

Horsley Witten Group

Sustainable Environmental Solutions

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March 9, 2007

Scituate Conservation Commission
c/o Mr. Michael Clark
Scituate Town Hall
600 Chief Justice Cushing Way
Scituate, MA 02066

**Re: Notice of Intent Review – Herring Brook Meadow, Scituate, Massachusetts
DEP File # SE-068-1988**

Dear Members of the Scituate Conservation Commissioners:

As requested, the Horsley Witten Group, Inc. (HW) is pleased to provide the Scituate Conservation Commission with our initial review of the Notice of Intent (NOI), site plans, and supporting documentation submitted by the applicant, Herring Brook Meadow, LLC, for the referenced project. Our review places specific emphasis on the existing site conditions, the proposed wetland resource area alterations, proposed mitigation, and the proposed stormwater management practices. HW reviewed the following documents received from both the Commission's files and the applicant:

- "Notice of Intent" prepared by SITEC Environmental, Inc. dated October 25, 2006;
- "Environmental Setting, Stormwater Flood Analysis & Mitigation" prepared by SITEC Environmental, Inc. dated October 10, 2006; and
- "Proposed Open Space & MA Wetlands Protection Act Compliance Measures" prepared by SITEC Environmental, Inc. dated October 11, 2006.

HW has also received the following set of plans for review, prepared by SITEC Environmental, Inc. and dated October 6, 2006:

<u>Description</u>	<u>Sheets, as Numbered</u>
"Title Sheet"	1
"Existing Conditions & Wetland Resource Areas Plan"	2
"Site Plan"	3
"Grading Plan"	4
"Stormwater Management Plan"	5
"Utility Plan"	6
"Landscape Planting Plan"	7
"Open Space Plan"	8
"Detail Sheets"	9-11

In addition, HW reviewed available source data from MassGIS (i.e., DEP wetlands, Zone II wellhead protection areas, floodplain limits, rare species habitats, etc.) and observed existing conditions on February 12, 2007.

This review considers the basic completeness of the submitted materials necessary to conduct a wetlands and engineering evaluation of the proposed project with respect to consistency with the Massachusetts *Wetlands Protection Act* (M.G.L. Ch. 131 § 40; WPA), the Town of Scituate Wetlands Protection Bylaw, the Department of Environmental Protection (DEP) Massachusetts Stormwater Management Policy (MSWMP), and standard engineering practices. Based on the materials submitted to date, HW offers the following comments.

PROJECT DESCRIPTION

The applicant proposes development of two parcels, totaling 15.34 acres of wooded and cleared upland areas, open meadow, and wetland resource areas. The development is concentrated in the western portion of the site (approximately 4 acres) while dedicating the balance of the site as open space. The site is bounded by Chief Justice Cushing Highway (Route 3A) to the west, the First Herring Brook tidal estuary to the north, an abandoned railroad embankment and wetlands to the east, and a single-family residential area to the south in Scituate, Massachusetts (Figures 1 and 2). The site is zoned as Residential (A-1) and Saltmarsh and Tideland Conservation zoning districts, and falls within the Floodplain and Watershed Protection District overlay.

The applicant proposes to develop a total of 60 units in five buildings and associated outdoor parking. Access to the parcel will be from Route 3A. The project will involve placement of substantial amounts of fill within Isolated Land Subject to Flooding (ILSF) and Land Subject to Coastal Storm Flowage (LSCSF), and alteration within Riverfront Area. The stormwater management plan proposes street sweeping, deep sump hooded catch basins, and water quality inlets (CDS Stormwater Treatment Units) leading to three outfalls, two to salt marsh and one to a replicated ILSF east of the development.

WETLANDS COMMENTS

The project as proposed will involve alteration to inland and coastal wetland resource areas. A discussion of each affected resource area follows.

1. Isolated Land Subject to Flooding

The project proposes alteration of 12,665 s.f. of ILSF, as regulated under the WPA Regulations (310 CMR 10.57). ILSF is locally significant to flood control and storm damage prevention, particularly with respect to adjacent properties. During our site visit, detained flood/storm waters were observed within the ILSF depression. This area is significantly lower in elevation than the rest of the site and directly abuts a neighboring property. The ILSF is also contained within the AE Flood Zone (described below). The applicant states that the "existing flood storage capacity with the ILSF will be maintained and exceeded and the existing stormwater flows into the ILSF will be reduced...therefore there will be no lateral displacement." The performance standards for alteration of ILSF are as follows:

A proposed project in Isolated Land Subject to Flooding shall not result in the following:

- 1. Flood damage due to filling which causes lateral displacement of water that would otherwise be confined within said area.*
- 2. An adverse effect on public and private water supply or ground water supply, where said area is underlain by pervious material.*

3. *An adverse effect on the capacity of said area to prevent pollution of the ground water, where the area is underlain by pervious material which in turn is covered by a mat of organic peat and muck.*
4. *An impairment of its capacity to provide wildlife habitat where said area is vernal pool habitat, as determined by procedures contained in 310 CMR 10.60 (c) Protection of Rare Wildlife Species.*

The ILSF likely qualifies as an Isolated Vegetated Wetland (IVW) under the local wetlands bylaw, as well as under the Federal *Clean Water Act* (33 U.S.C. 1251, *et seq.*). The Commission should note that alteration of more than 5,000 s.f. of IVW will likely require additional permitting through other regulatory agencies, including, but not limited to, 401 Water Quality Certification (WQC) and Section 404 of the Federal *Clean Water Act*, and as a result, the applicant may also be subject to review under the Massachusetts Environmental Policy Act, M.G.L. c. 30 §§ 61 through 62H, inclusive (MEPA). It is also likely that the project will require review under the Massachusetts Office of Coastal Zone Management (CZM) Federal Consistency review process.

Proposed alterations to this wetland resource must be mitigated in accordance with the performance standards set forth under the Town of Scituate Wetlands Protection Rules and Regulations (SWR 10.12(a)). Should the Commission accept the replicated ILSF/IVW, the Commission may want to also consider requesting a restored or enhanced Buffer Strip around this area.

HW recommends that the Commission take following actions:

- Request additional details (calculations, plans, studies) from the applicant for how the ILSF performance standards will be met, and information regarding mitigation. It is recommended that the applicant utilize the Town's guidance document, *Recommended Plants for Resource Areas*, regarding planting in resource areas when preparing a revegetation plan for the replicated ILSF.
- Request details from the applicant addressing each of the IVW performance standards under section SWR 10.12(a)), and how they will be met, and mitigation strategies associated with the proposed filling of this resource area.
- Consider requesting additional mitigation measures to create or restore a naturally vegetated Buffer Strip around the isolated wetland, whether or not alteration to this area permitted.
- Request that the Commission is copied on all correspondence with other regulatory agencies, and provided with copies of all other permits obtained for this project.

2. Riverfront Area

The project site is located within the 200-foot Riverfront Area (310 CMR 10.58) to the Third Herring Brook. This resource area is significant to the protection of public water supply, groundwater, flood control and storm damage. Approximately 4,280 s.f. of grading are proposed within the outer Riverfront Area.

In order to meet the performance standards for work within Riverfront Area, the applicant must first demonstrate that there are no other practicable and substantially equivalent economic alternatives for the project that would result in less impact to the Riverfront Area. The alternatives analysis submitted does not appear to explore alternative design layouts that would avoid all alterations to Riverfront Area, while still maintaining the substantial amount of open space proposed.

HW recommends that the Commission take following actions:

- Request that the applicant submit an expanded alternatives analysis demonstrating that there are no other practicable and substantially equivalent economic alternatives for the project that would result in avoidance or minimization of Riverfront Area alteration.
- Carefully consider HW's comments regarding the proposed stormwater management approach (below), should the Commission accept the proposed Riverfront Area alteration.
- Ensure that the proposed Conservation Easement includes language regarding the preservation of the land area in perpetuity, should the Commission accept the proposed Easement.
- Request the applicant to provide mitigation measures, such as restoring native vegetation within a portion of the Riverfront Area, to increase the capacity of the resource area to protect the interests under the WPA and the local bylaw.

3. Land Subject to Coastal Storm Flowage

The property is located within the AE floodzone (LSCSF), as regulated by the Federal Emergency Management Agency (FEMA). The National Flood Insurance Program (NFIP) Flood Insurance Rate Map shows the site's AE flood Zone at elevation 11 (Figure 3). Land Subject to Coastal Storm Flowage is defined at 310 CMR 10.04 as *land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, which ever is greater.*

Although there are no performance standards within the WPA Regulations for LSCSF, it is generally accepted that LSCSF is significant to the interests of storm damage prevention and flood control. The applicant proposes to place substantial amounts of fill within LSCSF (up to seven vertical feet of fill material). This amount of fill has the potential for altering storm surge flow patterns, increasing the potential for off-site flooding, and arguably altering existing drainage patterns at this site. Section 10.38 of the Town of Scituate Wetlands Rules and Regulations discusses the importance of velocity zones (VE-Zones) and AE-Zones for storm damage prevention and flood control. The general performance standard of this section states: "*any activity shall not have an adverse effect by increasing the elevation or velocity of flood waters or by increasing flows due to a change in drainage of flowage characteristics on the subject site, adjacent properties...*" The Commission may want to request that the applicant provide the Commission with data demonstrating how this project will meet this performance standard.

In addition, building within LSCSF should adhere to the State Building Code at 780 CMR 3107.

In addition, HW reviewed the Draft *No Adverse Impact in the Coastal Zone* guidance by the Association of State Floodplain Managers (ASFM, November 2006). The guidance states that the following activities within floodplain areas will cause adverse impacts, which are worth consideration with respect to this project:

- a) Cumulative impacts – through a series of alterations or additional development in the coastal area, particularly when coastal wetlands are encroached upon.
- b) Extending services into coastal areas – collapse of new infrastructure (water, sewer, electric, and roadways) in a storm results in effects that cascade throughout the community. In addition, the extension of these services can be construed by the community as "stable," even if they may not be in the long-term.

- c) Impacts of land use – to upstream properties and adjacent properties can occur, particularly from increased sediment to floodplains, wetlands and channels, which decrease their ability to store and convey floodwaters.

At a minimum ASFM recommends the following regulatory actions be taken in managing development in floodplain areas. HW recommends that the Commission consider these recommendations, as applicable.

- a) The bottom of the lowest horizontal structural member should be above the Base Flood Elevation (BFE; 10 ft.) and the structure should be built on piles or columns.
- b) Freeboard, an additional height requirement above BFE, should be required for new development.
- c) A qualified engineer or architect should certify the accuracy of elevated building foundations.
- d) Lower area enclosures on buildings below the BFE should be limited.

HW recommends that the Commission take following actions:

- Request that the applicant submit additional information (calculations, studies, plans) demonstrating that the proposed alterations within LSCSF will not have an adverse affect by increasing the elevation or velocity of flood waters, increasing or changing drainage flow characteristics, or increasing flooding on adjacent properties.
- Consider the following recommendations from the *No Adverse Impact in the Coastal Zone* guidance by the Association of State Floodplain Managers (ASFM, November 2006) regarding activities within the floodplain and regulatory actions for managing these areas, including:
 - Ensuring that the bottom of the lowest horizontal structural member is above the Base Flood Elevation (BFE; 10 ft.) or that the structures are built on piles or columns;
 - Requiring an additional height requirement above BFE (Freeboard);
 - Requiring certification by a qualified engineer or architect regarding the accuracy of elevated building foundations; and/or
 - Requiring that lower area enclosures on buildings below the BFE be limited.

ADDITIONAL CONSIDERATIONS

Floodplain and Watershed Protection District

The majority of the project will be located within the Floodplain and Watershed Protection District. With regard to these fragile resource areas, the Town of Scituate Zoning Bylaw states that the planning board will ensure that:

“The project does not adversely affect the natural environment to the detriment of community character and public health and safety. In particular, the project shall be so designed as to preserve the integrity of drinking water, ground water supply generally, floodplain, salt marshes and any other sensitive environmental features.”

The project proponent does not appear to have addressed the above standard in its Notice of Intent.

HW recommends that the Commission take following actions:

- Request that the applicant provide additional information that addresses the above zoning bylaw standard, or document that a waiver has been granted or is appropriate and the justification of said waiver.

Saltmarsh and Tideland Conservation District

The northern and northeastern portions of the project site are located within the Saltmarsh and Tideland Conservation District (as defined by elevation 10). The primary purpose of this district is to designate and protect saltmarsh and tideland natural resources. The Town of Scituate Zoning Bylaw states that in this district: “*no structure shall be erected... nor may any area within said district be filled, drained, dredged or excavated except by or under the direction of any Federal, State, County or town agency.*” The standards for this rule state that permits will not be granted for projects that adversely affect the natural character of the area. Based on our review and understanding of the project and our observations of the existing site conditions, HW believes that this project will likely have adverse impacts to the land and water resources on the site, as well as adjacent land areas.

Priority and Estimated Habitat

According to the most recent version of the Natural Heritage Atlas (October 1, 2006), a portion of this site occurs within both *Estimated Habitat of Rare Wildlife and Certified Vernal Pools* and *Priority Habitat of Rare Species* (Figure 4). Although it appears that no work will occur within these designated habitat areas, it would be useful to have the limits of these areas depicted on all sheets of the plan set. The narrow strip of land to be transferred to the Town as proposed Public Open Space may occur within the limits of these designated habitat areas, which in turn may have long term land management implications for the Town.

HW recommends that the Commission take following actions:

- Request that the applicant consult with the Massachusetts Natural Heritage and Endangered Species Program (NHESP) to ensure that the proposed project will not have any adverse impact to the habitat of one or more State-listed rare species that may require additional review under the Massachusetts *Endangered Species Act* (M.G.L. Ch. 131A) or MESA.

Wellhead Protection Area

The Commission should be aware that this project falls within a Wellhead Protection Area Zone II (Figure 5), which is important for protecting the recharge area around public water supply (PWS) groundwater sources. This will affect the stormwater management design criteria and compliance with the MA Stormwater Policy (see below).

STORMWATER MANAGEMENT

The proposed project is required to meet the Stormwater Management Policy (MSWMP) under the Massachusetts *Wetlands Protection Act*. HW has applied the MSWMP and standard engineering practices in the review of the proposed drainage and stormwater management aspects of the proposed project. Based upon the documents received to date, HW offers the following comments:

1. The applicant is proposing to place seven (7) vertical feet of fill in a coastal flood zone (FEMA AE Zone, elevation 11 feet). It is difficult to determine the effect that this will have on neighboring properties by simply reviewing the submitted materials. We recommend that the Commission request the applicant to conduct a more detailed assessment of the potential impacts that this project will have on the abutting parcels.
2. HW has not received the following information that is needed to complete the stormwater management review of the proposed project:
 - a) Water Quality Volume calculations per the MSWMP.
 - b) Pipe calculations using the Rational Method, including a tailwater analysis where applicable.
 - c) Calculations for the proposed riprap aprons, showing that they are adequately sized to dissipate erosive velocities. Aprons should be drawn to scale on plans.
 - d) The mean high tide and the mean high high tide elevations should be shown on the plans. The drainage calculations may need to be performed using tailwater conditions. The proposed outfalls are not much higher than the adjacent wetland and ILSF elevations, which may cause submerged conditions of outlet pipes.
 - e) HW recommends that the applicant provide construction details for the proposed retaining walls including detailed information on the footings and weepholes or other drainage features. All walls shown on the plans should be labeled with top and bottom of wall elevations.
3. With regard to the submitted calculations, we offer the following comments:
 - a) It appears that the delineation of the existing and proposed drainage areas do not include offsite areas that will contribute runoff to the drainage areas onsite. Offsite area that contributes to the drainage areas should be included in the hydrologic calculations for both pre and post development conditions. We recommend that the applicant include these offsite areas for affected watersheds.
 - b) When wetlands are included as part of a watershed, such as in Existing Subcatchment 1 and Proposed Subcatchment 1, they should be treated as impervious with a CN value of 98.
 - c) The applicant has assumed the sheet flow component of the time of concentration for proposed conditions to be 100 feet for each subcatchment. We recommend that the applicant revise the calculations to include a maximum 50 feet of sheet flow, as referenced in the "Hydrology Handbook for Conservation Commissioners" (DEP, 2002).
 - d) The applicant uses "Woods-fair," "Pasture-fair," and "Grass-fair" for the Curve Number in the existing and proposed runoff calculations. However, "Woods-good," "Pasture-good," and "Grass-good" should be used, as referenced in the "Hydrology Handbook for Conservation Commissioners" (DEP, 2002).
 - e) The TSS removal calculations include 10% for street sweeping. The Commission should be aware that this is a discretionary item in the MSWMP that is subject to the Commission's approval. The Operation and Maintenance Plan specifies sweeping two times per year and does not specify the type of equipment. Research has demonstrated that sweeping must occur much more frequently and with a vacuum assisted sweeper to achieve an annual removal of 10% TSS. We recommend that the Commission request additional information from the

Applicant on the type of sweeper to be employed and to increase the sweeping frequency to monthly in order to get credit for a 10% TSS removal.

- f) Runoff coefficients for the Rational Method range from 0.6 to 0.76 for the submitted CDS treatment unit calculations. Runoff coefficients for parking areas and rooftops typically range from 0.7 to 0.95. We recommend that the applicant provide additional information on how the coefficients were determined.
4. The use of CDS Stormwater Treatment Units or other similar proprietary products is highly discouraged, other than for pre-treatment. The total suspended solids (TSS) removal rate for the CDS units are stated as greater than 80% TSS and are being used in this application to meet the 80% TSS removal requirement under the MSWMP (Standard No. 4). However, the submitted calculations were based on target particle sizes of 150 – 300 microns. A smaller target particle size of between 20 and 40 microns is more appropriate to ensure a capture of 80% TSS. Thus, the stated removal rate is likely much higher than would be the case at the site. In addition, the MA STEP Program has not approved the CDS units and lists them as having “insufficient credible data to evaluate claims.” The results from the two listed studies rate the CDS units at 50% and 74% TSS removal. We recommend that the applicant consider revising the plan to use a best management practice (BMP) approach that meets the 80% TSS requirement of the MSWMP.
5. We recommend the applicant submit water quality volume calculations to ensure the stormwater practices are sized appropriately. Because the site is within a Zone II drinking water supply area, the applicant should use the “critical area” criteria for water quality volume treatment (1-inch of runoff times the total impervious area) to meet Standard 6 of the MSWMP. In addition, emergency containment or shutdown must be incorporated with any BMP design in a Zone II drinking water supply area.
6. The site is located within the watershed of a section of the Herring River listed as a Category 5 Water under the “Massachusetts Year 2004 Integrated List of Waters”(also known as the 303(d) list), requiring a Total Maximum Daily Load (TMDL) for pathogens. The Commission may wish to request that the applicant implement stormwater BMPs that are effective in pathogen removal, such as vegetated wetlands, bioretention practices, sand filters, or infiltration practices.
7. Standard 3 of the MSWMP requires that annual groundwater recharge for the post-development site approximates annual recharge from existing conditions. There are no exemptions of Standard 3 for waters subject to unimpeded tidal flushing. We recommend that the applicant provide calculations for the amount of recharge required on the site, the amount of recharge provided, and the locations of recharge areas. Vegetative practices such as bioretention, grassed swales, or constructed wetlands, and infiltration practices dispersed throughout suitable portions of the site can help provide the required recharge, as well as mimic existing hydrologic patterns and increase pollutant removal. “Clean runoff” from rooftops can be infiltrated directly, while parking lot runoff should be routed separately to a treatment BMP.
8. We recommend the applicant provide a detailed Erosion and Sediment Control (ESC) plan that clearly shows construction sequencing and the sediment and erosion control methods proposed during different phases of construction. The plan should include methods to protect slopes during construction, silt fence and haybales around the limit of work, locations of temporary sedimentation basins and swales, dewatering basins, material storage areas, locations of siltsacks (or equivalent) instead of haybales at all existing and proposed catch basins that may intercept construction runoff,

methods to control dust, and stone construction entrances. For site construction in such close proximity to the wetlands, aggressive erosion and sediment controls are essential to prevent impacts to the wetlands.

9. The outfalls discharge to a vegetated area for overland flow to the salt marsh. We recommend that the applicant demonstrate that this discharge can be safely conveyed without erosion or sedimentation in that area in order to meet Standard 1 of the MSWMP. The grading at the outfalls and riprap aprons should be shown to ensure that the inverts match with the surrounding grades. In addition, the applicant should demonstrate that the runoff from the southern portion of Proposed Subwatershed 1, which flows through adjacent property before reaching the relocated ILSF, can be conveyed without erosion, sedimentation, or other impacts to the offsite property or the ILSF.
10. We recommend that the applicant provide buoyancy calculations for all tanks, CDS stormwater units and any structure that extends below the seasonally high groundwater (11 feet). Tie-downs should be provided where necessary to protect water quality during coastal flooding.
11. We recommend that the applicant show the surface area and volume of the proposed ILSF replication on the site plans to demonstrate that the relocated ILSF will provide the same or greater storage volume for floodwaters.
12. The Landscape Plan includes nonnative tree and shrub species. We recommend that the applicant incorporate native species in this sensitive Floodplain and Watershed Protection Overlay District.
13. The following comments refer to the Operation and Maintenance (O&M) Plan:
 - a) The O&M plan should be a comprehensive document that is easily understood by the entity who must assume maintenance responsibilities, and will be required to legally-implement the plan.
 - b) The applicant should consider the fiscal resources required to repair or replace a system and include a budget for necessary costs should one or more systems fail in the future.
 - c) The applicant must provide an effective snow storage and management plan in order to meet the "no untreated runoff discharging to wetlands standard" of the MSWMP. Snow storage locations should be shown on the drawings, and the O&M plan should fully describe the necessary requirements for snow removal and treatment.
 - d) The applicant is proposing to utilize deep-sump catch basins as part of their stormwater management system. The applicant is advised that deep-sump catch basins have been shown to be ideal breeding grounds for mosquito larvae. The operation and maintenance plan and procedures should specify the specific measures that will be employed to minimize or eliminate the threat of transmission of mosquito-borne diseases.
14. A Stormwater Pollution Prevention Plan (SWPPP) is required for this project under the Environmental Protection Agency's Phase II National Pollutant Discharge Elimination System (NPDES) regulations. We recommend that the applicant provide copies of the SWPPP and the NPDES permit to the Commission.

SUMMARY

HW recommends that the applicant review these comments and provide requested information and clarifications to the Conservation Commission. The proposed project will result in a considerable amount of fill placed within the coastal flood zone as well as within ILSF, and will generate a significant amount of impervious surface. We believe the proposed project, as designed, has the potential to contribute to flooding impacts on adjacent properties, and may contribute to water quality impairment downstream of the project. HW reserves the opportunity to further comment upon any design revisions to assist the Commission in their review of the proposed project.

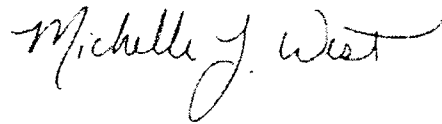
HW is pleased to provide the Scituate Conservation Commission with these comments and recommendations for your review and consideration. Should you have any questions or require further clarification with respect to our observations and opinions, please do not hesitate to contact HW at (508) 833-6600.

Sincerely,

HORSLEY WITTEN GROUP, INC.



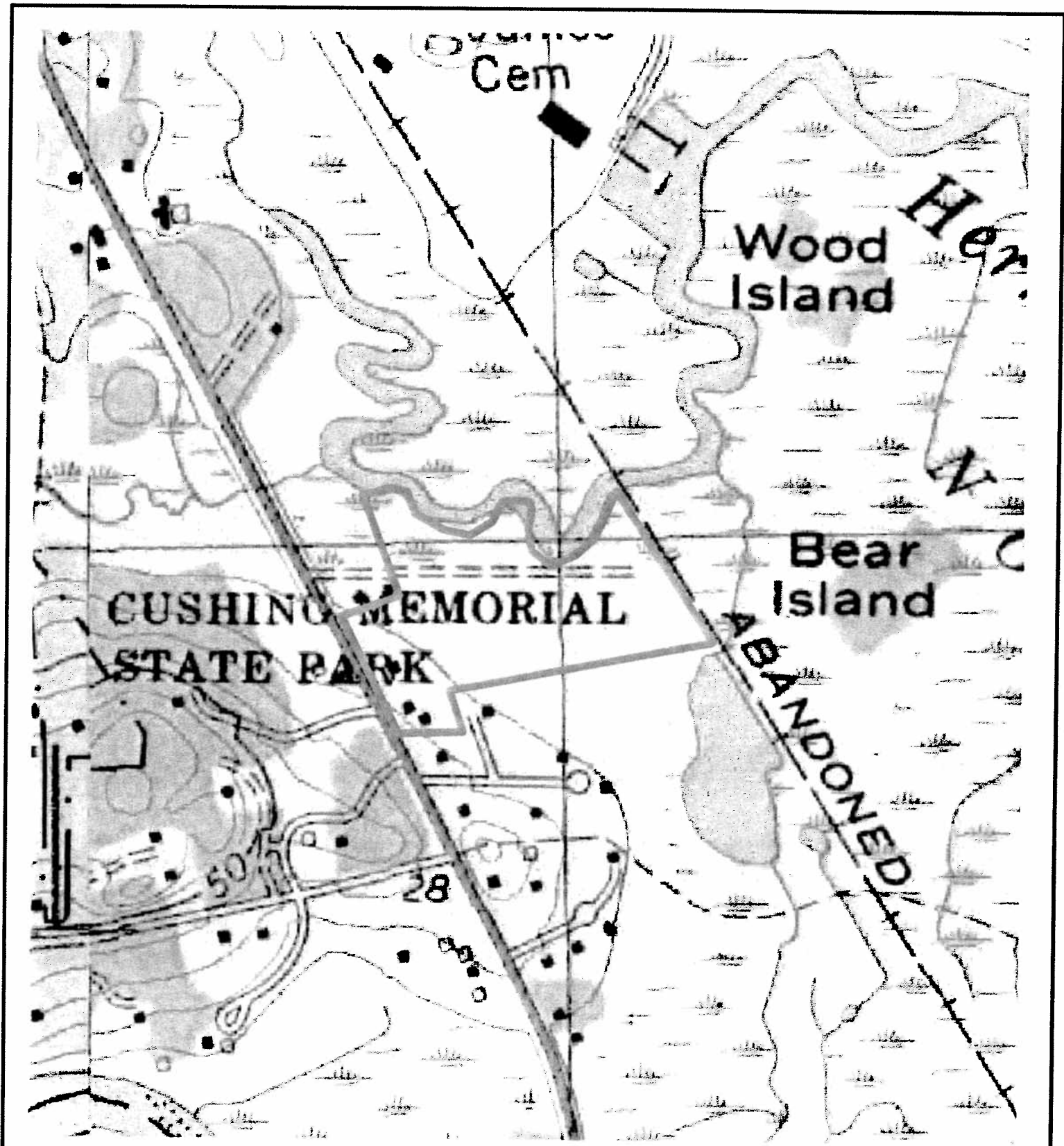
Amy M. Ball
Project Manager – Wetland Scientist




Michelle L. West, P.E.
Staff Engineer

Attachments (Figures)


cc: DEP, Southeast Regional Office
SITEC Environmental, Inc.



Legend

 Approximate Site Locus



 Feet
500

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 www.horsleywitten.com 

USGS Locus
 Herring Brook Meadow
 Scituate, MA

2/27/07 ec
 J17011 Scituate-Herring Brook Meadow\GIS

Figure 1



Legend

Approximate Site Locus



500 Feet

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Aerial Photo
Herring Brook Meadow
Scituate, MA

2/27/07 ec
J:\7011 Scituate-Herring Brook Meadow\GIS

Figure 2




Legend

 Approximate Site Locus

ZONE

	AE		X
	VE		X500



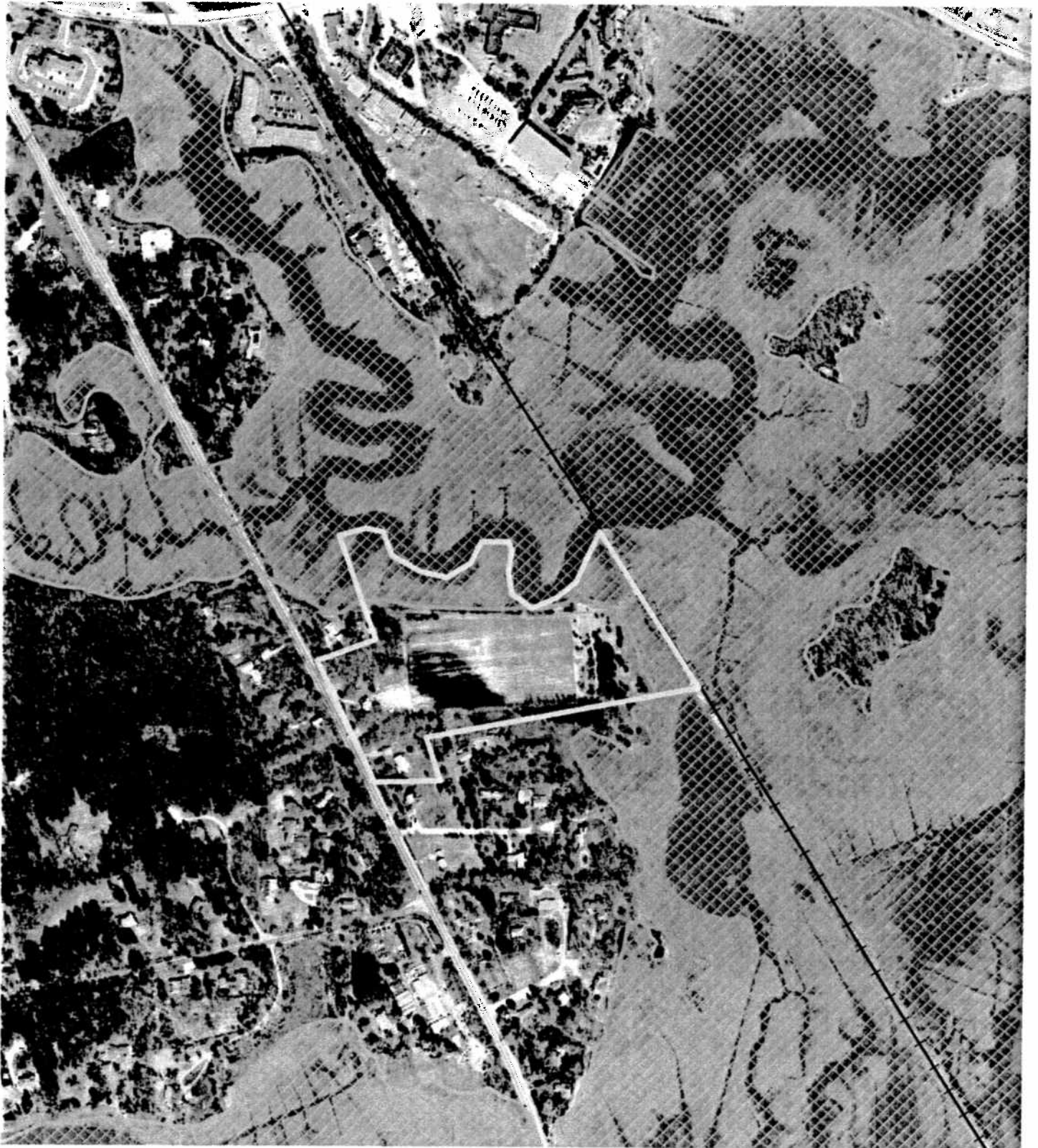
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





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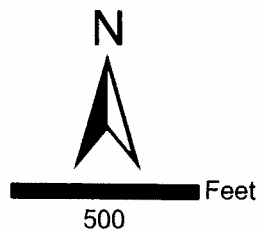


FEMA Flood
Herring Brook Meadow
Scituate, MA



Legend

-  Approximate Site Locus
-  Streams
-  NHESP Priority Habitats of Rare Species September 2006
-  NHESP Estimated Habitats of Rare Wildlife September 2006
-  Trains
-  Wetlands
-  Surface Water

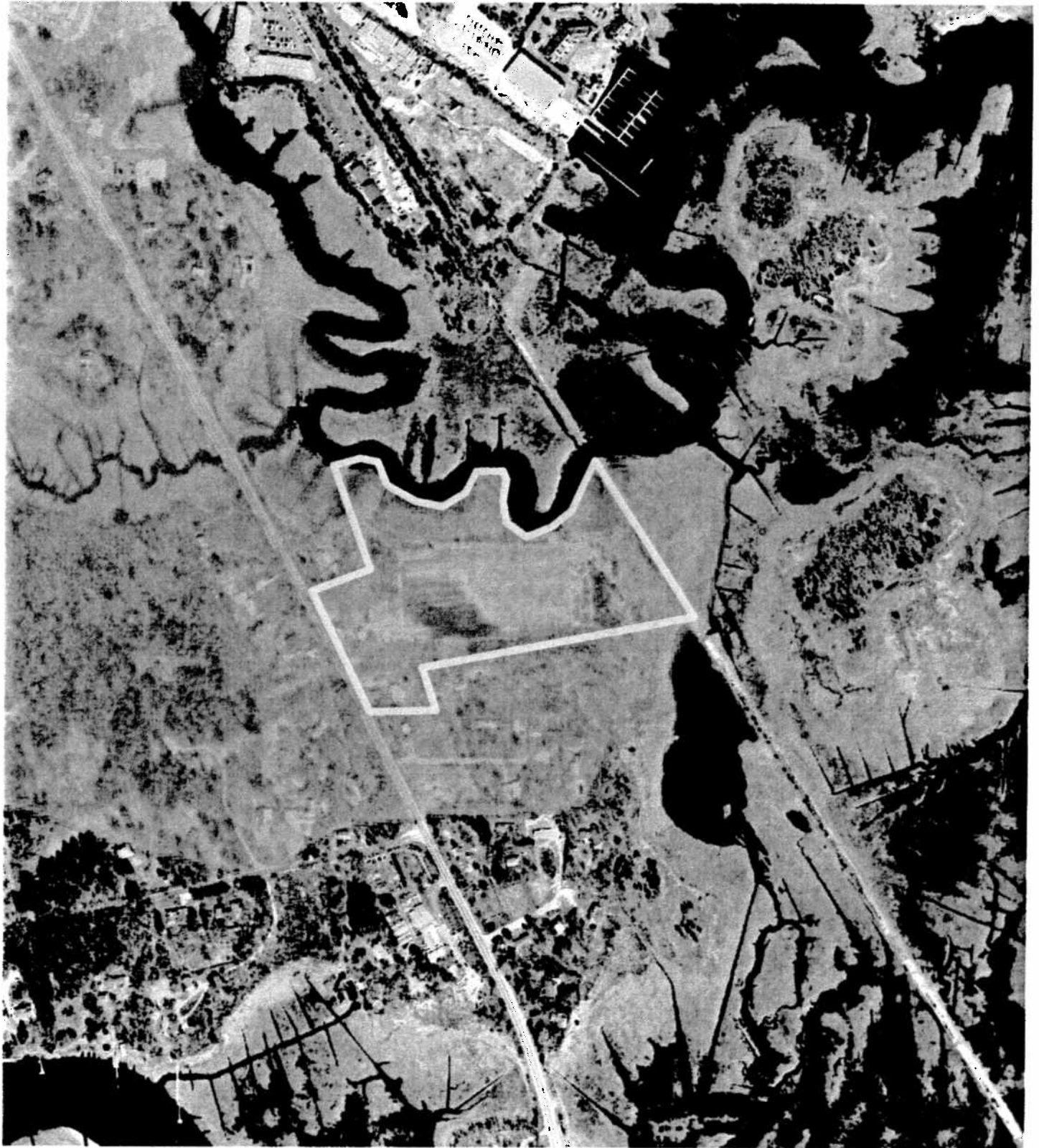


Horsley Witten Group

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**Existing Constraints
Herring Brook Meadow
Scituate, MA**



Legend

Approximate Site Locus



Zone II



500 Feet

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Regulated Areas
 Herring Brook Meadow
 Scituate, MA

2/27/07 ec
 JA7011 Scituate-Herring Brook Meadow\GIS

Figure 5