and a maximum of 72 hours. Given the rapid permeability of the soil, the recommended 12-hour minimum drainage time does not appear to be achievable. If this is the case, alternative methods to retain stormwater onsite to meet the 1-inch retention requirements of DEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities ("Stormwater Permit") would have to be incorporated into the stormwater management plan.

### The State's Regulatory Jurisdiction

The high tide line, which represents the landward limit of our Office's regulatory jurisdiction, is shown on the plans as 4.9' NGVD. Several drainage outfalls are depicted as extending beyond that elevation and would therefore require a permit from this Office. However, the 4.9' elevation does not represent the true high tide line at this site. Actual tide gauge levels for the year 2001 show that the highest monthly high tide levels are above 5.5' NGVD in Madison. This may explain, in part, why tidal wetlands have been flagged above the applicant's estimated high tide line of 4.9' NGVD. As a result, some additional discharge structures and fill placed for the biofilter basins will require a Structures,

Dredging, and Fill permit from this Office. Permits for structures and fill within the State's jurisdiction are generally discouraged if the structures or fill, along with all related construction activity such as the placement of material or equipment can be located landward of the state's jurisdiction. It appears that the structures and fill can be relocated landward and the project should be modified accordingly.

### **Biofilter Basins**

The bottom elevations of biofilters #1 and #2 are proposed to be 5.5' NGVD. Given that the subsoil is highly permeable, these biofilters could be influenced by high tides, particularly as sea level continues to rise. Eventually, they will not provide significant infiltration during high tide situations and could actually develop into tidal wetlands in the future. If only mildly saline conditions develop in the basin soils, *Phragmites australis* could gain an additional competitive advantage and become more difficult to control. It appears that the biofilters would have to be relocated landward, redesigned with higher bottom elevations, or both to be effectively used on this parcel.

### **Boat Launch**

A public car-top boat launch that would take advantage of an existing channel through the tidal wetlands through to the river is included in the proposal. However, the application does not contain sufficient information to determine if a car-top boat launch is feasible at this site. Ultimately, the depth of the existing channel will determine the feasibility of access for canoes and kayaks. It appeared during the site inspection that water depths in the channel would not be sufficient for enough of the tide cycle to support a car-top boat launch. However, actual elevations would be helpful in determining this potential.

If a boat launch is proposed at this site, infrastructural improvements including dredging would require a Structures, Dredging, and Fill permit from this Office.

### Summary and Project Recommendations

To meet the stormwater retention requirements of the DEP's Stormwater Permit to protect tidal wetlands, the developer proposes to use subsurface infiltration. However, given the rapid soil permeability and topography, subsurface infiltration does not appear to be feasible on this site. Therefore, the site does not appear to be capable of supporting the proposed high-density development without causing unacceptable adverse impacts to coastal resources.

There are a number of recommendations that have already been mentioned to this point. However, the following recommendations, some of which are reiterated from above, would require substantial redesign of the development and may result in a significant reduction in the area of the site that could be dedicated to residential development. The recommendations are as follows:

- 1 ) Significantly reduce the number of dwellings proposed on the site.
- 2) All subsurface infiltration structures should be eliminated, as this approach is not feasible at this site given the rapid permeability of the soils and the shallow groundwater table.
- 3) Drainage structures such as catch basins and pipes should be minimized or eliminated since all stormwater collected in these systems would have to be discharged close to tidal wetlands due to the topography of the site.
- 4) Site design features such as curbless roads, swales, overland flow, and other similar stormwater BMPs that maximize infiltration through the soil surface

should be incorporated into the site design.

- 5) The applicant should refine their groundwater mapping and corresponding elevations as it does not appear to incorporate the impact of extreme high tides that have occurred at the site.
- 6) The applicant should revise the plans to include an accurate high tide line.
- 7) All proposed infrastructure and related work activity should be located outside of the State's regulatory jurisdiction except for structures needed to support a potential boat launch and public access related amenities.
- 8) The plans should be modified to include a significant tidal wetlands buffer area to be left undisturbed to allow for the landward migration of tidal wetlands. Public access components could be located within the buffer area.

## Stormwater Management Review

The proposed development is for a total of 192 dwelling units consisting of 83 multifamily units, 39 single family detached units and 70 single family detached units as well as a cluster of community buildings, public open spaces, a public access walkway, several gazebos and public parking. The proposal will result in 49% impervious surface over the 42-acre site.<sup>1</sup>

### Stormwater Permitting

Since the site construction involves the disturbance of over five acres, Connecticut's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters* (the "permit") will cover the project. The permit requires that the developer registers with the Department of Environmental Protection (CTDEP) and submits a Stormwater Pollution Control Plan (the "Plan") *at least* thirty days before the start of construction. If the Department finds that the Plan is inadequate, Connecticut General Statutes Section 22a-430b and general permit Section 7(c) allow the commissioner to require an individual permit, a process that could delay approval of the project. To prevent this and to ensure adequate review time, the Department recommends early submittal of the Plan. Please note that while this review is based primarily on the state permit, many of the erosion and sedimentation issues are included in the Connecticut Guidelines for Soil Erosion and Sediment Control (the "guidelines"), and are issues that must be dealt with on a local level before being included in the Plan. The permit requires that the "Plan shall ensure and demonstrate compliance with the guidelines."

The Plan must include a site map as described in Section 6(b)(6) of the permit and

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<sup>1</sup> Impervious surface percentage derived from figures given on page 43-44 (handwritten) *Area & Curve Numbers* in Site Engineering Report by BL Companies, March 20, 2002.



S plan that has been approved by the Town in conjunction with the CTDEP Inland Water Resources Division (IWRD) and the local Soil and Water Conservation District may be included. The Plan must include a description of the E & S controls that will be used during each phase of construction, construction details for each control used, and a description of procedures to maintain all erosion and sediment control measures. The permit requires inspections by qualified personnel provided by the permittee at least once every seven calendar days and after every storm of 0.1 inches or greater. In addition, the Plan must include monthly inspections of stabilized areas for at least three months *following* stabilization. The Plan should note the qualifications of personnel doing the inspections and must allow for the inspector to require additional measures as necessary. The developer is proposing to hire an independent monitor to inspect the site during construction and report to town staff. All contractors and subcontractors must sign the contractor certification (Section 6(b)(6)(E)).

The Plan must be maintained on site during construction and updated as necessary.

### **Erosion and Sediment Control Notes**

A review of the Site Engineering Report, the Environmental Impact Assessment Report, and the Overall Erosion Control and Phasing Plan, all dated March 20, 2002 has resulted in the following comments:

1. Inconsistencies in the phasing schedules provided in the Site Engineering Report and the Erosion Control and Phasing Plan (Sheet # OEC- 1), particularly with regard to the installation of the temporary sedimentation basins, should be corrected.

2. The use of the biofilter basins as primary or secondary sedimentation basins during construction should be clarified.
3. The capacity of each sedimentation basin should be shown on the Plan.
4. Details of all outlet structures and velocity dissipation controls should be shown.
5. Locations of all stockpiled materials should be shown.
6. Maintenance of anti-tracking pads should be specified.
7. The Plan should address specific dewatering procedures. General permit Section 6(b)(6)(C)(ii) requires that dewatering wastewater be infiltrated into the ground unless otherwise approved by the commissioner in writing.

Please note that this listing does not constitute a complete review of the plans for permitting purposes. A more thorough review of the erosion and sediment controls will be conducted after the general permit registration and the Stormwater Pollution Control Plan has been submitted to this office.

### **Post -construction Stormwater Treatment**

Section 6(b)(6)(Cj)(iii) of the general permit contains three post-construction stormwater treatment requirements. Subsection 1 states that the Plan include a design for treatment that achieves a goal of 80% removal of suspended solids from the stormwater discharges. Subsection 2 requires that velocity dissipation devices be placed at stormwater discharge locations as necessary to provide non-erosive flow to receiving watercourses. Subsection 3 states that any site which has a post-construction stormwater discharge that is located less than 500 feet from a tidal wetlands which is not a fresh-tidal wetland, shall discharge such

stormwater through a system designed to retain the volume of stormwater runoff generated by 1-inch of rainfall on the site. This requirement minimizes salinity fluctuations from the introduction of large volumes of freshwater into tidal areas.

The developer proposes the combined use of catch basins with 2-foot sumps and hooded outlets, six off-line swirl concentrators (“Vortechnics”), three infiltration systems, and three biofilter basins to address the post-construction stormwater requirements. The Vortechnics units, which are recommended for this application, have been designed to provide sediment and oil and grease removal from runoff up to a 2-year storm. If maintained properly, the units should achieve 80% total suspended solids removal for the design storm and will be effective at removing floating contaminants. These units discharge to infiltration systems which then overflow to biofilter basins # 1 and #2.

It should be noted at this point that staff of the DEP Water Management Bureau have requested additional information regarding the groundwater model utilized by the developer, and the impacts of tidal fluctuations on the water table and on the functioning of the subsurface disposal system and the stormwater management system. The technical review of the following systems will be finalized after the requested information is received and evaluated.

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### **Infiltration Systems**

Three infiltration systems have been proposed to meet the 1-inch runoff retention requirement of the general permit and to provide additional filtering of the stormwater. According to the Site Engineering Report, the infiltration systems will retain the volume of runoff generated by 1.67 inches of rainfall, before overflowing to the basins. The groundwater model used by the developer predicts separation distances of 1.0 ft, 1.6 ft, and 1.0 ft between the bottom of infiltration systems #1, #2 and #3, respectively, and the greywater mound from

the subsurface disposal system. The report states that these are conservative estimates based on a constant high tide and a septic system design flow that is 1.5 times the proposed flow. However, staff of the DEP Office of Long Island Sound Programs have stated in their comments on this project that the high tide line is 5.5 ft NGVD, not the 4.9 ft NGVD shown on the plans. In addition, the EPA in a September 1999 Storm Water Technology Fact Sheet recommends a minimum 4-foot separation distance between the bottom of an infiltration system and the water table, and cautions that anaerobic conditions that clog the soil and reduce the capacity and performance of the system may develop if underlying soils can not dry out. The developer should address the inconsistency in the high tide lines, the impacts of the higher tide line on the effectiveness of the infiltration systems, and provide the rationale for utilizing a smaller separation distance than that recommended by EPA.

### **Biofilter Basins**

The infiltration systems overflow to basins #1 and #2. These basins are intended to provide some additional sediment and nutrient removal and to decrease the rate of runoff prior to discharge to the tidal wetlands. Although the basins have not been specifically designed to provide detention, the runoff hydrographs provided in the Site Engineering Report indicate that some detention will be achieved.

The bottom elevations and the primary outlets of biofilter basins #1 and #2 are proposed to be set at 5.5 ft NGVD. The Site Engineering Report states that the bottoms of these basins have been set above the high tide line of 4.9 ft NGVD to minimize any tailwater effects on the system and to avoid any tidal wetlands impact. Again, the developer should address the inconsistency in the high tide lines (elevations 4.9 vs. 5.5) and the impacts of the higher tide level on the capacity and performance of the biofilter basins.

Biofilter basin #3 appears to receive only untreated sheet flow from a small area of the eastern part of the site. The bottom elevation and primary outlets are proposed to be set at elevation 7.5 with the overflow weir set at elevation 9.0. Without pretreatment, this basin may require more frequent maintenance to remove sediment and debris.

### **Runoff Hydrographs**

The Site Engineering Report includes runoff hydrographs for the existing conditions and for the 2-year and 100-year storms under proposed conditions. None of the hydrographs show any runoff occurring from anywhere on the site under any condition for the first 10 - 12 hours. The developer should provide an explanation as to why this occurs.

### **Operation and Maintenance**

The developer is to provide a maintenance management system for the homeowner's association that includes a stormwater component. The homeowner's association will be responsible for maintaining all stormwater management structures. Because the capacity and performance of both the infiltration systems and the biofilter basins will be impacted by sediment and contaminant loads, and therefore rely upon effective pretreatment, proper and timely long-term maintenance of each segment of the stormwater system will be critical to minimizing the impacts of stormwater runoff to the tidal wetlands.

### **Conclusion**

The current proposal, if expanded to address the comments above, appears to meet the erosion and sediment control requirements of the general permit; however, there are questions about the ability of the proposed stormwater management system to meet the post-construction requirements of the general

permit. As stated above, DEP staff have requested additional information about the groundwater model used by the developer. The technical review of the post-construction stormwater management system will be completed once the additional information is received.

## On-Site Sewage Treatment and Disposal System Review

The Madison Landing Planned Adult Community project includes 192 dwelling units consisting of 83 multifamily units, 39 single family townhouses and 70 single family detached units.

Domestic sewage from the proposed development will be collected, pretreated for biochemical oxygen demand (BOD<sub>5</sub>) total suspended solids and nitrogen reduction by an alternative treatment technology and discharged through a pressurized distribution system to the existing on-site soils and groundwater for further renovation and disposal. Because this system serves multiple residential buildings it would be deemed a community sewerage system.

Site testing consisting of test pits, soil brings and soil analysis have been performed and a preliminary conceptual design report for the on-site sewage treatment and disposal system (OSSTDS) has been submitted to the Department of Environmental Protection for review and comment.

Regulatory jurisdiction for permitting the OSSTDS is within the responsibility of DEP because:

- Design flow exceeds 5,000 gallons per day of domestic sewage.
- An alternative treatment technology is proposed.
- The system is deemed a community system.

These requirements are contained within 22a-430 of the Connecticut General Statutes and Section 22a-430 of Regulations of Connecticut State Agencies.

In accordance with statutes and regulations the engineer must develop a conceptual design report which demonstrates that the system will function

hydraulically, and demonstrates that the system will protect the waters of the state from pollution. In doing so the consultant must meet performance criteria for the pollutants of concern, which include nitrogen, phosphorus, virus and pathogenic bacteria.

When Department staff is satisfied with the conceptual design report a completed permit application will be submitted for processing. At the time a complete application is received the Department will notify the local water pollution control authority (WPCA) that the Department is in receipt of a permit application and a community sewerage system is being proposed. This letter will cite the municipality's responsibility to manage or ensure the effective management of any community sewerage system not owned by the municipality and request specific documentation to be submitted to the DEP.

In conducting the technical review for the proposed OSSTDS, the DEP will require that the pretreatment system be elevated above the 100 year flood elevation. In addition the DEP staff will perform a technical review on the pretreatment facility to ensure that the performance criteria can be accomplished prior to discharging to the on-site soils. DEP staff will also review the groundwater flow analysis to ensure that the system will hydraulically function and renovate the aforementioned pollutants.

The following is a brief summary of the administrative procedures that will be followed in processing the 22a-430 discharge permit application for the OSSTDS.

- Upon receipt of a complete permit application, a conceptual design report with supporting documentation and Department staff satisfied with the technical aspects of the design, a draft permit and tentative determination will be developed and the tentative determination will be published in the local newspaper.



1. Upon completion of the public process (public notice or public hearing) the Commissioner will make a final determination on the application.
2. If the Commissioner concurs with staff and authorizes the discharge the applicant will submit construction plans and specifications for the Commissioner's review and approval. The Department will also expect documentation from the WPCA that they will manage the system or ensure the effective management of the system.
3. Plans and specifications are approved with conditions. One condition will require that the construction will be overseen by a professional engineer licensed to practice in Connecticut. The engineer will also be required to prepare and submit as-built drawings of the OSSTDS.
4. Once construction is completed and it is verified that the system has been installed in accordance with the approved plans and specification the permit to discharge is issued. The permit will contain specific terms and conditions, establish effluent limits, monitoring requirements, maintenance requirements and prescribe a reporting schedule.
5. The pretreatment plant will be operated by a properly certified operator. Discharge monitoring reports will be submitted monthly to the Department and the Town of Madison Health Department and Water Pollution Control Authority.

Although the Department has not completed its technical review on the project. Issues that need to be considered and understood include:

1. Understanding groundwater movement on the site, seasonally high water, tidal influence, and imposing recharge from treated sewage flow and precipitation.
2. Once groundwater movement is understood reviewing pollutant renovation analysis for the pollutants of concern in domestic sewage.
3. Review performance criteria of the alternative treatment technology.
4. Review distribution and application of the treated effluent to the application site.

## Soils Resources Review

This soils report applies to the Madison Landing active adult housing development proposal. The tract of land is a 42-acre site located along the shore in Madison. The site is bounded by Rt. 1 to the north, the Hammonasett River to the east and an extensive tidal marsh along its southern, eastern and northeastern borders. The proposed development plan involves the creation of 192 dwellings comprising single-family detached, single family attached and multi-family homes and community buildings. The information submitted in this report is based on the soil series descriptions and the mapping units descriptions, which reflect the current soils mapping presented in the 1979 USDA Soil Survey of New Haven County and on field observations.

The site can be found on sheet #72 of the New Haven County Soil Survey.

### Wetland Soils

#### Mapping Units

**We - Westbrook mucky peat.** Nearly level, very poorly drained organic soil is in tidal marshes along the coast of Long Island Sound. This soil has moderate to rapid permeability in the organic layers ranging from 16 to 51 inches in depth and moderate permeability in the substratum. Runoff is very slow. This soil is subject to tidal flooding twice daily.

This soil has a **poor potential** for community development. If the soil is used for walkways, the organic layer should be removed to prevent them from settling after construction.

## Non-wetland Soils

### Mapping Units

**(1) HkA - 0 to 3 percent slope and HkB - 3 to 8 percent slope. Hinckley gravelly sandy loam.** This mapping unit consists of nearly level, excessively drained soil on outwash terraces of stream valleys. The soils have rapid permeability in the surface layer and subsoil and very rapid permeability in the substratum. Runoff is slow. Soil water capacity is low and levels of acidity range from medium to very strongly acid.

The soil has **good potential for community development**. The droughtiness of this soil is a major concern in landscaping. Irrigation or sprinkling will be an issue to maintain landscape materials. Careful consideration in selecting drought tolerant plants is advisable in these types of soils.

Waste disposal systems, such as septic tank absorption fields will function satisfactorily. However, special care on the design and installation must be taken to prevent contamination of the ground water due to the very rapid permeability of the substratum. The substratum of this soil can and will act as a direct conduit for ground water flows in the direction of the river and the salt marsh.

### Concerns

The majority of proposed construction will be conducted atop of the HkA and HkB soils in this project. Percolation tests were conducted, but there was no data set to support the installation of this large a system in the materials provided to the District.

- The extraordinary water deficit that all of New England has been subjected to have severely lowered all water table levels. The data from test pits on the

proposed plan should have a data set that indicates what the water tables were and when the tests were conducted. **This data should be looked at more carefully to insure adequate vertical separation from a more normal seasonal water table level, insure the systems proper installation and optimize the performance of this system.**

- The long term functioning of the septic system needs to be designed around normal conditions with true seasonal high water table levels. Not levels established during a long drought period. Inquiries into when the tests were performed would be prudent.

**(2) Nn - Ninegret fine sandy loam, 0 to 3 percent slopes.** This is a nearly level well drained soil in slightly depressional areas of outwash terraces and narrow stream valleys. This soil has a seasonal high water table at a depth of about 20 inches from late in fall until late spring.

This soil has a **fair to poor potential for community development.** The minimization of land disturbance and reduction of landscaped areas is important to limit application of pesticides, fertilizers and herbicides which can readily be introduced to the ground water regime. Permeability is moderately rapid in the surface layer and subsoil and rapid in the substratum.

It has a poor potential for waste disposal systems, such as septic tank absorption fields, because of the seasonal high water table. Waste from the septic system may pollute the ground water.

### Siting Concerns/Alternate Subdivision Configuration

In this reviewer's opinion the "cookie cutter" approach to this proposed development lacks vision. Suggested reference materials for new layout and design approach are as follow:

- 1) An Inland Wetland Commissioner's Guide to Site Plan Review, CT DEP, Bureau of Water Management, Inland Water Resources/Inland Wetland Program.
  - 2) Conservation Design for Subdivisions, A Practical Guide To Creating Open Space Networks, by Randall G. Arendt, Natural Lands Trust, American Planning Association, and American Society of Landscape Architects. See attachment #1 & #2.
- Minimize site disturbance and conserve natural resources as prescribed by the 2002 CT E&S Guidelines.
  - Reconfiguring the site layout to a village-like scenario that accommodates the same intended residential density through clustering of dwellings instead of the sprawl of single-family units. Improve and enhance aesthetic value of complex.
  - Preserve the existing woodlands along critical salt marshes. Maintain and enhance natural buffers. Eliminate Lots #61, 83, 84, and 93 through 99. See attachment #3.
  - Increase Open Space attribute.
  - Reduce impervious surface.
  - All proposed site work should be outside the 50' wetland setback / buffer. See E&S measures.

- The 50' wetlands setback / buffer employed by the Town of Madison is a good tool. Unfortunately, it has not been adhered to or respected in many areas of this proposed development of this site plan. Allowing work within the setback defeats the ordinance and places the natural resources and their habitats in greater jeopardy.
- Eliminate the dual line of silt fence within the buffer. Proper installation of a single row of silt fence at the 50' setback distance will prove more than adequate and will clearly define the limits of disturbance on-site.
- Create a staging area located as far away from sensitive areas as possible. This area will provide containment for waste disposal, fueling, maintenance and storage of hazardous materials on-site. See attachment #4.

Evidence of encroachment and violation of the 50' wetlands setback throughout the site plan is demonstrated in the OEP and the Grading & Drainage Plan drawings on GD-1 through GD-3. Citing the creation of several basins, final grades and walkways found within the established setback. See attachment #5.

### **State Administered Programs**

Over 5 acres of disturbed land will result in this proposed project, which will require compliance with CT DEP's Stormwater Permitting for Construction Activities under the National Pollution Discharge Elimination System (NPDES). The application has three components: 1) Permit application, 2) Pollution Prevention Plan, 3) Post Construction Requirement. For further information on this permit program contact Christopher Stone of the DEP Permitting Enforcement and Remediation Division at (860) 424-3850.

### Nonpoint Source Pollution

- Disposal of tarmac materials. How and Where? Concerns regarding petroleum hydrocarbon contamination if material is not removed from site and disposed of properly.

Walkways should be constructed outside of the 50' setback and utilize low maintenance materials which reduce or eliminate the possibility of introducing toxins to sensitive habitats. A soft trail system should be employed in the area of the existing woodland stand.

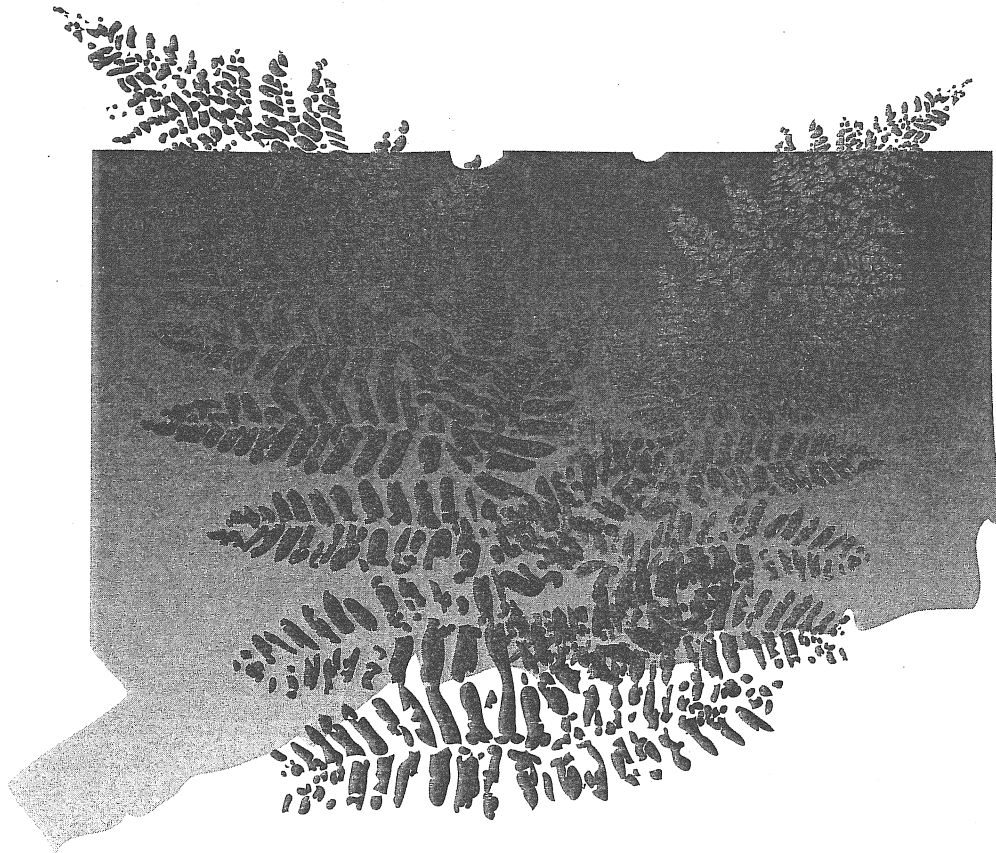
### Hydraulic Regime

The introduction of an increased volume of fresh water into the ground water from the proposed septic system may have an adverse effect on tidal marsh flora due to changes in salinity. Further investigation and review by a wetlands specialist may be warranted in this situation.



Attachment #1

# An Inland Wetland Commissioner's Guide To Site Plan Review



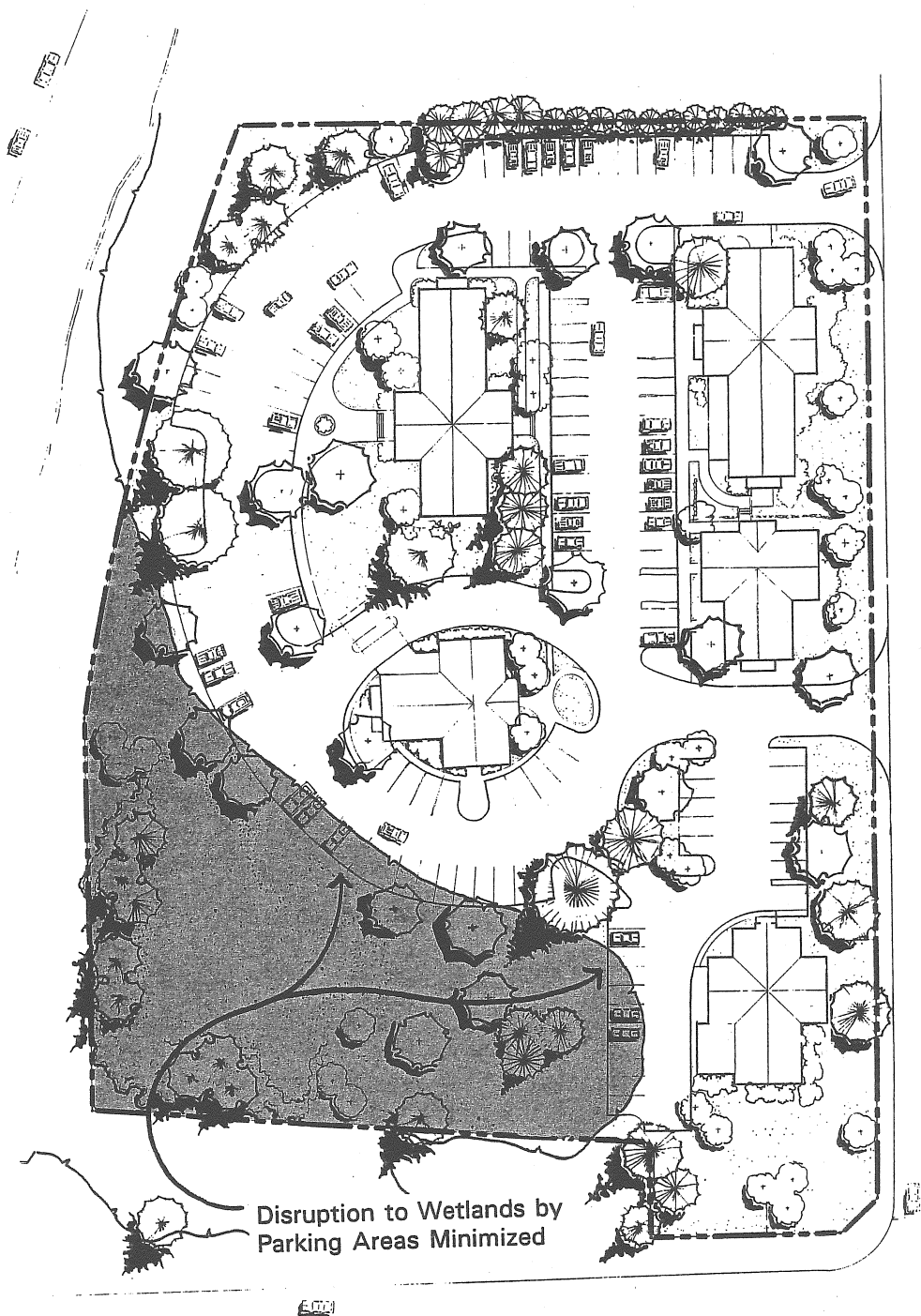
Keane Callahan    Marsha Hutchinson    Jeffrey H. Mills  
Gary R. Hath      Jeffrey A. Gebrian    Henry Withers

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Connecticut Department of Environmental Protection  
Timothy R.E. Keeney, Commissioner

Bureau of Water Management  
Inland Water Resources Division/Inland Wetland Program

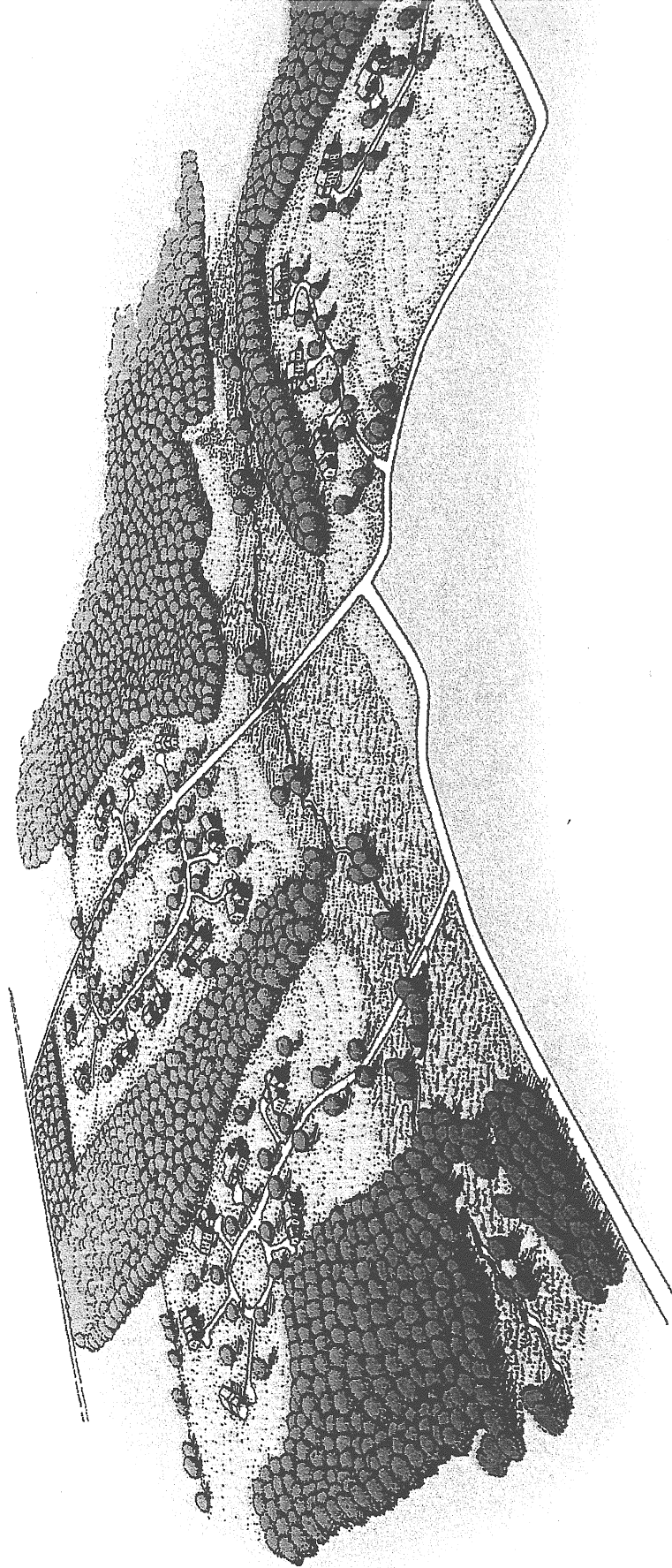
- In the final scheme, the proposed development is rearranged to minimize all intrusions into the wetland area, which also reduces the total paved area and amount of direct surface runoff.



# Conservation Design for Subdivisions

A PRACTICAL GUIDE TO CREATING OPEN SPACE NETWORKS

## Attachment #2



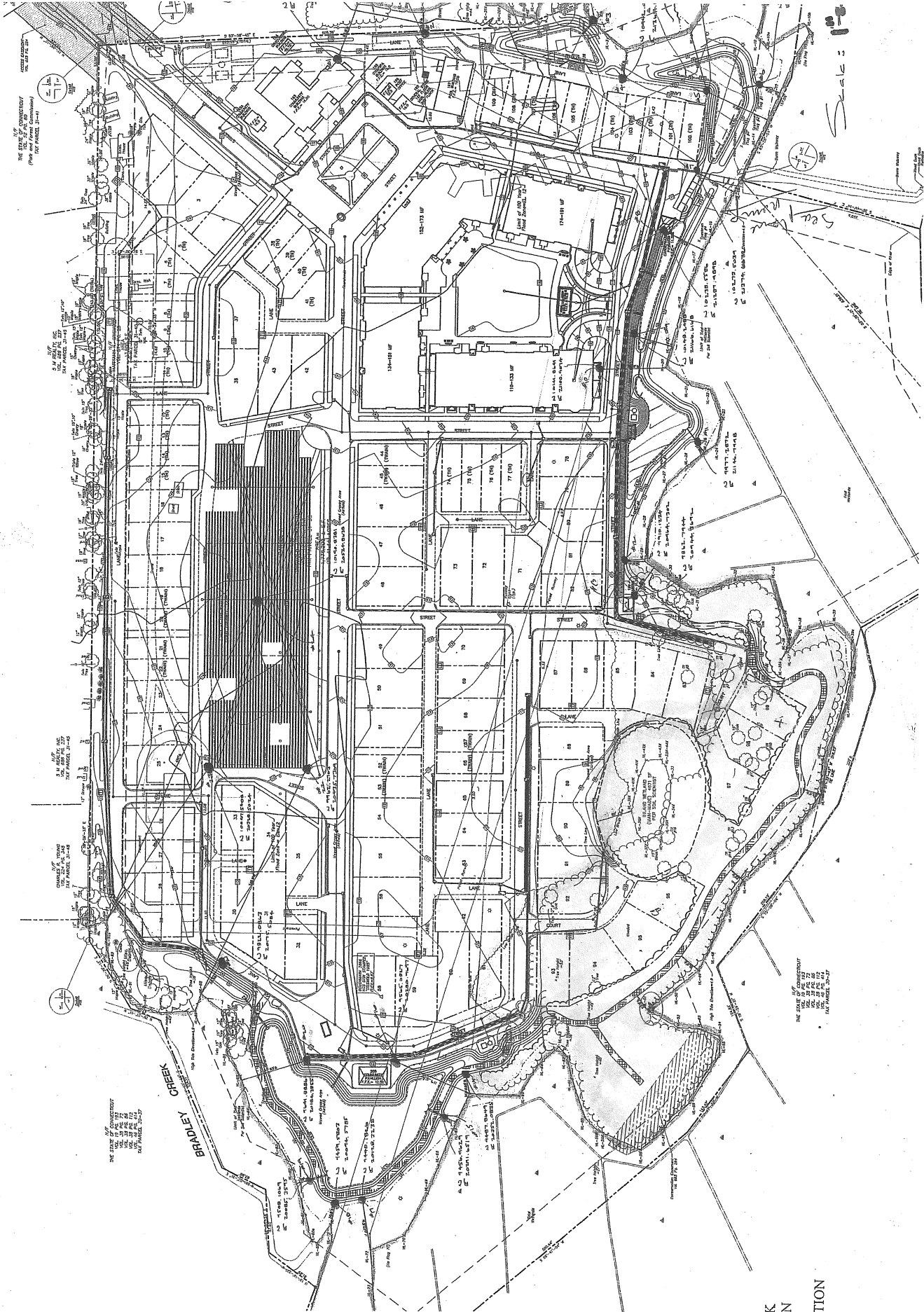
Randall G. Arendt

*Natural Lands Trust, American Planning Association, and American Society of Landscape Architects*



**Figure 5-1.** Site plan for the proposed expansion of Romansville, an historic hamlet within the rural/suburban township of West Bradford, Chester County, Pennsylvania. The author's design (at right) retains the entire density of the developer's original "cookie-cutter" plan (shown on the left) but arranges the development in a more compact village-like manner that preserves a substantial greenbelt of woodlands and farm fields around its perimeter. Due to their very compact nature, neo-traditional village layouts do not have the same high proportion of "view lots" that are commonly found in well-designed "conservation subdivisions." To compensate for this, the Romansville design includes five internal greens or commons (plus two ballfields), a relatively high number for a development of approximately 150 houselots.

Attachment #3



PRESERVE WOODLAND AREA

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N  
TION

**Attachment #4**

**Hazardous Materials Management**

**Advisory Measures / Recommendations:**

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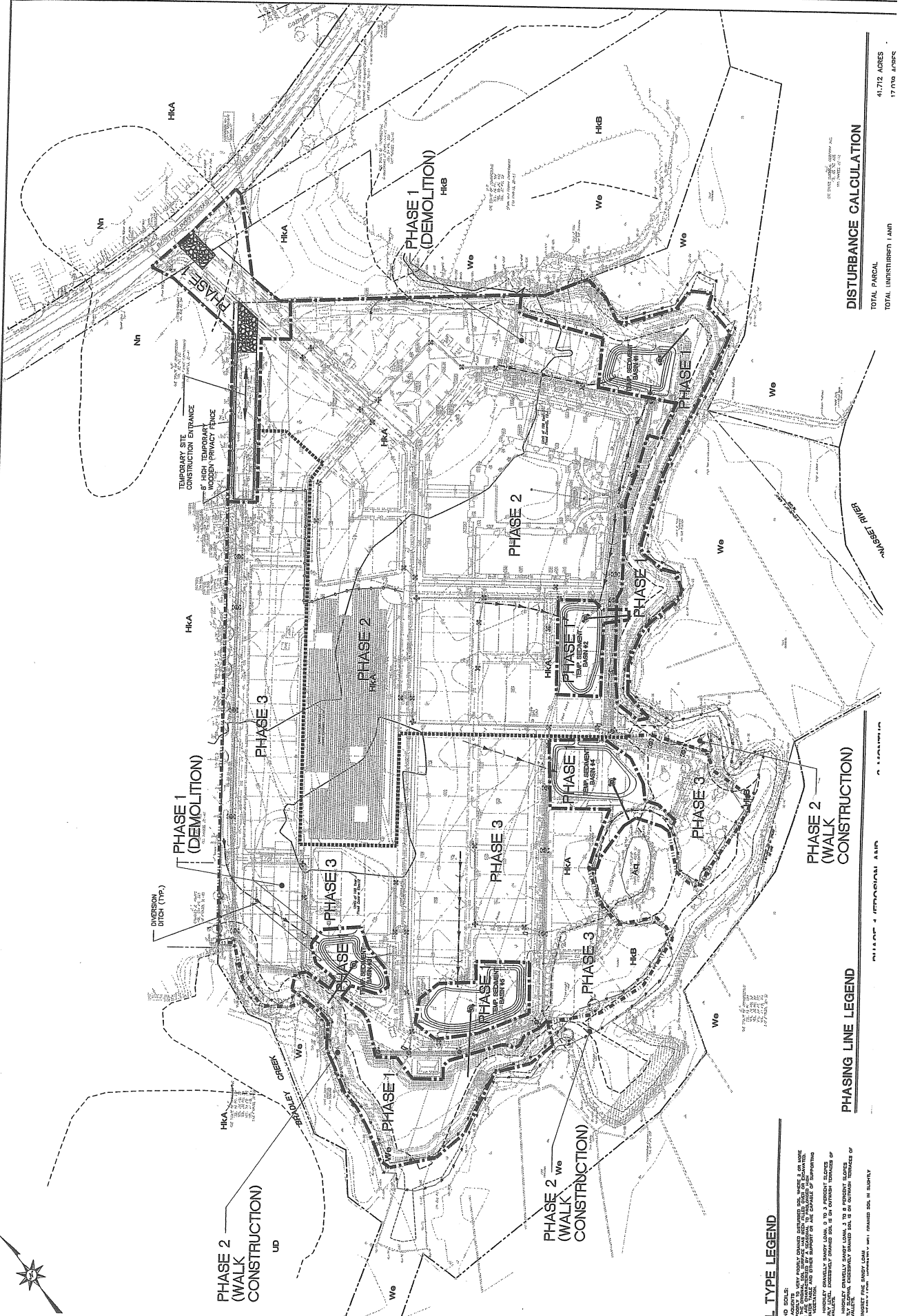
**# Petroleum Products: Disposal of, storage, use and handling**

- Shelter for storage - providing cover and wind protection
- Tanks and containers systems to be kept off of ground
- Impervious containment system around perimeter of storage area capable of holding 110 - 125 % of largest container
- Identify and label all products
- All waste products disposed of in proper receptacles or recycled
- Line storage area with double layer of plastic sheeting to prevent ground contamination

**# Vehicle / Fuel Staging and Wash areas to be located away from sensitive areas such as, surface waters, watercourses, wetlands etc.**

**# Isolate, store and cover construction materials, topsoil and chemicals to prevent exposure and reduce potential for transport of pollutants off site.**

**# Spill response plan should be developed to manage hazardous materials, oils, fuels, etc.**



*Grading Activities Violating 50' Wetlands Setback*

## Inland Wetland Review

The wetlands, both tidal and inland, were delineated and flagged by Mr. Michael Klein of Environmental Planning Services, Inc. Numbered wetland flags marked the wetland edge in the field and were represented on the map making location on the field walk efficient work.

The only inland wetland mapped on this site is a small, isolated wetland of about 4,500 square feet. It was apparent from the field inspection that this wetland is created. Most likely it is the result of excavation. This bowl shaped depression has been cleared of its sand and gravel.

Currently, under a thin cover of leaves, a dense, highly organic soil layer is present. This thick fibric layer was damp to the touch at the time of the field visit, though there was no standing water.

The functional values of this wetland would likely be judged as low. The wetland's smallness of size limit its functionality for almost all commonly recognized wetland values. Its attraction to wildlife due to its size and lack of standing water would be close to negligible as well.

Possibly its ability to hold moisture and deliver it slowly into the groundwater might be of benefit, especially when compared to the high permeability of the neighboring Hinckley sandy gravelly loam. But again, any positive impact would seemingly be negated due to its small extent on the landscape. These issues aside, the site is mapped as an inland wetland and the municipally mandated 50 foot buffer from the wetland boundary has been delineated and honored on the proposed plans.



Although the issues of tidal wetlands are addressed in another section of this report, the town should, in conjunction with the state, renovate the impacted tidal wetlands that abut the property.

Prime locations of the wetlands in need are the southwest end of the runway and the collection of metal hardware and refuse that has been dumped in the tidal wetlands abutting the existing hangers and maintenance structures.

### Water Quality

The surface water quality (which includes the wetlands and watercourses) of the parcel have been mapped by the Department of Environmental Protection as being *Class A*. Assumptions are made on many of the classifications over the extent of the map and not all surface water gets quality tested. However, with no known sources of pollutants to the ditched watercourses, the site can be assumed to have the water quality classification of *A*. The Hammonasset River borders the property on the east for approximately  $\pm 1000$  feet. The river here is classified as *SB*, which is Coastal and Marine surface waters B.

In addition, the groundwater classification for the parcel and much of the area around it is classified as *GA-impaired*. Impairment in the Hammonasset River Estuary reflects the possibility of some degradation due to bacteria, domestic septic systems, marinas and stormwater. This classification may be founded on professional judgment, based on the neighboring land use, and not actually field tested.

The descriptions of these classifications are:

*Class A*

Designated uses: potential drinking water supply; fish and wildlife habitat; recreational use; agricultural and industrial supply and other legitimate uses including navigation.

Discharge restricted to: same as allowed in AA (i.e.: Discharge restricted to: discharges from public or private drinking water treatment systems, dredging and dewatering, emergency and clean water discharges).

*Class GA*

Designated uses: existing private and potential public or private supplies of water suitable for drinking without treatment; base flow for hydraulically connected surface water bodies.

Discharge restricted to: same as for GAA (i.e.: discharges limited to: treated domestic sewage, certain agricultural wastes, certain water treatment wastewaters) and discharge from septage treatment facilities subject to stringent treatment and discharge requirements, and other wastes of natural origin that easily biodegrade and present no threat to groundwater.

*Class SB*

Designated uses: marine fish, shellfish and wildlife habitat, shellfish harvesting for transfer to approved areas for purification prior to human consumption, recreation, industrial and other legitimate uses including navigation.

Discharge restricted to: as for GAA and discharge from septage treatment facilities subject to stringent treatment and discharge requirements, and other wastes of natural origin that easily biodegrade and present no threat to groundwater.

*Source: Protection Summary of the Water Quality Standards and Classifications (1997), Connecticut Department of Environmental Protection, Bureau of Water Management.*

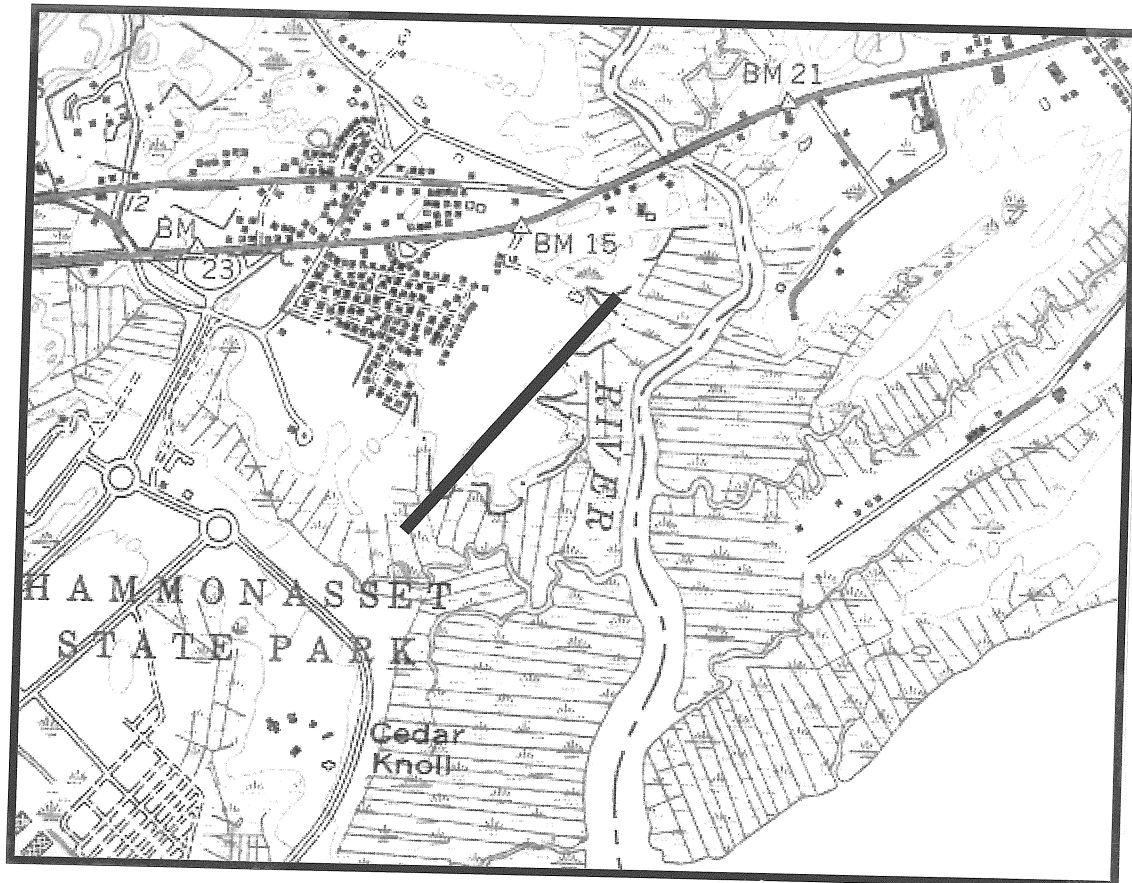
### National Wetland Inventory Classification

The U.S. Fish and Wildlife Service has mapped and classified wetlands and watercourses using a system of codes for all the topographic maps in the state. This parcel occurs on the Clinton quadrangle, 1:24,000 scale National Wetland Inventory (NWI) maps. Because of the scale of mapping, the inventory classifies wetlands that are the largest and most conclusively observed on the aerial photography.

In this case no freshwater wetlands have been mapped. However, tidal marsh wetlands between the property and the Hammonasset River (to the northeast, east, southeast and away from the river abutting the property to the south) do share a single classification. This classification, E2EMPd, represents the following: E - Estuarine, 2 - Intertidal, EM - Emergent (vegetation), P - Irregular (water regime), and d - partially drained or ditched.

Some wetland filling took place to allow the runway to extend to the length it is now. Below is a close approximation of the current location of the runway as applied to the land and marsh mapping on the 1951 USGS Clinton Topographic map. By observing the areas mapped as marsh one is able to get a reasonable idea of the filling that must have taken place before the runway was put into place.

*Below is an approximation of the placement of the current runaway on the 1951 USGS topographic map (heavy, diagonal black line to the left of the word RIVER).*



## Aquatic Resources Review

### Fish Habitat in the Vicinity of Griswold Airport

To the east, south and west, the upland portion of the Griswold Airport property (Property) abuts the Hammonasset River salt marsh, which is one of the largest salt marsh complexes in Connecticut. The 10 acres of salt marsh on the Property has over 450' of frontage with the Hammonasset River, and for more than 2,000' it is contiguous with salt marsh within the 408 acre Hammonasset Natural Area Preserve (part of Hammonasset State Park).

The salt marsh along the Hammonasset River is a mosaic high marsh, low marsh and tidal creek habitats. These habitats are important for a variety of fishes, but most notably for mummichog, striped killifish, Atlantic silverside and sheepshead minnow. For these species the marsh system provides food, spawning habitat and shelter from predators. A marsh system the size of the Hammonasset River complex produces large numbers of these small fishes. They in turn attract fish that prey on them, such as striped bass and bluefish. American eel is another common species found in the tidal creeks feeding opportunistically on small fishes and invertebrates.

In addition to the salt marsh, the Hammonasset River and Clinton Harbor have many other habitats, including tidal flats, sandy beaches, subtidal bottom types ranging from sand to mud, and marina basins. The list of species that occurs in these habitats is too numerous to list here. Some of the common species are striped bass, bluefish, winter flounder, summer flounder, white perch, tomcod, hogchoker, cunner and tautog.

Eelgrass functions as another fish habitat in Clinton Harbor, but as has been the case along Connecticut's coast, it is a species in decline. The remaining eelgrass in

Clinton Harbor is now the western-most, documented occurrence of eelgrass in Long Island Sound. As described by ERT member Lori Benoit, the main reason for the decline is probably nitrogen inputs from various human activities.

The decline of eelgrass is unfortunate because a variety of fish utilize this habitat. Common species are Atlantic silverside, bay anchovy, sticklebacks (three and four spine), pipefish and tomcod, as well as juvenile winter flounder, black sea bass, cunner, and tautog. The lined seahorse, a somewhat rare species in Connecticut's waters, can also be found within eelgrass beds. Numerous crustaceans utilize eelgrass beds, most notably American lobster (primarily juveniles) and blue crab. If salt marshes are nearby, mummichog and striped killifish will venture into the eelgrass to forage and hide from predators. Juveniles and adults of important recreational species such as bluefish, summer flounder and striped bass are attracted to the abundance of prey species using the eelgrass beds.

### **Potential Effects of Development on Fish Habitat**

As there is no in-water work or alteration of salt marsh proposed, there will be no direct impact to fisheries or fish habitat. However, possible long-term effects on fish habitat have been identified and thoroughly described by ERT members Lori Benoit and John Gaucher, whose offices are responsible for the protection of coastal resources. The main concerns are replacement of salt marsh plants by common reed (*Phragmites*) and other upland plants, eventual loss of salt marsh due to sea level rise, and nutrient loading to the Hammonasset River and Clinton Harbor which may contribute to habitat alteration.

The designers of the development have incorporated a number of best available technologies (BAT) to prevent adverse impact to the salt marsh and water bodies. These include: a stormwater system with features such as infiltration systems and biofilters that is designed to partially renovate stormwater and control the

rate of discharge; implementation of an Integrated Pest Management Plan to control fertilizer and pesticide applications on common property; extensive native plantings around the perimeter of the property; and an on-site sewage treatment and disposal system (OSSTDS) that is designed to meet certain State of Connecticut performance criteria. As a result of these features, the designers state in the Environmental Impact Assessment Report that "The project will result in no adverse impacts on tidal wetlands."

The ERT has found, however, that some of the stormwater treatment and OSSTDS design features may be inadequate to prevent adverse effects. Problems with the proposed stormwater treatment system identified by ERT members Karen Leonard, John Gaucher and Lori Benoit include: an inadequate separation of the filtration systems from groundwater level, poorly defined groundwater level (possibly underestimated because it was determined in August), the use of an incorrect high tide line (elevation 4.9 NGVD vs. 5.5 NGVD), and lack of analysis on the effect of sea level rise on the efficiency of the stormwater system. The effects of increased flow from the OSSTDS cannot yet be fully appreciated because the ground water modeling is not fully developed, and a conceptual design report demonstrating that the system will protect the waters of the state from pollution has not yet been submitted (see report submitted by ERT member Warren Herzig). Furthermore, because of the size of the development and amount of impervious surface, the amount of fresh water that will enter the marsh could be significantly higher than is currently the case. All of these factors together may result in an increase in the amount and rate of freshwater flow to the marsh and increased nutrient input. The result may be to favor the growth of common reed at the expense of high marsh plants.

It should be noted that even if the above issues were resolved, the development could contribute to a future threat to the salt marsh: sea level rise. Lori Benoit described how the development of certain locations around the perimeter of the salt marsh would essentially cut off any possibility of the salt marsh advancing

inland as sea level rises and drowns the existing marsh. Given the value of this salt marsh and the potential to mitigate the effects of sea level rise, the developers of the Property might consider planning for this eventuality.

The effect of the development on fish habitat within the nearby river and harbor are difficult to assess with the information currently available. An increase in nitrogen loading that would favor various species of algae is the primary concern. As discussed by Lori Benoit, eelgrass may serve as an indicator of water quality. The decline of eelgrass in Clinton Harbor suggests that there is excess nitrogen loading to the system from human sources. If this valuable fish habitat is to recover, nitrogen input to the river should be reduced rather than increased.

Once the various issues raised by the ERT members have been addressed, it would be useful for the applicant to determine what the additional freshwater and nitrogen loading to the salt marsh and river will be as a result of the development. This Team member would expect that if the various issues raised by ERT members concerning stormwater and sewage treatment are addressed, then the amount of nitrogen reaching the river would be insignificant due to additional uptake of nitrogen uptake by the salt marsh. It should be noted, however, that Lori Benoit expressed concern about the negative consequences of increased nitrogen input to the marsh. Furthermore, she noted that it is inconsistent with State policy to rely on a salt marsh for polishing effluent.

### **Summary**

The proposed development shares an extensive boundary with one of the most important salt marshes in the state. Due to the size and complexity of the salt marsh and its association with the Hammonasett River and Clinton Harbor, it functions as important fish habitat. The applicants should be lauded for attempting to plan an environmentally sensitive development by incorporating BAT for controlling stormwater runoff and wastewater treatment. However, due



to the size of the proposed development, extensive frontage with salt marsh and certain design inadequacies identified by ERT members, the proposed BAT may not prevent adverse impacts to salt marsh. The issues identified by the ERT should be addressed, and then a ground water model that incorporates nutrient inputs should be developed to provide a tool for assessing the effects of the development on the salt marsh.

## The Natural Diversity Data Base Review

The Natural Diversity Data Base maps and files have been reviewed regarding the Proposed Madison Landing Planned Adult Community in Madison, Connecticut. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the site. However, our information indicates that many State listed Species occur at Hammonasset State Park which is adjacent to this property. The species include:

<u>Species Name</u>	<u>Common Name</u>	<u>State Status</u>	<u>Contact Person</u>
Owl winter roost for: <i>Asio flammeus</i>	Short-eared Owl	Threatened	Julie Victoria DEP Wildlife 860-642-7239
<i>Asio otus</i> <i>Aegolius acadicus</i>	Long-eared Owl Northern Saw- whet Owl	Endangered Special Concern	
<i>Sabatia stellaris</i>	Marsh Pink	Endangered	Nancy Murry DEP - EGIC 860-424-3589
<i>Ammodramus caudacutus</i>	Saltmarsh Sharp- tailed Sparrow	Special Concern	Jenny Dickson DEP Wildlife 860-675-8130
<i>Ammodramus maritimus</i>	Seaside Sparrow	Special Concern	Jenny Dickson DEP Wildlife 860-675-8130
<i>Catotrophorus semipalmatus</i>	Willet	Special Concern	Jenny Dickson DEP Wildlife 860-675-8130
<i>Sterna antillarum</i>	Least Tern	Threatened	Julie Victoria DEP Wildlife 860-642-7239

<i>Charadrius melodus</i>	Piping Plover	Threatened	Julie Victoria DEP Wildlife 860-642-7239
Salt Marsh	Significant Natural Community	None	Ken Metzler DEP - EGIC 860-424-3585

The NDDB indicated that a variety of state-listed avian species have been documented in areas immediately adjacent to the project location. These species use this location for everything from breeding habitat to overwintering areas. The marsh complex that includes the edges of the project area and the associated upland areas provide very important stopover habitat for birds during both spring and fall migration. The nature of this site as an old, reverting airfield has likely made it attractive to several avian species and it is reasonable to expect that many of the species known to utilize various habitats at Hammonasset State Park also utilize areas of the proposed project site. It is difficult to properly evaluate potential impacts to these species without additional details regarding the proposed development. The specific impact will vary by species and by the time of year the species occur in the area. It would be reasonable to expect that there will be some level of adverse impact to these listed avian species but the scope of the impacts are impossible to determine at the present time.

The NDDB records indicate that an owl winter roost for shorteared owl, long-eared owl, northern saw-whet owl and two threatened shorebird species, least tern and piping plover occur in the vicinity of this project site.

The short-eared owl (*Asio flammeus*) (state threatened, wintering populations only) roosts in the winter in evergreen groves near marshes. Similarly, long-eared owl (*Asio otus*) (state endangered) habitat consists of thick woods. They roost in dense stands of evergreens or vine-covered thickets. Both species feed on meadow mice, white-footed mice and rabbits over fields at dusk.

Our data on Northern Saw-whet owl (*Aegolius acadicus*) distribution and abundance in Connecticut is poorly documented as are their habitat requirements and limiting factors. Fragmentation and loss of habitat to human development are continuing problems for this species in the Northeast. The species is associated with coniferous woods. They are nocturnal birds that hunt along the edges of open parks, meadows or fields. Their food items are mainly insects and occasionally mice, chipmunks and birds such as sparrows and juncos. Northern saw-whet owls are cavity nesters.

It is suggested that if the cutting of pine groves, hardwood groves, or dead tree tops or stumps is necessary for this project that a thorough survey for nesting activities by these species be conducted.

Northern Saw-whet owls will nest in artificial nesting boxes that are placed in the area. Artificial nesting box plans will be provided at your request. Nesting boxes and silvicultural practices that maintain high densities of nesting and roosting cavities in trees with a minimum diameter of 30.5 cm will benefit this species.

Least terns and piping plovers lay their eggs on sandy beaches with sparse vegetation. If this habitat exists in the project area a thorough survey for nesting activities by these species should be conducted. It is recommended that no vehicles, equipment or construction be done on the beach from late March to September so as not to disturb these potentially nesting birds.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This

information is not necessarily the result of comprehensive or site specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

## WILDLIFE RESOURCES REVIEW

### Existing and Potential Wildlife Values

The 42-acre Griswold Airport property consists of approximately 10 acres of tidal saltmarsh, 10 acres of hardwood forest/shrub habitat, and a 22-acre open field. It is one of the last remaining unprotected properties of its size and type on Connecticut's shoreline. The following species were observed on the property during a brief site visit on May 10, 2002: American Robin, Northern Mockingbird, Northern Cardinal, Red-winged Blackbird, House Finch, Common Grackle, Brown-headed Cowbird, Carolina Wren, Song Sparrow, Barn Swallow, Gray Catbird, Common Yellowthroat, Willet (state species of special concern), Gray Squirrel and Eastern Coyote (scat and tracks.) The property also is likely used by Killdeer (open field) and Seaside Sparrows (marsh) for nesting.

Current maintenance (i.e., short grass) of the property as an airport, generally limits its value to wildlife as breeding habitat. However, the property is part of a larger, intact saltmarsh complex which is directly linked to 919-acre Hammonasset Beach State Park and Natural Area Preserve (the Park), one of the most significant breeding and migratory bird stopover areas on the Atlantic Coast. Protecting upland habitats adjacent to saltmarshes is considered to be critical to maintaining healthy populations of marsh-nesting birds. If left undeveloped and managed for wildlife, the Airport property has great potential to enhance wildlife use of the Park and provide habitat for grassland-dependent wildlife such as butterflies, dragonflies and one or more species of birds that are declining in the Northeast (e.g., Savannah Sparrow, Bobolink, Eastern Meadowlark, Horned Lark.) Protecting this property as an extension of the Park also would enhance opportunities for wildlife viewing and environmental education.

The following information, compiled by the National Audubon Society, highlights some of the ecological and educational values of Hammonasset Beach State Park and Natural Area Preserve (map attached):

- The Natural Area Preserve (saltmarsh) provides important habitat for three of the top four high conservation priority bird species for this habitat type in Southern New England. It supports one of the highest concentrations of Saltmarsh Sharp-tailed Sparrows (state species of special concern) in the world, one of the largest remaining populations of Seaside Sparrows (state species of special concern) in Connecticut, and is a regionally important wintering/migration area for American Bittern (state endangered). Both the Sharp-tailed and Seaside Sparrow are considered high priority species for conservation in Connecticut by Partners In Flight (PIF). PIF is an international coalition of federal, state and local government agencies, philanthropic foundations, professional organizations, conservation groups, industry, the academic community and private individuals dedicated to the conservation of land birds and their habitats. The group's goal is to stimulate cooperative public and private efforts in North America and the Neotropics (Central and South America) by focusing its resources on the improvement of monitoring and inventory, research, management and education programs. Additional species of concern that nest in the marsh include American Black Duck, Clapper Rail, Willet and Osprey.
- Several species of wading birds, including the Great Egret (state threatened), Snowy Egret (state threatened), Little Blue Heron (state species of special concern), and Glossy Ibis (state species of special concern) use the saltmarsh as foraging habitat during the nesting and post-nesting dispersal seasons. The park is within the 10-mile feeding radius of the wading bird colony that nests on Duck Island Wildlife Management Area in Westbrook.
- The Piping Plover (federal and state threatened), Least Tern (state threatened) and American Oystercatcher (state species of special concern) nest on the beach at the mouth of the Hammonasset River and the Roseate Tern (federal and state endangered) regularly forages at the mouth of the river and offshore waters during the breeding season. The Park and offshore waters are within 10 miles of the Roseate and Common Tern colony that nests on the Falkner Island Unit of the Stewart B. McKinney National Wildlife Refuge in Guilford.

- The Park provides migratory stopover habitat (spring and fall) for shorebirds, raptors, warblers and other landbirds. The Park has served as a raptor banding station for several years. The cedars, other evergreens and shrub habitat offer significant roosting habitat for migrating Northern Saw-whet (state species of special concern), Barn (state threatened) and Long-eared Owls. The park is one of the primary wintering and/or migratory stopover habitats for Short-eared Owls (state threatened), Northern Harriers (state endangered; second highest banding total in North America), American Black Ducks and American Bitterns.
- The Park provides regionally important wintering/migration habitat for open country songbirds such as the Snow Bunting, Horned Lark (state threatened) and Ipswich Sparrow (state species of special concern).
- Offshore waters may be regionally important to migrating/wintering waterfowl and diving birds. The Park and offshore waters also are significant staging areas for gulls, particularly Laughing Gulls.
- The saltmarsh/river is a nursery area for many game fish (i.e., striped bass, bluefish, summer flounder, weakfish) and forage fish (i.e., mummichogs, striped killifish, atlantic silversides) and serves the important function of protecting the water quality of Long Island Sound. A portion of the Hammonasset River adjacent to the airport is identified as a shellfish (hard clams and oysters) concentration area.
- The Park's recreational and educational value cannot be overstated. It is considered one of the premier birding areas in Connecticut and is heavily used by beachgoers and other recreationists for hiking, picnicking, camping, nature walks/study, saltwater fishing, swimming and scuba diving. Nearly every birding organization in the state and many schools and universities run field trips to the park. Numerous research projects also have been conducted on site.
- An estimated 1.5 million people visit the Park annually. The positive economic impact of such visitation on the local economy is significant. According to the preliminary U.S. Fish and Wildlife Service 2001 National Survey of Fishing, Hunting, and Wildlife-associated Recreation, 859,000 residents of Connecticut took part in wildlife viewing recreational activities and 279,000 non-residents took part in



wildlife viewing in Connecticut. Total expenditures for wildlife viewing recreational activities in Connecticut were over \$220 million.

### **Potential Impacts**

Because the Airport property lies directly adjacent to the Park, any activities or alterations on the property are likely to have a direct impact on the biological integrity of the saltmarsh system and associated wildlife. Potential threats from such a large-scaled development include:

- **Habitat loss and degradation**

Approximately 50% of the uplands will be permanently converted to structures and impervious surfaces. The functional value of the remaining undeveloped portions of the property as wildlife habitat will be significantly reduced. Many of the species that would potentially use the airport property are habitat “specialists,” meaning that they have very specific habitat requirements and have a very narrow tolerance for disturbance or other environmental changes. For example, Savannah Sparrows are “area sensitive”; they require relatively large patches of grassland habitat (20-40 acres) to successfully reproduce.

Connecticut’s forests and other wildlife habitats are rapidly becoming fragmented by development. Fragmentation occurs when large tracts of habitat are divided into smaller patches by commercial and residential development, powerline right-of-ways, and transportation corridors (e.g., roads, driveways and railways.) As habitats are cut into smaller and smaller pieces and surrounded by development, wildlife habitat is lost or degraded the potential for wetland and water quality degradation increases and community character is reduced. Habitat fragmentation and land use practices have encouraged high populations of “generalist” species such as deer, turkeys, and mammalian predators such as coyotes, fox, raccoons and skunks. These species have adapted to living among humans, benefiting from the increase in food and cover provided by brushy “edges” and other artificial habitats.

- **Water quality degradation**

Activities/potential sources of pollution that could impact the marsh include: erosion and sedimentation during site construction, runoff and use of fertilizers and pesticides associated with the conversion of natural vegetation to impervious surfaces and manicured lawn, and improper design/capacity of the septic system.

- **Increased predation**

In addition to providing increased food and cover value for predators, fragmentation/subdivision of land has imposed greater limitations on access to private lands for hunting or trapping to control populations, thereby increasing predation rates, wildlife-human conflicts, and the risk of starvation and disease. The introduction of domestic dogs and cats also poses a significant threat to wildlife, particularly during the breeding season. (See “Increased light pollution.”)

- **Increased risk of invasion by non-native plants**

Soil disturbance and tree canopy removal (resulting in increased exposure to sunlight) associated with construction projects and other human activities encourage the spread of invasive plants. Encroachment into the marsh by Common Reed Grass (Phragmites) and potentially Purple Loosestrife is of primary concern. Other invasive plants present in the uplands that are of concern include Multi-flora Rose, Asiatic Bittersweet and Japanese Honeysuckle. Reed Canary Grass is commonly used alone or in seed mixes to aid in the stabilization of bio-filter basin slopes. The use of this plant should be avoided due to its invasive quality.

- **Increased light pollution**

The ecological consequences of artificial lighting on wildlife populations is of growing concern to wildlife managers. Numerous experiments and anecdotal evidence suggest that increased night lighting associated with human development can disrupt normal behavioral and physiological processes of wildlife, resulting in direct mortality and reduced reproduction. For example, the negative effects of lighting on the nesting behavior and nesting success of sea turtles have been well

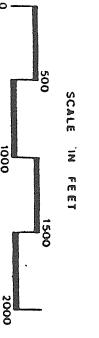
documented. Light pollution on nesting beaches has been found to alter how turtles choose nesting sites, how they return to the sea after nesting and how hatchlings find the sea after emerging from nests. Although little is known about the direct effects of increased light pollution on marsh nesting species, increased unnatural ambient light levels are likely to increase nocturnal predator (e.g., Eastern Coyotes, Red Fox, Raccoons, Black-crowned Night Herons) activity and may disrupt natural circadian rhythms of the species that use the marsh and river. The Environmental Impact Assessment Report did not address this issue. It is difficult to assess the effects of light pollution associated with this project based on the information provided.

- **Increased human disturbance**

Numerous research projects have documented the negative impacts of human disturbance on wildlife reproduction and behavior. Human activities can impact animals through four primary routes: exploitation, disturbance, habitat modification and pollution, and can result in behavioral changes including avoidance, habituation or attraction. The degree of impact depends on the location, timing (e.g., seasonal, day/night), and frequency of disturbance.

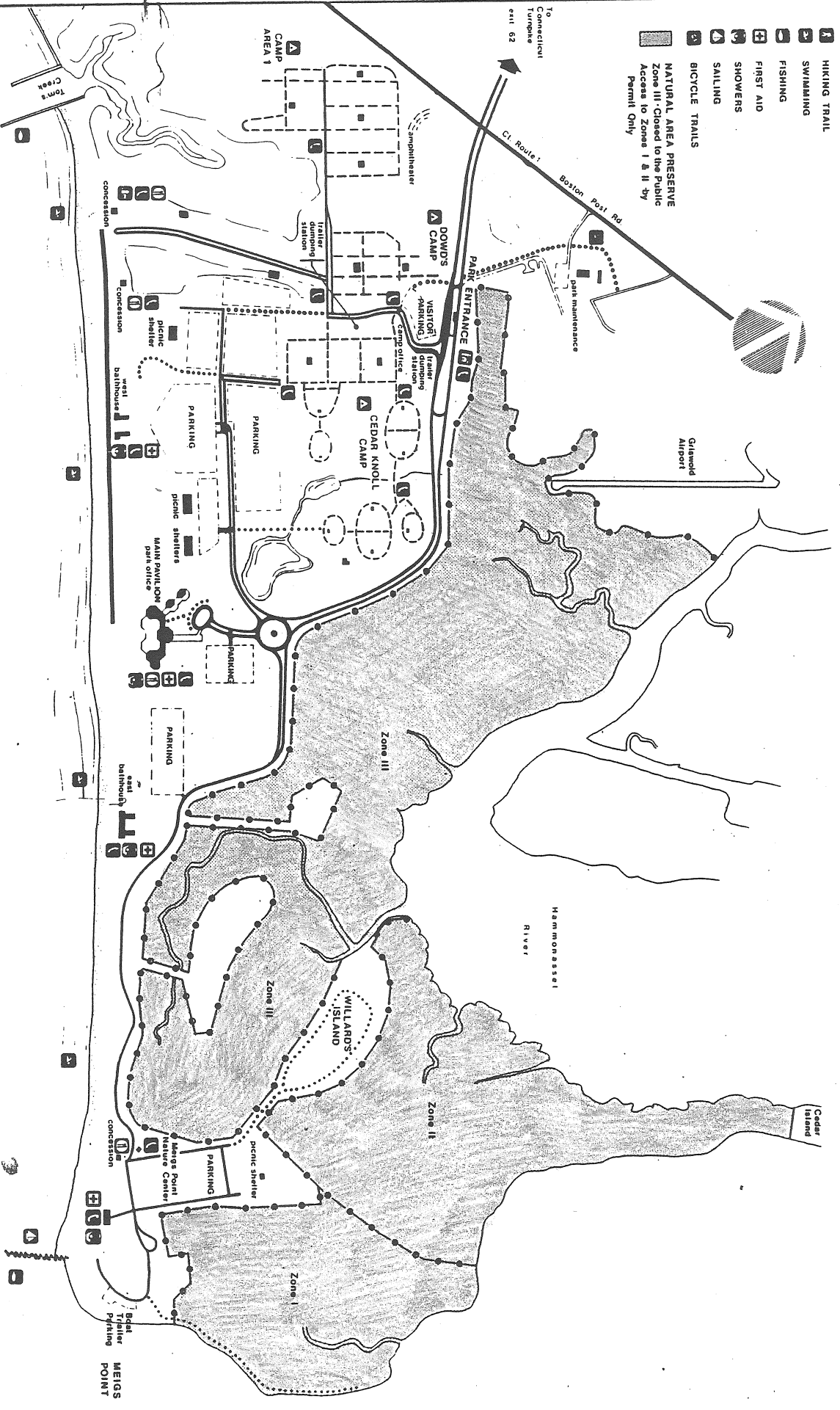
**LEGEND**

- PARK MANAGER
  - CAMPGROUND
  - TELEPHONE
  - FOOD SERVICE
  - CAMP STORE
  - HIKING TRAIL
  - SWIMMING
  - FISHING
  - FIRST AID
  - SHOWERS
  - SAILING
  - BICYCLE TRAILS
  - NATURAL AREA PRESERVE
- Natural Area Preserve  
Zone III - Closed to the Public  
Access to Zones I & II by  
Permit Only



# HAMMONASSET BEACH STATE PARK

MADISON,  
CONNECTICUT



LONG ISLAND SOUND

## Archaeological Resources Review

A review of the state of Connecticut Archaeological Site Files and Maps show no known archaeological resource in the project area. However, our files do indicate that six prehistoric Native American villages and camp sites are located in very close proximity to the project area. These archaeological sites date as early as 7,000 years ago, and, were continuously occupied by Connecticut Indians into the Historic Period. Four of these archaeological sites appear to have good-to-fair integrity, that is, the sites may still be capable of yielding important information about the past. While the Office of State Archaeology (OAS) have no information concerning the area within the boundaries of the project, it is suggested that the property is highly sensitive for the discovery of prehistoric archaeological sites.

The Office of State Archaeology strongly recommends an archaeological survey for portions of the project area not previously disturbed by land use associated with the original construction of Griswold Airport. The flat topographic area that provided for an airstrip would also have been desirable for Native American settlements along the Hammonasset River. The OAS office is prepared to offer the applicant any technical assistance in conducting the recommended archaeological survey. The OAS maintains a list of qualified archaeological consultants. The survey should be conducted in accordance with the Connecticut Historical Commission's *Environmental Primer for Connecticut's Archaeological Resources*.

## A Planning Perspective

### Introduction

From a planning viewpoint the basic issue here involves the appropriateness of this proposed use on this specific property and the degree of proposed density in a relatively low density community such as Madison. Land use control remains primarily a municipal function, except where overridden, for example in the case of the CT Coastal Management Act, and therefore it is Madison that must answer this basic question. The record indicates that commercial use was approved in 1997. Furthermore the town Planning and Zoning Commission in August 2001 approved a Special Exception Permit for an adult residential community for up to 250 dwelling units. The question of whether the proposed 192 unit development is too dense for Madison may be debatable, but existing town zoning seems to clearly permit it as a legitimate development proposal. Therefore, with the exception of the 1/22/01 policy statements by DEP - OLIS (flood hazard minimization and provision of public access) ERT comments would necessarily appear to be limited to analysis of project elements rather than project suitability.

### Community Design

The project designers should be commended for their efforts to design an attractive traditional village, `a la Duany, whose architectural firm is a project participant. Narrowed streets, traffic calming, rear and/or underground garages/parking are very desirable features. Also the proposed architectural styles are appropriate for Connecticut and visual unity from the planned control of height, scale, and materials to be used. One suggestion is consider buffer planting of evergreens (such as arborvitae) both as a good neighbor and to enhance village character.

### Natural Resource/Conservation Issues

Protection of the tidal wetland within the property is the main conservation concern and there is to be no direct impact on these ten acres. Indirect impact should be minimized by buffer strips, erosion control during construction, and the planned biofilter basins. In addition, the applicant has promised to clean up the tidal wetland behind the hanger and to restore the disturbed tidal wetland at the end of the runway, reportedly in partnership with DEP.

Necessarily, a further recommendation is to place a conservation restriction on the tidal wetland acreage to forestall possible future permitting requests, said restriction to be granted to the Town of Madison, DEP, Madison Land Trust, or other suitable entity. In addition, the proposed protection with buffer to be given to the small pocket of inland wetland seems adequate.

### Public Access

Although proposed to be a private community with private roads, provision for public access per OLIS request has been included, allowing opportunity for parking and more specifically for enjoying the boardwalk/path with vistas over the Hammonasset River and adjoining salt marsh.

## Land Use Planning Considerations

### Site Location

Leyland Development LLC is proposing to develop a 42.5-acre site into a planned residential community for adults over 55 years of age known as Madison Landing. The site is located along the southerly side of the Boston Post Road (Route 1) in southeast Madison, approximately 0.2 miles west of the Madison/Clinton town line.

### Site Characteristics

The property consists of a flat, grassy airfield, with a small wooded area in the southeast portion of the property. A portion of the site, approximately ten acres, is surrounded by undeveloped tidal wetlands, associated with the Hammonasset River and Long Island Sound. The Boston Post Road abuts the northern property line, undeveloped tidal wetlands form the southern and eastern boundaries of the site, Bradley Creek runs along the southwestern boundary and summer cottages abut the western property line. The Hammonasset River, which drains into Long Island Sound, flows along the eastern portion of the site. The Hammonasset State Park abuts the site to the southwest, with tidal wetlands separating the park and the airport. A very small portion, located near the southern perimeter, contains approximately 0.10 acres of man-made inland wetlands. Along the southeastern perimeter is a deteriorated boat launch for kayaks and canoes and a partially wooden walkway extending approximately 240 feet into the tidal wetlands.

The site is presently occupied by Griswold Airport, a small airport continuing to offer limited landing services for small private planes and gliders. In addition to the airfield and runway, are numerous structures that include: two existing



houses, two abandoned airplane hangars, and several sheds and storage buildings.

The site is currently served by the Connecticut Water Company, the Southern Connecticut Gas Company, Connecticut Light and Power and Southern New England Telephone.

Town officials have indicated two small redevelopment projects occurring in the vicinity of Griswold Airport along Route 1. There are several commercial businesses to the west along the northern portion of the Boston Post Road, east of the Hammonasset Connector. The first redevelopment project in this particular area is a two-story building undergoing extensive renovation expansion to accommodate 30,000 square feet of office space. The Madison Planning and Zoning Commission has recently approved another project application to reconstruct and expand two sites directly across from the proposed Madison Landing. The applicant submitted plans to rehabilitate two buildings, the smaller building will include a restaurant and the larger two story building will be a combination of business/professional office and retail business/service with approximately 25,000 square feet of floor area. The Planning and Zoning Commission has not received any plans for the third parcel (adjacent to the two being developed).

### **Traffic Circulation/Site Access**

The site of Madison Landing is located along the southerly side of the Boston Post Road, a principle east-west arterial. Access to the adult residential development will be off Route 1, approximately 100 feet west of the current airport driveway. The entrance was designed to be located opposite the driveway to the north to provide better alignment. Based on Connecticut Department of

Transportation criteria, the applicant is providing a left turn by-pass lane and a right turn lane for vehicles entering the development.<sup>1</sup>

The Madison Landing Homeowner's Association is expected to maintain the interior road network. The streets vary in width, with rights of way ranging from 32 feet to 50 feet, with a typical street measuring at 24 feet. Within the street right of way measurement, the applicant has provided a seven foot landscaped area and a five foot sidewalk (for both sides of the street). In general, the development has been designed to ensure that each home site has a two-car garage that is located to the rear of the lot. The garage is then accessed from a lane that is approximately 14 - 16 feet wide. The zoning regulations require a minimum of two spaces for each single family residence and 1.5 spaces for each dwelling unit in multiple family dwellings. The applicant is proposing an underground parking garage for the apartment building. The garage is designed for 125 parking spaces (the regulation requires 123 parking spaces), with access to the garage in the rear portion of the building.

Madison Landing will be open to the public. The applicants are providing on-street parking areas throughout the development. In addition, pedestrian access will be provided from the Boston Post Road, connecting with the community's sidewalks.

### **Recreational Opportunities - Public Access and Open Space Priorities**

Currently, access to the small boat launch is limited for two reasons. The launch area has deteriorated over time and secondly, the Griswold Airport is private property. The developers of Madison Landing are committed to significant improvements to the launch area, which include improvements to the bermed walkway, a new ramp, a plaza area and a canoe/kayak pavilion. On street parking

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<sup>1</sup> Pending State Traffic Commission approval.

will be provided. Additional recreational opportunities open to the public include a combination boardwalk and walking trail. The proposed trail will begin at the boat launch as a raised boardwalk, then become an eight foot wide unpaved trail, ending near the Bradley Creek. Since the material for the trail has not been specified, the applicants may want to consider an environmentally safe material, such as a compact stone dust. The trail will have several strategically placed park benches as well as gazebos and pavilions. Providing public access to the Hammonasset River and Long Island Sound, as well as additional recreational opportunities, are a great benefit to Madison residents.

The zoning regulations require at least 19% of open space and must be in addition to the ten acres of tidal wetlands. The applicant is providing approximately 34% open space, which includes the common areas of the development (does not include tidal wetlands and private lawns). The regulation also requires the Homeowner's Association maintain and protect the tidal wetlands.

### **General Characteristics of Site Plan**

The Traditional Neighborhood Development (TND) approach was conceived by Andres Duany and Elizabeth Plater-Zyberk as an alternative tool to conventional subdivision design. A core concept of the TND approach is the integrated relationship of the neighborhood, to be designed at the pedestrian scale with close attention given to the design and placement of public and private spaces. The developer's of Madison Landing have designed a community based on some of these same TND principles. The community will be for active adults who are 55 and over, with an integrated design of residences, community buildings and public spaces. Neighborhood amenities, such as the general store and the post office, as well as various recreational amenities were all designed to be pedestrian-friendly. Many houses are oriented to sit closer to the street, with the garages placed to the rear of the lot, accessed from rear lanes. The homes are built

on smaller lots that sit closer to one another with a majority of the building lot covered. Configuring the homes in this manner is how many of the traditional New England town greens were built.

Site construction will occur on what is currently the airfield, which is a flat grassy area. The tidal wetlands will remain undeveloped, with no development occurring within 50 feet of the tidal wetlands. The project will include 192 total dwelling units, consisting of 83 multifamily units, 39 single-family attached units, 70 single family detached units, various community buildings and several neighborhood greens. The architectural style of Madison Landing is modeled on two principal architectural traditions commonly found in Connecticut: the Ancient Classical style of Greek Revival and the English Renaissance Classical styles of Georgian and Federal/Adam.

Common with Traditional Neighborhood Developments (TND) is the utilization of a design code rather than the typical bulk requirements used in zoning regulations. As part of the 2001 zoning text amendment, the Madison Planning and Zoning Commission stipulated as a requirement of the special exceptions that dimensional requirements and building design features must be incorporated into a design code. The bulk requirements of a zoning regulation controls all dimensional requirements, but does not stipulate design aesthetics, such as types of building materials and architectural style of residential units.

The design code defines the three various residential types allowed in Madison Landing, known as "Singles (detached single family homes); Townhouses (attached single family homes); and Twains (two attached homes, side-by-side, creating a building that reads as a larger single family house, one home has an entrance on the front facade, while the other has its entrance on the side)." To illustrate the layout of the development, the design code incorporates a Neighborhood Master Plan and a Neighborhood Design Plan. The Master Plan illustrates the layout of the development, including all open space/common

areas, the location of the single-family residences, townhouses, community buildings and multi-unit apartment buildings. The Design Plan delineates the setbacks and the orientation of all residential units and garages.

The design code also requires that all home sites have a two-car garage, with the allowance of habitable space above the garage. Key elements of the dimensional standards for a typical residential unit are summarized below.

	SINGLE HOME (S1)	SINGLE HOME (S2)	TWAIN HOME (TW)	TOWNHOUSE (TH)
Finished interior space	2400 sq. ft. (min) 4800 sq. ft. (max)	1750 sq. ft. (min) 3800 sq. ft. (max)	1600 sq. ft (min) 3250 sq. ft. (max)	1600 sq. ft. (min) 3800 sq. ft. (max)
Garage space	450 sq. ft. (min) 600 sq. ft. (max)	450 sq. ft. (min) 600 sq. ft. (max)	450 sq. ft. (min) 600 sq. ft. (max)	450 sq. ft. (min) 600 sq. ft. (max)
Setback: front	8 feet	8 feet	5 feet	4 feet
Setback: side	5 feet, except for garages, which may a zero foot setback when adjacent to other home sites	5 feet, except for garages, which may have a zero foot setback when adjacent to other home sites	5 feet	0 feet when adjacent to a street, lane or path and 5 feet when adjacent to another side yard
setback: rear	8 feet, except for garages, which shall have a 4 foot setback	8 feet, except for garages, which shall have a 4 foot setback	4 feet	4 feet
Garage width	24 feet	24 feet	24 feet	24 feet
Height	3 stories or 35 feet	3 stories or 35 feet	3 stories or 35 feet	3 stories or 35 feet

In addition to dimensional requirements, the design code also regulates architectural style and design elements, providing an illustrative guide for typical building materials, methods and styles. Exterior architectural details outlined in the Code include foundations and site work (i.e. exterior lighting and fences); material of walls (i.e. wood clapboard, brick, wood siding and shingles); the style of doors and windows; various options for porches, stoops, entry stairs configurations and balconies; various types of roofs (i.e. pitch, dormers and skylights); cupolas, widow's walks, balustrades and towers and lastly other miscellaneous elements such as columns, colors and chimneys.

The Design Code outlines a two-tiered design review process for the construction of all new homes. The review process starts with the Neighborhood Architect who is designated by the developer to review the building plans for consistency with the Design Code. If consistent, the Neighborhood Architect signs off on the Certification Form, then submitting to the Madison Zoning Enforcement Officer. The second level of review is by the Madison Zoning Enforcement Officer (ZEO), who reviews the Certification Form for completeness and the building plans for consistency with the Design Code, and if consistent zoning approval is granted. However, the process also allows for a Town Architect, chosen by a majority vote of the Madison Planning and Zoning Commission. The Town Architect can accept referral applications from the ZEO to review Certification Forms, reviewing possible inconsistencies with the Neighborhood Architect, then submitting revised plans back to the ZEO. If the Certification Form is denied by either the ZEO or the Town Architect, the Neighborhood Architect may petition a review by the Madison Planning and Zoning Commission. The ZEO may grant minor exceptions to the Design Code if it deemed necessary.

Various best management practices are being used in the design of the stormwater management system to protect water quality and renovate stormwater prior to discharge. A community subsurface sewage disposal system has been designed to connect with all of the homes and community buildings throughout Madison Landing. The applicant has also prepared a Sediment and Erosion Control Report.<sup>2</sup> As part of this report, the applicant has planned to phase building construction to minimize negative site impacts, with three construction phases and an anticipated project completion within five years. The applicant is proposing to remove all existing structures on the project site and

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<sup>2</sup> The stormwater management system, the subsurface sewage disposal system and the sediment and erosion controls have been designed according to the Town of Madison and CT DEP standards. It should be understood at the time of this report the review process for these three systems has not been completed.

pulverize all bituminous concrete and curbing, with the intention of utilizing pulverized material as on-site fill.<sup>3</sup>

### Zoning History/Land Use Considerations

In 1997 the Madison Planning and Zoning Commission approved a special exception text amendment for Griswold Airport for Business and Legal Reports (BLR), allowing business and professional offices including accessory uses customary with and incidental to such uses, including book storage and distribution. The regulation required a maximum building coverage of 15%, a maximum building height of 45 feet, with an allowance that up to 20% of the building area would be permitted to maximum height of 55 feet, and one elevator tower at a maximum height of 60 feet. The applicant subsequently received approval of a special exception permit and coastal site plan, however, the applicant withdrew the application.

In November 2000, Leyland Development submitted an application for a special exception text amendment to allow adult planned communities in the area known as Griswold Airport. In August 2001, the Madison Planning and Zoning Commission amended Section 4.1.37 by deleting the original BLR text and replacing it with regulations allowing a Planned Adult Community at the site known as the Griswold Airport. The zoning regulation allows a maximum of 250 units (6 units per acre), stipulating a minimum of 65 single family detached residences, a minimum of 35 single family attached units and a maximum of 135 dwelling units in multiple family buildings. The maximum building coverage is 25% and open space not to be an amount less than 19% of the non-tidal wetland area.

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<sup>3</sup> As stated in the Madison Landing Coastal Site Plan Review, Sheet Number DM-1, Legend, #12 and must meet specification requirements.

The applicant is proposing 192 units (4.6 units per acre), consisting of 70 single family detached units, 39 single-family attached units and 83 multifamily units. Due to the dimensional requirements of this development, in particular, the combination of the increased building coverage, the smaller lots and the minimal setbacks result in a significant percentage change in the impervious surface coverage. The existing impervious coverage is approximately 4.21 acres or 10.09%. "Once Madison Landing is fully developed, the coverage will be approximately 15.966 acres or 38.28%, leaving approximately 62% of the site as undisturbed area."<sup>4</sup> The applicant has addressed the issue of groundwater regeneration by designing the stormwater system to retain and renovate more than the first inch of stormwater runoff through the use of subsurface infiltration pipes and biofilter basins.

The applicant is proposing limited mixed uses for Madison Landing residents located near the entrance of the development, consisting of a meetinghouse, a small post office, a fitness spa, pool and a small general store.

Madison Landing appears to be an appropriate use for this parcel because of the increased level of control and monitoring of the wastewater and stormwater systems. If single-family dwellings were built on this parcel, each unit would have their own septic system and large yard, increasing the potential for septic system failures and fertilizer pollution, ultimately harming the ecosystems of the Hammonasset State Park, the Hammonasset River and Long Island Sound.

### **Conformity with Zoning Regulations, Municipal Plans and Regional Plan**

The applicant has continuously worked with the Town of Madison to ensure compliance with state and local regulations. The development meets many of the goals formulated in Madison's recently updated Plan of Conservation and

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<sup>4</sup> As stated on page 3 of the Municipal Coastal Site Plan Review Application.



Development. In particular, the *Plan* mentions expanding coastal access opportunities. As stated earlier, the applicant is improving the existing boat launch and providing a boardwalk along the tidal marshes, which will be open to the public. Madison has recognized there is a high demand for elderly housing in the town. The *Plan* states that “provisions should be made for additional elderly housing”. Madison Landing would add 192 units to the elderly housing supply. The Plan of Conservation and Development also mentions enhancing commercial areas on Route 1 through mixed uses, including residential units. An active adult community can be a catalyst for appropriate commercial development. The Plan also recommends “undertaking a special study of each commercial area along Route 1 in order to guide the appropriate future development of these areas”. This particular area should provide low-intensity, pedestrian-friendly development to serve this new community. Officials can evaluate current zoning designations to determine appropriate uses, setbacks and other requirements to compliment the new development, such as appropriate design requirements and consistent scale, rather than allowing haphazard commercial development. Local officials should continue to work on developing a vision plan for this area to ensure Madison Landing is not an isolated development and that future development is in keeping with the Town's vision of mixed-use development.

The *Vision for the Future, a Regional Plan of Development* recommends development be guided to major transportation corridors within areas of adequate infrastructure. Madison Landing is located along a major arterial that currently has a mix of residential and commercial uses. The *Plan* also recommends the protection of environmentally sensitive land. The developer's engineers have gone to great strides to comply with local and state environmental mandates to ensure the Hammonasset River and Long Island Sound ecosystems are protected. The Regional Plan also encourages clustering in moderate to low-density areas. The concept of this traditional neighborhood development is clustering housing to encourage an urban pattern of

development in a suburban area. Madison Landing is consistent with the land use, environmental and open space goals formulated in the *Regional Plan of Development*.

### Summary

One of the major themes of Madison's Plan of Conservation and Development is to expand coastal access opportunities. Providing access to the boardwalk trail and improving the boat launch area for residents of Madison Landing and the public are important attributes to improving the overall character of Madison.

The design and management of stormwater runoff, the subsurface sewage disposal system and erosion and sediment controls were done in a comprehensive manner using Best Management Practices to protect the ecosystems of the Hammonasset State Park, the Hammonasset River and Long Island Sound. All systems and facilities will be maintained by the Madison Landing Homeowner's Association, therefore adding a level of control not typically found in conventional residential developments and commercial/retail uses.

Madison Planning and Zoning officials should continue to follow the Plan of Conservation and Development by developing regulations that will target appropriate development in this area to guarantee future growth is integrated with the design concepts of Madison Landing and the surrounding area.

## ConnDOT Office of Intermodal Planning Review

The Connecticut Department of Transportation (ConnDOT), Office of Intermodal Planning, has reviewed the Madison Landing Planned Adult Community development proposal regarding traffic concerns, and offers the following comments:

The traffic study performed by BL Companies indicates that a traffic signal is not warranted at the entrance of the proposed development site. ConnDOT's Division of Traffic Engineering also has determined that the proposed right-turn lane and left-turn bypass at the entrance to the proposed development would operate acceptably without a traffic signal. It is recommended that a striped crosswalk at the northern terminus of the proposed sidewalk, along with advance pedestrian warning signs, be considered as part of this proposal. Pedestrian access at this location is of particular importance because of the commercial development area on the north side of Route 1 opposite the subject residential development.

# ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, soil scientists, foresters, climatologists and landscape architects, recreational specialists, engineers and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - an 83 town area serving western Connecticut.

As a public service activity, the Team is available to serve towns within the King's Mark RC&D Area - *free of charge*.

## **Purpose of the Environmental Review Team**

The Environmental Review Team is available to assist towns in the review of sites proposed for major land use activities or natural resource inventories for critical areas. For example, the ERT has been involved in the review of a wide range of significant land use activities including subdivisions, sanitary landfills, commercial and industrial developments and recreation/open space projects.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision making. This is done through identifying the natural resource base of the site and highlighting opportunities and limitations for the proposed land use.

## **Requesting an Environmental Review**

Environmental reviews may be requested by the chief elected official of a municipality or the chairman of an administrative agency such as planning and zoning, conservation or inland wetlands. Environmental Review Request Forms are available at your local Soil and Water Conservation District and through the King's Mark ERT Coordinator. This request form must include a summary of the proposed project, a location map of the project site, written permission from the landowner/developer allowing the Team to enter the property for the purposes of a review and a statement identifying the specific areas of concern the Team members should investigate. When this request is reviewed by the local Soil and Water Conservation District and approved by the King's Mark RC&D Executive Council, the Team will undertake the review. At present, the ERT can undertake approximately two reviews per month depending on scheduling and Team member availability.

For additional information regarding the Environmental Review Team, please contact the King's Mark ERT Coordinator, Connecticut Environmental Review Team, P.O. Box 70, Haddam, CT 06438. The telephone number is 860-345-3977.