

**STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL**

**NORTHEAST UTILITIES SERVICE  
COMPANY APPLICATION TO THE  
CONNECTICUT SITING COUNCIL  
FOR A CERTIFICATE OF  
ENVIRONMENTAL COMPATIBILITY  
AND PUBLIC NEED ("CERTIFICATE")  
FOR THE CONSTRUCTION OF A  
NEW 345-KV ELECTRIC TRANSMISSION  
LINE FACILITY AND ASSOCIATED  
FACILITIES BETWEEN SCOVILL  
ROCK SWITCHING STATION IN  
MIDDLETOWN AND NORWALK  
SUBSTATION IN NORWALK, INCLUDING  
THE RECONSTRUCTION OF PORTIONS  
OF EXISTING 115-KV AND 345-KV  
ELECTRIC TRANSMISSION LINES,  
THE CONSTRUCTION OF BESECK  
SWITCHING STATION IN  
WALLINGFORD, EAST DEVON  
SUBSTATION IN MILFORD, AND  
SINGER SUBSTATION IN BRIDGEPORT,  
MODIFICATIONS AT SCOVILL ROCK  
SWITCHING STATION AND NORWALK  
SUBSTATION, AND THE  
RECONFIGURATION OF CERTAIN  
INTERCONNECTIONS**

**DOCKET NO. 272**

**MAY 24, 2004**

**PRE-FILED TESTIMONY OF LAND-TECH CONSULTANTS, INC  
ON BEHALF OF THE CITY OF MILFORD**

**Q1. Please describe Land-Tech Consultants, Inc. ("Land-Tech"), including its areas of expertise.**

A1. Land-Tech Consultants, Inc. is a multi-disciplinary environmental and engineering consulting firm established in 1979 to provide professional land use and public works consulting services. Land-Tech has offices in Southbury and Westport, Connecticut. Land-Tech staff includes engineers and environmental scientists with advanced degrees and extensive experience in land-use evaluation, planning and design,

environmental impact analysis and soil erosion and sediment control. Staff includes licensed Professional Engineers, Professional Wetland Scientists, Certified Professionals in Erosion and Sediment Control, Biologists and a Registered Soil Scientist.

**Q2. Please identify the names and positions of the Land-Tech professionals responsible for this testimony.**

A2. Christopher P. Allan, Senior Associate  
Thomas S. Ryder, Senior Environmental Analyst

**Q3. Please summarize your educational background, areas of expertise, certifications and professional affiliations.**

A3. **Christopher P. Allan.** I graduated from the University of Bridgeport in 1979 with a major in Biology (program: Environmental Studies). In 1982, I received a Masters in Environmental Studies from the Yale School of Forestry and Environmental Studies.

I have expertise in environmental site assessments, upland and wetland habitat evaluations, environmental impact assessments, pond, stream and wetland evaluations, wetland creation and restoration projects, wetland delineation, wetland functional assessment, and erosion and sediment control planning.

I have the following certifications: Certified Soil Scientist, Professional Wetland Scientist #266; Certified Professional and Soil Erosion and Sediment Control #355; U.S. Fish and Wildlife Service, Habitat Evaluation Procedures.

I also maintain the following professional affiliations: the Society of Soil Scientists of Southern New England; Soil Science Society of America; Society of Wetland Scientists; Connecticut Association of Wetland Scientists; Massachusetts Association of Wetland Scientists; Soil Conservation Society of America; International Erosion Control Association; and The New England Soil and Water Conservation Society.

**Thomas S. Ryder.** I graduated from Michigan State University in 1989 with a Bachelor of Sciences degree in Biology. In 1995, I received a Masters in Biology from the State University of New York College at Buffalo.

I have expertise in threatened and endangered species surveys, habitat assessments, wetland functional assessments, limnological and stream investigations, riparian investigations, fishery studies, habitat evaluation procedures, and rapid bio assessment protocols.

I maintain the following certifications: U.S. Fish and Wildlife Habitat Evaluation Procedures, and Groundwater Pollution and Hydrology. I am the Vice President of the Connecticut Association of Wetland Scientists and a member of the Wildlife Society, and the Society of Wetland Scientists.

Resumes for both Mr. Allan and Mr. Ryder are attached hereto as Exhibit A.

**Q4. Please summarize any related work experience.**

A4. Land-Tech has been involved in countless projects concerning environmental assessment and impacts, including the following:

- Land-Tech Consultants has conducted a review of application materials submitted to the Connecticut Siting Council for installation of a 354 KV overhead electrical power supply along an existing ROW from Bethel to Norwalk. The review included an on-site inspection of the entire ROW to identify wetlands and sensitive habitats and an assessment of the adequacy of application's natural resource inventory. The review included an assessment of potential environmental impacts associated with the project and testimony before the Connecticut Siting Council.
- Land-Tech was invited to make a presentation before the Siting Council Working Group regarding the use of natural resource information to be

considered in the planning of proposed utility corridors. The working group recommended to the Siting Council that the Council's application process be modified so that the natural resource information and potential environmental impacts resulting from the utility construction and operation are included in the initial application process and prior to the Council's action rather than during the Development and Management Plan phase. This recommendation was adopted and resulted in the Connecticut Siting Council's Application Guide for Terrestrial Electric Transmission Line Facilities, dated September 9, 2003.

- Participated in the creation of the Connecticut Guidelines for Soil Erosion and Sediment Control, including authoring revisions to the guidelines. Conducted seminars and site evaluation in erosion and sediment control plan design in coordination with the Soil Conservation Service.
- Conducted a literature review of the impacts on water quality posed by residential development for the Litchfield Hills Council of Elected Officials under a grant from the U.S. Environmental Protection Agency, administered by the Connecticut Department of Environmental Protection. The study included the preparation and publication of a 260-page report entitled Carrying Capacity of Public Water Supplied Watersheds: A Literature Review of Impact from Water Quality from Residential Development. The report was intended to assist the municipalities in and outside the region in defining the carrying capacity of public water supply watersheds and identifying impacts to water quality posed by development.
- Land Tech rewrote and edited Protecting Connecticut's Water Supplied Watersheds: A Guide for Local Officials, under a grant from the Connecticut Department of Environmental Protection. Completed a review of municipal regulations and non-regulatory programs of New Hartford and Torrington, Connecticut, including recommendations related to the revision of municipal regulations to afford greater protection of

public drinking water quality for development impacts. This study was funded by a grant under §205 of the Clean Water Act.

- Assisted the Connecticut Department of Environmental Protection in updating the NPS Assessment & Management Plan. The purpose of the plan is to identify priority watersheds and watercourses including the Saugatuck River for application of best management practices to control the introduction of non-point sources of pollution.
- Land-Tech has prepared five (5) new facility and five (5) exempt modification applications for presentation to the Siting Council on behalf of AT&T Wireless and its predecessor Litchfield County Cellular. This work has all been within the Litchfield County service area. To date Land-Tech has conducted detailed evaluations for thirty-six (36) proposed cell sites and prepared ten (10) applications for presentation before the Siting Council. Land-Tech has provided D&M plan inspection and compliance reporting as well as participating in the public hearing process for each application.
- Conducted a bioassessment and benthic macroinvertebrate survey of Sodom Brook in Meriden using the U.S. Environmental Protection Agency Rapid Bioassessment Protocol III. Assisted the City of Meriden in obtaining a water diversion permit for the operation of an existing water supply reservoir. Consulting services included an evaluation of existing shoreline and wetland habitats in existing downstream fisheries resources and potential impacts on these resources.
- Assisted Bridgeport Hydraulic Company, now Aquarion Water, in obtaining a water diversion permit for the operation of existing water supply well fields. Consulting services included an evaluation of well water withdrawal on wetland (bog) habitats, existing downstream fisheries resources and potential impacts on those resources. Connecticut and jurisdictional wetlands were delineated and an environmental survey of the physical

and biological parameters of the wildlife pond was conducted. An earthen dam and transitional pond were designed to create a 16-acre wildlife pond/marsh adjacent to Macedonia Brook State Park. Local and DEP, §401 Permit Applications were prepared.

- Floral soils and hydrologic evaluations were conducted for the development of a fire pond in Walden Woods, Weston, Connecticut.
- Under §319 of the Clean Water Act, updated Connecticut's non-point management plan to comply with EPA criteria and identify priority areas for action.

**Q5. What is the purpose of your testimony?**

A5. Land-Tech was retained by the City of Milford to conduct a general evaluation of the existing natural communities along the proposed right-of-way, and to determine the nature of the probable environmental impacts, including effects on and in conflict with the policy of the State concerning the natural environment, ecological balance, scenic and recreational values, forests and parks, water purity, and fish and wildlife. These data were compared with the descriptions provided in the Application.

**Q6. What was the scope of your analysis?**

A6. Our Scope of Services associated with the proposed overhead ROWs consists of the following: 1) review the CL&P and UI application, and pre hearing questions, 2) conduct a field inspection of the ROW within the City of Milford to determine if all regulated areas and potential impacts have been adequately addressed in the Application, and 3) prepare a report of findings on the above information.

**Q7. What materials did you review in order to conduct your analysis?**

A7. This evaluation was based on data collected during an on-site investigation of the ROW from the Milford/Orange line to the proposed East Devon Substation and a review of the following materials.

- “Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for a 345-kV Electric Transmission Line Facility and Associated Facilities Between Scovill Rock Switching Station in Middletown And Norwalk Substation in Norwalk”. Volume 1 of 12, dated October 9, 2003.
- “Wetland and Waterways Description Report Electric Transmission Line Facility Between Scovill Rock Substation in Middletown and Norwalk Substation in Norwalk”, dated April 2003.
- “Amphibian Breeding Survey Electric Transmission Line Facility Between Scovill Rock Substation in Middletown and Proposed East Devon Substation, Milford, CT”, dated August 15, 2003, prepared by Soil Science and Environmental Services.
- “Analysis of Potential Impacts to Bird Species along the Proposed Middletown to Norwalk 345-kV Transmission Line” by Phenix Environmental Inc, dated September 2003.
- Federal, State and Municipal Agencies Correspondence, Volume 4 of 12 and supplemental filings.
- “Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for a 345-kV Electric Transmission Line Facility and Associated Equipment. Aerial Photographs Overhead Portion – 400 Scale” Segments 42-47 Volume 9 of 12.
- “Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for a 345-kV Electric Transmission Line Facility and Associated Equipment. Typical Cross

Section, Typical Cross Section Details, Plan & Profile Drawings”, Volume 10 of 12.

- “Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for a 345-kV Electric Transmission Line Facility and Associated Equipment. Aerial Photographs Overhead Portion – 100 Scale” Segments 147-166 Volume 11 of 12.

**Q8. Does either the Application or supplemental materials adequately describe the nature of the probable environmental impacts, including a specification of every significant environmental effect, whether alone or cumulatively with other effects, on, and in conflict with, the policies of the state concerning the natural environment, ecological balance, forests and parks, air and water purity and fish and wildlife? Please describe.**

A8. Many of the impacts are presented, however, some sensitive resources were not included in the Application and therefore their impacts were not evaluated. Our review of the Application indicates that there could be significant impacts to wetlands and watercourse, including temporary disturbance and permanent fills. We believe that potential impacts have been understated by the applicant. Alternatives to avoid or mitigate the proposed impacts were not discussed.

**Q9. Did you conduct field work in preparing your analysis?**

A9. In order to conduct a thorough evaluation of the submitted documents, Chris Allan (Professional Wetland Scientist, Registered Soil Scientist) and Tom Ryder (Biologist) of Land-Tech Consultants, Inc. walked the ROW from the Milford/Orange line south to the proposed East Devon Substation on March 12, 2004. The objective of this exercise was to identify significant or sensitive natural resources, compare these resources with the descriptions provided in the Application and assess ecological impacts.

Each pole segment along the ROW and the adjacent properties was inspected to identify the following: 1) the presence of wetlands and watercourses, 2) community types supported, 3) dominant vegetation, 4) suitability of existing and potential access routes, and 5) potential impacts to natural resources. Potential impacts associated with ROW modifications include: wetland filling, access road upgrades, vegetation clearing, erosion and sedimentation, water quality reduction, and impacts to amphibian and bird breeding as well as to species of special concern. These data were then compared to the data provided in the Application.

**Q10. Based upon your review of these materials and subsequent field work, does the proposed overhead transmission line (including new poles and potential access ways, also referred to as "Project") impact on any significant natural resource areas? If so, please identify them.**

A.10 Yes, significant natural resource areas to be impacted are listed below.

1. Wepawaug River and associated tributaries. The Wepawaug River is stocked annually with trout by the DEP. These resources also are known to support the State Special Concern Species wood turtle.

2. Wetland 167. This wetland is adjacent to the Wepawaug River. The wetland serves as a vegetated riparian corridor along the river, protects and enhances water quality flowing into the Wepawaug River, provides significant wildlife habitat, provides ample flood storage, and protects downstream properties from flood impacts associated with the Wepawaug River.

3. Vernal Pools. In addition, vernal pools or potential vernal pools were found along and adjacent to the ROW. These are summarized in the following table.

Pole Number Segment	Description
149	Vernal pool extending to within a few feet of pole 5041. Approximately 30 wood frog egg masses were found just northeast of pole 5041.
151	Potential vernal pool/confirmed amphibian breeding area located west of pole 3836. Approximately 40 wood frog egg masses and two spotted salamander egg masses were identified.

**Q11. Did you prepare an Ecological Impacts Assessment?**

A11. Yes. We identified the community types and dominant vegetation supported by each segment. We also identified the presence/absence of wetlands and watercourses, vernal pools and other amphibian breeding areas within each segment. We identified areas within close proximity to the ROW identified by the CT NDDB as habitats potentially supporting protected and special concern species. We also identified numerous potential impacts to natural resources from proposed ROW improvements such as access road improvements, and pole placement. The Ecological Impacts Assessment ("Assessment") is attached hereto as Exhibit B.

**Q12. What conclusions can you draw from the Assessment as to the nature of the natural resources located in the existing right of way and potential access roads?**

A12. The natural resources within the existing ROW and potential access road areas consist of upland meadow and a number of sensitive watercourses and a wide range of wetland systems.

**Q13. Please describe your findings regarding impacts to wetlands and watercourses in Milford as a result of this proposed Project.**

A.13 Based on the Applicant's information, approximately 2.8 acres of wetlands will be disturbed temporarily and approximately 1.4 acres of wetlands will

be permanently filled. Most of the wetland disturbance and filling activities will occur within Wetland 167. This wetland is associated with the Wepawaug River, has high functional value and is partially located within Eisenhower Park. Four pole sets will be removed and replaced within this wetland. These activities will disturb about 2 acres of Wetland 167 and could result in the permanent loss of about 1 acre of wetland. Wetland filling will result in the loss of flood storage capacity and wildlife habitat. In addition, the close proximity of a vernal pool (not identified in the Application) to pole 5041 raises serious concerns regarding the ability to protect this sensitive habitat.

The Application proposes significant impacts to the wetlands systems including vernal pools and potentially nesting birds. The Applicant's statement that "the project will not result in any significant long-term adverse environmental impacts" is not well founded.

No vernal pools were identified by the Applicant in Milford. However, our investigation found a large well functioning system located a few feet from a pole to be removed and a second potential vernal pool adjacent to the ROW.

The Applicant has not offered any alternatives to mitigate or compensate for the proposed disturbances. Since not all impacts can be effectively restored or compensated, the preferred action is always avoidance.

**Q14. Please describe your findings regarding impacts to fisheries, birds, and endangered species in Milford as a result of this proposed Project.**

A14. Fisheries - Wepawaug River in Milford is stocked annually with trout by the DEP. This watercourse and the various other tributaries that cross the transmission line ROW are very sensitive to upgradient disturbances. These watercourses would be impacted by the crossing of large heavy machinery needed to perform the transmission line upgrade. Impacts to water quality, such as turbidity from loose disturbed soil entering the

brook, and changes in temperature from clearing of vegetation could alter the habitat suitability for these fish and the insects they feed on.

Birds - Several species of birds utilize the open meadow or scrub/shrub (thickets) of the right-of-way to nest and/or forage. These species are particularly vulnerable to vegetation impacts during the nesting season. Section M.3.4 of the "Potential Environmental Effects and Mitigation Measures" report states that that no vegetation clearing or management will be conducted during the breeding season (April 1 to August 15). However, a concern that has not been addressed is the impacts to the winter residents that occupy the open canopy habitats of the maintained ROW. These maintained meadows or scrub/shrub habitats are not common in Connecticut. Species known in the area that utilize these habitats in the winter include the catbird, white-throated sparrow, towhee, winter wren, tree sparrow, field sparrow (species population in major decline), yellow-rumped warbler, pine warbler and brown thrasher<sup>1</sup>, which is a species of special concern. Disturbance to these species and others utilizing the ROW in the winter from the construction/improving of access roads, installation/removal of poles and other activities needs to be addressed.

Threatened, Endangered or Special Concern Species - The Connecticut Department of Environmental Protection's Natural Diversity Database identified the special concern species wood turtle (*Clemmys insculpta*) in the vicinity of the Wepawaug River. DEP records show other areas of concern within transmission line right-of-way along the Housatonic River. (See Milford 345 kV NDDDB Areas Map). The DEP recommends restricting work to the dormant period of November 1 to April 1 in order to minimize impacts to wood turtle populations. The Applicant has agreed to limit disturbance around the Wepawaug River to the wood turtle's non-active period. This is the appropriate course of action.

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<sup>1</sup> Personal communication, Dr. Christopher Loscalzo, past president of New Haven Bird Club

Wood turtles are typically found in the vicinity of water such as wooded riparian habitats of streams, small rivers and associated fringes. Other habitats include wet meadows, swamps and upland fields and meadows<sup>2</sup>. This species is diurnal spending most of its time basking on logs, stream banks and partially open woodlands. They migrate considerable distances with a mean home range estimate at 447 meters (Ernst et al. 1996). Nesting areas include open moist sandy areas near water but not subject to flooding. This population of this species has declined due to habitat loss.

The Applicant states (page L-46 Section L 3.7) that if avian surveys identify that a protected or special concern species is nesting near the ROW, construction would be scheduled so as to avoid the nesting season of February through July. However, the Application does not mention conducting wildlife surveys as part of the construction sequence and does not indicate who will be notified of the results. This information should be provided. The nesting season dates presented here by the Applicant are different from those reported in Section M.3.4. This inconsistency should be corrected.

**Q15. Does your inventory differ in any way from the natural resources identified in materials filed by the Applicants?**

A15. Yes, Wetland 167 is a large, diverse wetland system. This wetland borders the Wepawaug River and provides several valuable wetland functions. It serves as a vegetated riparian corridor along the river, protecting water quality and providing significant wildlife habitat. Its broad, flat expanse provides ample flood storage, protecting downstream properties from flood impacts associated with the Wepawaug River. It enhances downstream water quality by filtering pollutants and sediments in floodwaters and stormwater runoff. The wetland provides passive

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<sup>2</sup> Ernst, C., J. Lovich and R. Barbour. 1994. Turtles of the United States and Canada. Smithsonian Institution. 578 pgs.

recreational opportunities especially since part of the wetlands lies within Eisenhower Park. Wetland 167 appears to be underrated in the applicant's evaluation of Wetland Functional Quality. It is our opinion that this wetland should be rated Moderate-High for Ecological Integrity and Noteworthiness, and High for Wildlife Habitat, Educational Potential, Flood Control, and Nutrient and Sediment Retention and Removal.

The Amphibian Breeding Survey prepared by Soil Science and Environmental Services (SSES) identified one wetland with high amphibian breeding potential (Wetland 167), two wetlands with moderate amphibian breeding potential (Wetlands 168 & 172), and no vernal pools in the City of Milford (Page 2, Findings). Our investigation identified two areas of high amphibian breeding in the City of Milford, with one being confirmed as a vernal pool.

**Q16. Would the wetland impacts resulting from this project require a permit from the U.S. Army Corps of Engineers?**

A16. Yes, either a Programmatic General Permit or an Individual Permit will be required based on the amount of jurisdictional wetland impacted.

**Q17. In your professional opinion, what is the best way to avoid the impacts to wetland, watercourses, vernal pools, and amphibian areas in Milford?**

A17. From an environmental perspective, an underground/understreet route is preferred. The placement of the 345-kv line underground along existing public roads would eliminate most of the impact concerns. The installation of an underground line is not expected to significantly impact wildlife along the route, as minimal alteration to vegetation is required. Access roads and pole installations would not be required. The only impact to the environment would be a narrow trench that will be placed along the

existing roads. Any impacts to wetlands and watercourses due to such crossings are expected to be significantly less than proposed overhead route.

The reason for this is two-fold. The first is that the underground route follows existing roads, which typically cross only narrow portions of wetlands and watercourses. The second reason is that most of these sensitive habitats have already been spanned, therefore, greatly minimizing the required impacts to these systems.



Christopher P. Allan  
Senior Associate

**EXPERTISE**

Environmental Site Assessments  
Upland and Wetland Habitat Evaluations  
Environmental Impact Assessments  
Pond, Stream and Wetland Evaluations  
Wetland Creation and Restoration Projects  
Wetland Delineation  
Wetland Functional Assessment  
Stormwater Quality Evaluation/Treatment Design  
Sedimentation and Erosion Control Planning  
Land-Use Evaluations and Design  
Site Plan and Sewage Disposal System Design.

**EDUCATION**

Yale School of Forestry and Environmental Studies,  
New Haven, CT  
Major: Environmental Studies (Program: Land Use)  
Degree: M.E.S. (1982)  
University of Bridgeport, Bridgeport, CT  
Major: Biology (Program: Environmental Studies)  
Degree: B.A. (1979)

**LICENSES/PROFESSIONAL  
CERTIFICATIONS**

Certified Soil Scientist  
Professional Wetland Scientist #266  
Certified Professional in Soil Erosion and Sediment  
Control #355  
Registered Sanitarian, Connecticut #317  
U.S. Fish and Wildlife Service, Habitat Evaluation  
Procedures

**PROFESSIONAL AFFILIATIONS**

The Society of Soil Scientists of Southern New  
England  
Soil Science Society of America  
Society of Wetland Scientists  
Connecticut Association of Wetland Scientists  
Massachusetts Association of Wetland Scientists  
Soil Conservation Society of America  
International Erosion Control Association  
New England Soil and Water Conservation Society

**RELATED EXPERIENCE**

- ❖ Principal investigator for numerous **wetland delineations, natural resource inventories and environmental impact assessments for development projects** throughout Connecticut.
- ❖ Principal investigator for the **preparation of erosion and sediment control plans** for numerous site developments throughout Connecticut.
- ❖ Principal investigator for numerous **reviews of proposed site development plans** for various town and city land use agencies throughout Connecticut. Site development plans are reviewed for compliance with regulations, environmental impacts, and erosion and sediment control practices.
- ❖ Project manager and principal investigator for **seasonal monitoring of Lake Terramuggus**, an 85 acre impoundment located in Marlborough, Connecticut. The lake is evaluated annually from May to September. Monitoring parameters include water chemistry, temperature, dissolved oxygen, clarity, bacteria levels, phytoplankton communities, and chlorophyll-a concentrations.
- ❖ Principal investigator for the preparation of **natural resource inventories and environmental impact statements for cellular tower sites** throughout Litchfield County. These services were provided for AT&T Wireless and Litchfield County Cellular.
- ❖ Project manager and principal investigator for the preparation of a **natural resource inventory and environmental impact assessment of a proposed water diversion** at the Bradley Hubbard Reservoir in Meriden, Connecticut. The project involved an evaluation of existing shoreline vegetation and downstream fisheries resources associated with a public water supply reservoir and an evaluation of potential impacts on these resources.
- ❖ Project manager and principal investigator for **annual assessments of benthic macroinvertebrate communities** in Sodom Brook located in Meriden Connecticut. The

- project involves annual sampling of benthic macroinvertebrates, an on-site evaluation of stream characteristics, and assessment of stream quality using the U.S. E.P.A. Rapid Bioassessment Protocol II. The bioassessment data is used to evaluate potential drawdown effects from two public water supply wells located near Sodom Brook.
- ❖ Principal investigator for preparation of an **Environmental Impact Statement and Connecticut Environmental Policy Act (CEPA) Finding of No Significant Impact (FONSI)** associated with the proposed expansion of Northwestern Connecticut Community College in Winsted, Connecticut.
  - ❖ Principal investigator for a **natural resource evaluation and impact assessment of a proposed golf course** on 138 acres in Bethany, Connecticut.
  - ❖ Project manager and principal investigator for **evaluating stream and riparian habitat and an assessment of impacts** associated with flood control modifications on Harbor Brook in Meriden, Connecticut. The project involved an evaluation of stream characteristics and overall habitat suitability for macro-invertebrates, fish, and other wildlife. Impacts associated with channel deepening and straightening, and the creation of floodway channels were assessed.
  - ❖ Principal investigator for the **evaluation of benthic macroinvertebrate communities and overall stream quality** for a portion of the Oxoboxo River in Montville, Connecticut. The assessment was conducted to supplement a water diversion permit application for the Rand-Whitney Container Board Company. U.S. E.P.A. Rapid Bioassessment Protocol II was used to evaluate benthic communities and stream health. Annual sampling is currently being conducted to assess potential impacts from the permitted diversion.
  - ❖ Project manager and principal investigator for the **design of a 1.4 acre wetland** to compensate for impacts on an existing wetlands from building expansion at the international headquarters of Lego Systems, Inc. in Enfield, Connecticut. The project involved an evaluation of existing wetlands, selection of a suitable compensation site, design of the compensation wetland, construction monitoring, and annual post-construction inspections.
  - ❖ Project manager and principal investigator for the **design of a stormwater filtration wetland** for the international corporate campus of Lego Systems, Inc. in Enfield, Connecticut. The design incorporated a three stage wetland filtration system (wet meadow, shallow marsh, and shallow open water) for enhanced filtration of stormwater.
  - ❖ Principal investigator for a **stream and riparian habitat restoration** at Rocky Hill Veterans Cemetery in Connecticut. The restoration design included the use of geotechnical fabrics and vegetation for soil stabilization and the creation of a vegetated buffer strip to treat runoff from upslope managed turf grass.
  - ❖ Project manager and principal investigator for the design of a **stream and wetland habitat restoration** in Canaan, Connecticut. The project involved the recreation of watercourse and wetland habitat over mine spoils that were placed in wetlands. The design involved regrading of mine spoils and the creation and stabilization of over 600 feet of streambed and the creation of over 1 acre of compensation wetlands.
  - ❖ Project manager and principal investigator for the **delineation of federal jurisdictional wetlands and wetland soil characterization** at Silver Sands State Park in Milford, Connecticut. The delineation was part of an overall master plan for the development of the State Park.
  - ❖ Principal investigator for the **delineation and evaluation of inland, coastal, and federal jurisdictional wetlands, an assessment of impacts from roadway construction, design of stormwater filtration wetlands, and phragmites management**. These services were performed as part of the proposed extension of Monroe Street through Silver Sands State Park in Milford, Connecticut.
  - ❖ Principal investigator for a **tidal saltwater marsh restoration** at Indian Harbor in Greenwich, Connecticut. Restoration activities included the removal of construction debris and selective grading within the marsh to permit natural colonization of indigenous floral species.
  - ❖ Principal investigator for a **floral and faunal habitat evaluation and impact assessment of a proposed bulky waste landfill on a freshwater tidal marsh** associated with the Mattabasset River in Middletown, Connecticut.
  - ❖ Project manager and principal investigator involving the use of the **U.S. Fish and Wildlife Service Habitat Evaluation Procedures (HEP)** to assess impacts from the diversion of

- Limekiln Brook into a surface mine in Brookfield, Connecticut.
- ❖ Principal investigator for the **evaluation of potential impacts on timber rattlesnakes** (*Crotalis horridus*) from a residential subdivision in Glastonbury, Connecticut. Recommendations were made to reduce human interactions with the State threatened species.
  - ❖ Principal investigator for a **benthic macroinvertebrate and fisheries survey** of a portion of the Pomperaug River in Southbury, Connecticut. The project included sampling of benthic macroinvertebrates and use of the U.S. EPA Rapid Bioassessment Protocol II to evaluate stream quality. An electrofishing survey was also conducted to evaluate fish populations. Potential impacts associated with potential drawdown effects caused by withdrawal of water from the Pomperaug aquifer were evaluated.
  - ❖ Project manager and principal investigator for the **design of a 16 acre wildlife pond and wetland** adjacent to Macedonia Brook State Park in Kent, Connecticut. The project included delineation of federal jurisdictional wetlands, preparation of the habitat design, and preparation of permit applications for local, state and federal approval.
  - ❖ Project manager and principal investigator for the **evaluation of potential impacts on water quality, trout fisheries, and wetland habitats** associated with the Moosup River in Sterling, Connecticut from proposed drawdown effects caused withdrawal of water by the Exeter Energy Project from the associated aquifer.
  - ❖ Principal investigator for the **delineation of federal jurisdictional wetlands and an evaluation of wetland habitats** for a proposed shopping center expansion in Glastonbury and East Hartford, Connecticut.
  - ❖ Principal investigator for the **delineation of federal jurisdictional wetlands and preparation of an Army Corps of Engineers wetlands permit application** for the construction of a proposed automobile repair maintenance facility and car wash in Southbury, Connecticut.
  - ❖ Principal investigator for the **delineation of federal jurisdictional wetlands and an evaluation of wetland habitats and potential impacts** from a proposed funeral home in Monroe, Connecticut.
  - ❖ Principal investigator for the **delineation of federal jurisdictional wetlands and an evaluation of wetland habitats and potential impacts** from a proposed assisted living care facility in Monroe, Connecticut.
  - ❖ Principal investigator for the **delineation of federal jurisdictional wetlands and an evaluation of wetland habitats and potential impacts** from a proposed cemetery expansion in Roxbury, Connecticut.
  - ❖ Principal investigator for the **delineation of federal jurisdictional wetlands and an evaluation of wetland habitats and potential impacts** from a proposed residential development in Milford, Connecticut.
  - ❖ Assisted in design and monitoring of **wetland creation projects** associated with replacing wetlands lost as a result of Bradley International Airport expansion for Connecticut Department of Transportation

### PUBLICATIONS

*The Use of Vegetation for Non-Structural Sediment Control.* Co-Author, Public Works magazine, March 1984, Vol. 115, No. 3.

*The Application of Natural Systems to Protect the Aquatic Environment.* Co-Author, Presented at The Aquatic Environment: Problems and Perspectives, Western Connecticut State University, October 1984.

*Test Salt to Control Phragmites in Salt Marsh Restoration (Connecticut).* Co-Author, Restoration & Management Notes, Vol. II, No. 1, Summer 1984.

*Carrying Capacity of Public Water Supply Watersheds: A Literature Review of Impacts on Water Quality from Residential Development.* Co-Author. Prepared for the Litchfield Hills Council of Elected Officials; published in March, 1990 as DEP Bulletin 11 (ISBN 0-942085-00-0).

*Protecting Connecticut's Water-supply Watersheds: A Guide for Local Officials.* Co-Author. Prepared for the Connecticut Department of Environmental Protection; published by the Connecticut DEP January, 1993.

# CURRICULUM VITAE

Thomas S. Ryder  
Senior Environmental Analyst  
Land-Tech Consultants, Inc.

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## EXPERTISE

Wetland surveys and Functional Assessments  
Vernal Pool Evaluations  
Wildlife Surveys and Habitat Assessments  
Threatened and Endangered Species Surveys  
Environmental Impact Assessments  
Limnological Investigations  
Fisheries Studies  
Habitat Evaluation Procedures  
Rapid Bioassessment Protocols

## ACADEMIC BACKGROUND

M.A., Biology, State University of New York  
College at Buffalo, 1995  
B.S., Biology, Michigan State University, 1989

## CERTIFICATIONS

US F&W. Habitat Evaluation Procedures  
8-Hour OSHA Supervisors Training  
40 Hour Hazardous Waste Operations Course  
Groundwater Pollution and Hydrology (The  
Princeton Course)  
Hazardous Materials Emergency Response  
Operations Training  
Certified SCUBA diver, PADI

## PROFESSIONAL AFFILIATIONS

The Wildlife Society  
Connecticut Association of Wetland Scientists (Vice  
President, Publishing Chair)  
Member Scientific Advisory Committee – Milford  
Point, Connecticut Audubon Society  
Society of Wetland Scientists

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## RELATED EXPERIENCE

- **Biologist** – Land-Tech Consultants, Inc. June 1998- Present. Responsibilities include: conducting wetland and vernal pool evaluations, wildlife and threatened & endangered species surveys, and performing fisheries and limnological investigations.
- **Biologist** – Dames & Moore, Inc. Bethesda, MD office. August 1995 – June 1998. Conducted wildlife surveys and wetland evaluations on U.S. Government and Private Corporation lands as part of Dames & Moore's Government Division. Worked closely with Federal and State Agencies to ensure proper protection of identified natural resources.
- **Field Team Leader** – Dames & Moore, Inc. West Valley, NY. September 1990 – August 1995. Worked in the Environmental Laboratory of the U.S. Department of Energy's West Valley Demonstration Project. Responsibilities included: leading a groundwater monitoring team, collection of multimedia samples including surface water, groundwater, soil, sediment, and fish; worked under a New York State SPEDES permit, conducting effluent monitoring; performing radiological data validation, equivalent to EPA CLP Level III & IV, for groundwater, surface water, soil, vegetation and air, and communicated with contract laboratories to resolve data deficiencies in order to monitor the quality of reportable radiological information.
- Evaluated numerous **vernal pools** and conducted **amphibian** breeding surveys throughout Connecticut. Projects involved conducting an intensive investigation to identify the biological productivity and physical functions of the systems. The investigations involved dip netting and egg mass identification within the pools and amphibian surveys in the surrounding habitats. Worked with landowners to protect identified pools and present site-specific data to the local agencies for evaluation.
- Principal Investigator for a **vernal pool** evaluation in Stamford CT. Evaluation was in support of a five lot housing development.
- Prepared a water diversion application for a 30± acre property in Stamford CT. The project included a four season **mammal survey** including a **winter track survey** and working with the DEP Fisheries Division to enhance **fish habitat** of an on-site pond.
- Project manager and principal investigator for a **benthic macroinvertebrate community** study of Sodom Brook in Meriden Connecticut. The study used the EPA's Rapid Bioassessment Protocol III to evaluate potential drawdown effects from local public water supply wells.
- Evaluated the function of numerous **wetland systems**, confirmed the presence of several **vernal pools**, and conducted a multiyear **amphibian breeding study** on a 56± acre

- property in Westport Connecticut. These investigations were conducted to determine the interrelationships of the community mosaic and determine appropriate protection measures of the natural resources in proximity to a housing development.
- Project manager and principal investigator for a water diversion permit application for an existing golf course in Ridgefield, Connecticut. Investigations involved evaluating **wetland habitats** and conducting **amphibian breeding surveys** on the property.
  - Evaluated the natural resources along a proposed CL&P 345kv powerline right of way in southwest Connecticut. Field work included walking the entire right of way length and identifying existing wetland, watercourse and other natural resources. Specific investigations included conducting several **amphibian breeding surveys** to determine the presence of vernal pools. Objective was to review an application to upgrade the powerline. Findings of our investigation were presented to the Connecticut Siting Council in the form of oral and written testimony.
  - Conducted several **amphibian breeding surveys** and **vernal pool evaluations** for the Town of East Haddam, in support of application reviews.
  - Project Coordinator of a **wildlife survey** on a 75 acre site in Cheshire, Ct. The wildlife survey was conducted to determine what impacts may be incurred by the expansion of a multi-acre building into wooded upland and wetland habitats. The survey included dip netting, pit fall traps, small mammal live traps and a bird survey. Collected vegetation data, which included tree coring, tree heights, and diameter, soil profiles and other data to determine vegetative composition and density of tree, shrub and herbaceous layers on the property.
  - Conducted the largest known relocation experiment using biotelemetry, and extensively studied the daily behavioral patterns of the **threatened loggerhead sea turtle** (*Caretta caretta*). Study was devised to assess the usefulness of relocation as a mitigation tool and to document the habitat usage of adult males and subadults in near shore waters. The project, funded by the U.S. Army Corps of Engineers, incorporated the use of a global positioning system (GPS), radio and sonic telemetry, automated radio data recorders and a remotely operated submersible camera.
  - Conducted physiology and relocation experiments on small mammals and passerines in the upper peninsula of Michigan. The study, which was part of an **Environmental Assessment**, assessed possible thermo-regulatory and homing ability effects of electromagnetic fields generated by the United States Navy's Extremely Low Frequency (E.L.F.) communication antennae.
  - Field coordinator for an **ecological survey** of power-line extensions in Ohio. Field characterization consisted of traversing approximately ten miles of the proposed corridors and assessing ecological communities. Data collected included, species of tree and shrubs, tree aging, tree diameter and height. All sample plots were geographically referenced using a differentially processed global positioning system. Specific data were also collected for a **Habitat Evaluation Model** for the protected Indiana Bat (*Myotis sodalis*). Impacts to protected and high interest species were assessed based on field data and information from local and state agencies.
  - Performed a **Rapid Bioassessment** of a creek running adjacent to closed landfills in Schenectady, New York. The RBP was conducted to assess impacts incurred from the runoff or seepage of the landfills into the creek. A separate aspect of the project included co-narrating a wildlife video documenting the various vegetative communities, wildlife and aquatic habitats present on the property.
  - Wrote a **River Characterization** for the St. Jones River in Dover, Delaware. The characterization was to identify the **sediment and surface water pollutants** of the river and compare with sediment and surface water quality data taken from the Dover Air Force Base. Surface water and sediment data were obtained from the EPA STORET database and two prior assessments of the Dover Air Force Base. All data were compared to current AWQCs and ERLs to determine toxicity risks. An ASTM database search of government and private facilities on the NPL, RECRIS and other lists were obtained. The characterization was performed to identify the impact of the Dover Air Force Base on the St. Jones River.
  - Project manager of a **biological monitoring study** which assessed the impacts of the 1997 opening of the Bonnet Carre' Spillway. The objective was to acquire sufficient data to evaluate the short-term effects of the spillway opening on Mississippi jurisdictional waters. Monitoring included sampling the health of finfish and aquatic vertebrates/invertebrates, oysters and water

quality of Mississippi estuarine areas. The study was funded by the Army Corps of Engineers, New Orleans District.

- Conducted a **habitat assessment** including the collection of soil samples and macroinvertebrate species of a stream on an industrial site in Richmond, VA. The data collected were in support of a screening level risk assessment to assess the potential risk of contamination to the biotic community. The results indicated high levels of PAH's in the soils.
- Wrote a post closure maintenance plan for a sanitary and a construction and demolition debris landfill at Fort Belvoir, VA. The plan was consistent with federal and state laws and regulations while designed to increase the **habitat suitability** for various species of **wildlife**. The plan presented recommendations for mowing patterns and frequencies as well as species to plant.
- Conducted a **rapid bioassessment** of an impacted stream on an industrial plant in Parlin, New Jersey. The bioassessment utilized the procedures referenced in the *Mid-Atlantic Coastal Stream Workgroup* (MACS, 1993). The bioassessment was in support of a **Risk Assessment**.
- Conducted **wildlife habitat assessment** of aquatic and terrestrial communities in Pennsylvania. Aquatic habitat assessment utilized the procedures referenced in the *Mid-Atlantic Coastal Stream Workgroup* (MACS, 1993). The habitat characterization was in support of an **Environmental Assessment**.
- Wrote a biological resource report in support of an **Environmental Assessment** for the proposed expansion of the Smithsonian Institution National Air and Space Museum. A wildlife and vegetation survey was performed on the approximate 370 acre portion of the Dulles International Airport. The survey included characterizing the various wildlife utilizing the terrestrial, wetland and riparian communities. Various state and federal agencies were contacted to provide information on known or expected protected wildlife in the study area.
- Assisted with a vulnerability analysis, which supported an oil contingency plan for an oil company in Newington, Virginia. Consulted various state and federal agencies on the presence of **protected plants and wildlife**, wild and **scenic rivers**, historic and archeological areas as well as other protected or restricted areas in the study area. Reviewed several Fairfax

county planning maps to obtain information on local utilities, parks and natural areas, public facilities and transportation routes needed in the instance of an oil spill.

## PUBLICATIONS

**Ryder, T.S.** 1995. *Daily Movements and Relocation of the loggerhead sea turtle (Caretta caretta), at Cape Canaveral Florida*. Masters thesis. State University of New York College at Buffalo.

**Ryder, T.S.**, E.A. Standora, M.D. Eberle, J.M. Edbauer, K.L. Williams, S.J. Morreale, and A. Bolten. 1994. *Daily Movements of adult male and juvenile loggerhead turtles (Caretta caretta) at Cape Canaveral, Florida*. Proceedings of the Fourteenth Annual Symposium of Sea turtle Biology and Conservation.

Standora, E.A., S.J. Morreale, A. Bolten, M.D. Eberle, J.M. Edbauer, **T.S. Ryder**, and K.L. Williams. 1993. *Diving Behavior, Daily Movements and Homing of loggerhead turtles (Caretta caretta) at Cape Canaveral, Florida*. Report to the Army Corps of Engineers. 105 pages.

Standora, E.A., S.J. Morreale, A. Bolten, M.D. Eberle, J.M. Edbauer, **T.S. Ryder**, and K.L. Williams. 1993. *Assessment of sea turtle baseline behavior and trawling efficiency in Canaveral Channel, Florida*. Report to the Army Corps of Engineers. 114 pages.

## PRESENTATIONS

Fourteenth Annual Symposium on Sea Turtle Biology and Conservation. March 1994 at Hilton Head, South Carolina. "Daily Movements of Adult Male and Juvenile Loggerhead Turtles (*Caretta caretta*) at Cape Canaveral, Florida".

State University College at Buffalo Research Symposium, sponsored by Sigma Xi, the Scientific Research Society. Buffalo, New York. May 1993. "Displacement of Loggerhead Sea Turtles and their Daily Movements in the Cape Canaveral Area".

**Exhibit B**

**ECOLOGICAL IMPACTS ASSESSMENT  
OF  
THE APPLICATION OF  
THE CONNECTICUT LIGHT AND POWER COMPANY  
AND  
THE UNITED ILLUMINATING COMPANY  
TO THE CONNECTICUT SITING COUNCIL**

**Docket Number 272**

**For a**

**345-kV TRANSMISSION LINE  
THROUGH THE CITY OF MILFORD, CONNECTICUT**

**PREPARED FOR:  
THE CITY OF MILFORD, CONNECTICUT**

May 24, 2004

## EXECUTIVE SUMMARY

The Application submitted by CL&P and UI proposes to construct a 345-kv transmission line through the City of Milford. We reviewed the application materials and walked the entire right of way within Milford and provide this evaluation of existing resources and proposed impacts. We identify numerous pole installation/construction and access road impacts that will occur under the proposal. Using information provided by the Application, we determined that the project will result in approximately 2.2± acres of temporary wetland disturbance and 1.1± acres of permanent wetland fill. In addition, the proposed overhead route will cross 6 watercourses.

The Application states that no vernal pools are located within the existing right-of-way (ROW) through Milford. However, our investigation found one well functioning vernal pool and one potential vernal pool. The Application proposes several impacts due to pole/construction and access routes, however, the Application does not offer any alternatives to avoid or minimize these impacts.

The proposed overhead route crosses the Wepawaug River, which is a known location for the State Species of Special Concern wood turtle (*Clemmys insculpta*). The Wepawaug River is also stocked annually with trout by the DEP. This watercourse and the various other tributaries that cross the transmission line ROW are very sensitive to upgradient disturbances. The proposed overhead route also crosses a public water supply watershed area located near Rutland Road southward to just south of Oronoque Road.

The submitted data do not appear to support the conclusion in the Executive Summary of Volume 1 that “the project will not result in any significant long-term adverse environmental impacts.” Rather, the data indicate that significant long and short term impacts to sensitive natural resources will occur.

The data provided in the Application as well as the additional data collected through our investigation indicate that an underground alternative along public roads provides the best protection of sensitive environmental resources. It should be made clear that not all impacts can be effectively mitigated or restored and avoidance is always a preferred alternative.

## INTRODUCTION

Land-Tech Consultants, Inc. was retained by the City of Milford, Connecticut to evaluate the application of The Connecticut Light and Power Company (CL&P) and United Illuminating (UI) (hereby referred to as “Application”) to the Connecticut Siting Council (Docket No. 272). This Application seeks to construct a 345-kV electric transmission line from Middletown to Norwalk through 5.5± miles of the City of Milford. The focus of Land-Tech Consultant’s investigation was to evaluate the Application and determine if it adequately characterizes the natural resources and the potential impacts along the overhead Right-of-Way (ROW).

This evaluation was based on data collected during an on-site investigation of the ROW from the Milford/Orange line to the proposed East Devon Substation and a review of the following materials.

- “Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for a 345-kV Electric Transmission Line Facility and Associated Facilities Between Scovill Rock Switching Station in Middletown And Norwalk Substation in Norwalk”. Volume 1 of 12, dated October 9, 2003.
- “Wetland and Waterways Description Report Electric Transmission Line Facility Between Scovill Rock Substation in Middletown and Norwalk Substation in Norwalk”, dated April 2003.
- “Amphibian Breeding Survey Electric Transmission Line Facility Between Scovill Rock Substation in Middletown and Proposed East Devon Substation, Milford, CT”, dated August 15, 2003, prepared by Soil Science and Environmental Services.
- “Analysis of Potential Impacts to Bird Species along the Proposed Middletown to Norwalk 345-kV Transmission Line” by Phenix Environmental Inc, dated September 2003.
- Federal, State and Municipal Agencies Correspondence, Volume 4 of 12 and supplemental materials.
- “Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for a 345-kV Electric Transmission Line Facility and Associated Equipment. Aerial Photographs Overhead Portion – 400 Scale” Segments 42-47 Volume 9 of 12.
- “Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for a 345-kV Electric Transmission Line Facility and Associated Equipment. Typical Cross Section, Typical Cross Section Details, Plan & Profile Drawings”, Volume 10 of 12.
- “Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for a 345-kV Electric Transmission Line Facility and Associated Equipment. Aerial Photographs Overhead Portion – 100 Scale” Segments 147-166 Volume 11 of 12.
- Personal Communication with Dr. Christopher Loscalzo, past president of New Haven Bird Club and compiler of New Haven Christmas Bird Count.
- Letter to Pamela B. Katz, Chairman Connecticut Siting Council from Jane K. Stahl, Deputy Commissioner of the Connecticut Department of Environmental Protection, dated May 4, 2004.

As part of the Application, CL&P and UI propose to replace each set of 3 existing 115-kV structures with one 115-kV steel monopole and one 345-kV steel pole utilizing a delta configuration. The 115-kV steel monopole would be a typical height of 80 feet and the 345-kV delta structure is proposed to be a typical height of 85 feet. The Application states that the current ROW widths in Milford are adequate and no ROW width expansion is proposed. Vegetation within the ROW will need to be cleared to 12 feet high within 11 feet of the 115-kV line and 16 feet high within 15 feet of the 345-kV line.

## **METHODS**

In order to conduct a thorough evaluation of the submitted documents, Chris Allan (Professional Wetland Scientist, Registered Soil Scientist) and Tom Ryder (Biologist) of Land-Tech Consultants, Inc. walked the ROW from the Milford/Orange line south to the East Devon Substation on March 12, 2004. The objective of this exercise was to identify significant or sensitive natural resources, compare these resources with the descriptions provided in the Application and assess ecological impacts.

Each pole segment along the ROW and the adjacent properties was inspected to identify the following: 1) the presence of wetlands and watercourses, 2) community types supported, 3) dominant vegetation, 4) suitability of existing and potential access routes, and 5) potential impacts to natural resources. Potential impacts associated with ROW modifications include: wetland filling, access road upgrades, vegetation clearing, erosion and sedimentation, water quality reduction, and impacts to amphibian and bird breeding as well as to species of special concern. These data were then compared to the data provided in the Application.

## **FINDINGS**

The following concerns were identified. They are presented by habitat category. Segment numbers provided refer to 100 scale aerial photographs (Volume 11, Segments 147-166).

### **Wetland and Watercourse Assessments**

Wetland 167 is a large, diverse wetland system. This wetland borders the Wepawaug River and provides several valuable wetland functions. It serves as a vegetated riparian corridor along the river, protecting water quality and providing significant wildlife habitat. Its broad, flat expanse provides ample flood storage, protecting downstream properties from flood impacts associated with the Wepawaug River. It enhances downstream water quality by filtering pollutants and sediments in floodwaters and stormwater runoff. The wetland provides passive recreational opportunities especially since part of the wetlands lies within Eisenhower Park. Wetland 167 appears to be underrated in the Applicants' evaluation of Wetland Functional Quality. It is our opinion that this wetland should be rated Moderate-High for Ecological Integrity and Noteworthiness, and High for Wildlife Habitat, Educational Potential, Flood Control, and Nutrient and Sediment Retention and Removal.

### **Fisheries**

Wepawaug River in Milford is stocked annually with trout by the DEP. This watercourse and the various other tributaries that cross the transmission line ROW are very sensitive to upgradient disturbances. These watercourses would be impacted by the crossing of large heavy machinery needed to perform the transmission line upgrade. Impacts to water quality, such as turbidity from loose disturbed soil entering the brook, and changes in temperature from clearing of vegetation could alter the habitat suitability for these fish and the insects they feed on.

### **Amphibians/Vernal Pools**

The Amphibian Breeding Survey prepared by Soil Science and Environmental Services (SSES) identified one wetland with high amphibian breeding potential (Wetland 167), two wetlands with moderate amphibian breeding potential (Wetlands 168 & 172), and no vernal pools in the City of Milford (Page 2, Findings). Our investigation identified two areas of high amphibian breeding in the City of Milford, with one being confirmed as a vernal pool.

Land-Tech Consultants walked the entire ROW through the City of Milford on March 12, 2004. Potential vernal pools identified during this investigation were inspected on April 12, 2004 to obtain detailed information on each system to determine if they are functioning as a vernal pool.

The Applicants (via SSES) defined vernal pools as isolated topographical depressions which contain vernal or ephemeral ponding with no inflow stream and no finfish population.

A widely accepted vernal pool definition is presented in A Guide to the Identification and Protection of Vernal Pool Wetlands of Connecticut published by the University of Connecticut, Cooperative Extension System. A vernal pool:

- Contains water for approximately two months during the growing season;
- Occurs within a confined depression or basin that lacks a permanent outlet stream;
- Lacks any fish population; and
- Dries out most years, usually by late summer.

In addition to these physical characteristics, the presence of certain animal species is used to confirm the existence of a vernal pool. Some species are considered obligate vernal pool species meaning that they rely entirely on vernal pools for breeding and early development. The presence of obligate species is also used to evaluate the functionality and quality of the vernal pool. These species include: spotted salamander (*Ambystoma maculatum*), Jefferson salamander (*Ambystoma jeffersonianum*), marbled salamander (*Ambystoma opacum*), wood frog (*Rana sylvatica*), eastern spadefoot toad (*Scaphiopus h. holbrookii*) and the fairy shrimp. The presence of one or more of these species confirms the pool as a “vernal pool” and, therefore, increases the relative function or value of the pool.

Each pool was investigated using observation and dip netting methods. The pool’s physical and biological characteristics such as depth, shoreline vegetation, shade cover, and substrate were recorded as well as and the presence of obligate species or evidence of breeding (egg masses).

Our investigation identified the following:

- A confirmed well functioning vernal pool is located east of pole 3841 and extends to within a few feet of pole 5041 (Segment 149). This pool is approximately 200 feet long and 150 feet wide and is part of Wetland 167. The pool contains three community types, 1) an open understory red maple swamp with 12”-24” of standing water, abundant 12”-18” hummocks and a 75% tree canopy cover, 2) a dense shrub

swamp with red maple dominated understory. This community contained abundant overhanging shrubs and approximately 12" of standing water, and 3) a small wet meadow community dominated by grasses and surrounded by hummock shrub community (See Photos 1 & 2 in the Appendix). Standing water in this area was approximately 6" to 12" deep. This community lacks a tree canopy, as it is located directly under the transmission lines and extends within a few feet of pole 5041. The system contains no defined inlet or outlet channel, however, surface flow from the wetland to the east was crossing the access road and discharging into the middle of the eastern shore of the pool. Water marks on the trees indicated that the system could hold an additional 6 inches of water. The pool is bordered by an existing access road to the west and north, the transmission line ROW over the eastern portion and to the east, and the south.

Approximately 30 wood frog egg masses were identified in the wet meadow community just northeast of pole 5041. The egg masses were clustered within a four-foot radius. This system meets the physical and biological definition of a functioning vernal pool and should be protected.

- A confirmed amphibian breeding area and potential vernal pool is located west of pole 3836 (Segment 151). During the site visit, the pool contained one main water body and two smaller pools separated by a small rise in the topography (Photos 3 and 4 in the Appendix). These pools would be surficially connected if the system contained another couple inches of water. The main pool is very deep for its size with a central depth of at least 5 feet. The smaller pools to the southeast and northeast are approximately 6-10" deep. The tree canopy provides shade over a majority of the pool. The shoreline of these pools generally lacks a shrub layer and therefore contains no overhanging vegetation. The exception is a large dead fall tree and some shrubs located along the eastern shoreline. The substrate provided by this deadfall contained a cluster of approximately 40 wood frog egg masses. Two solitary spotted salamander egg masses were identified attached to emergent twigs.

It is not possible, during the time frame of this investigation, to determine if this pool dries up occasionally in the summer months. Data collected from this investigation shows this pool to be a functioning amphibian breeding area.

Suitable access exists along the eastern side of the ROW away from the pool, however, the pool has the potential of being impacted by access road improvements.

- The SSES Amphibian Breeding Survey indicates egg masses were identified within wetland 168 but did not specify which species were found. The determination of which species of egg mass are present is important in evaluating what characteristics are needed for their survival. Different species require different inundation periods (hydroperiods) and development times and require different habitat for suitable adjacent upland migration routes. The species of egg should be identified.

### **Birds**

Several species of birds utilize the open meadow or scrub/shrub (thickets) of the right-of-way to nest and/or forage. These species are particularly vulnerable to vegetation impacts during the nesting season. Section M.3.4 of the "Potential Environmental Effects

and Mitigation Measures” report states that that no vegetation clearing or management will be conducted during the breeding season (April 1 to August 15). However, a concern that has not been addressed is the impacts to the winter residents that occupy the open canopy habitats of the maintained ROW. These maintained meadows or scrub/shrub habitats are not common in Connecticut. Species known in the area that utilize these habitats in the winter include the catbird, white-throated sparrow, towhee, winter wren, tree sparrow, field sparrow (species population in major decline), yellow-rumped warbler, pine warbler and brown thrasher<sup>2</sup>, which is a species of special concern. Disturbance to these species and others utilizing the ROW in the winter from the construction/improving of access roads, installation/removal of poles and other activities needs to be addressed.

### **Threatened, Endangered or Special Concern Species**

The Connecticut Department of Environmental Protection’s Natural Diversity Database identified the special concern species wood turtle (*Clemmys insculpta*) in the vicinity of the Wepawaug River. DEP records show other areas of concern within transmission line right-of-way along the Housatonic River. (See Milford 345 kv NDDB Areas Map). The DEP recommends restricting work to the dormant period of November 1 to April 1 in order to minimize impacts to wood turtle populations. The Applicant has agreed to limit disturbance around the Wepawaug River to the wood turtle’s non-active period. This is the appropriate course of action.

Wood turtles are typically found in the vicinity of water such as wooded riparian habitats of streams, small rivers and associated fringes. Other habitats include wet meadows, swamps and upland fields and meadows<sup>3</sup>. This species is diurnal spending most of its time basking on logs, stream banks and partially open woodlands. They migrate considerable distances with a mean home range estimate at 447 meters (Ernst et al. 1996). Nesting areas include open moist sandy areas near water but not subject to flooding. This population of this species has declined due to habitat loss.

The Applicant states (page L-46 Section L 3.7) that if avian surveys identify that a protected or special concern species is nesting near the ROW, construction would be scheduled so as to avoid the nesting season of February through July. However, the Application does not mention conducting wildlife surveys as part of the construction sequence and does not indicate who will be notified of the results. This information should be provided. The nesting season dates presented here by the Applicant are different from those reported in Section M.3.4. This inconsistency should be corrected.

### **Wetland and Watercourse Impacts**

On-site investigations of the ROW raised the following concerns regarding pole locations and access. Segment numbers refer to the 1”=100’ scale maps provided in Volume 11 of the Application.

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<sup>2</sup> Personal communication, Dr. Christopher Loscalzo, past president of New Haven Bird Club

<sup>3</sup> Ernst, C., J. Lovich and R. Barbour. 1994. Turtles of the United States and Canada. Smithsonian Institution. 578 pgs.

### Pole Removal/Installation

- Pole set 3845 is located within Wetlands 163 (Segment 148). Pole installation will require wetland filling.
- Poles sets 3838, 3839, 3840 (misidentified on the 1"=100' aerials as 3839) and 3841 are located within Wetland 167 (Segment 150). Significant wetland disturbance and filling of about 1 acre of floodplain wetland is required.
- Pole set 3831 is located within Wetland 170 (Segment 153). Pole installation will require wetland filling.

### Access Routes

- Pole sets 3845 and 5045 (Segment 148) have no existing suitable access and are located within Wetland 163.
- Access to poles 3841 and 5041 (Segment 149) requires upgrading an existing path through wetland 167. This will require filling within the floodplain wetland. The removal of pole 5041 will disturb the vernal pool which is located a few feet north of pole 5041. The vernal pool could also be impacted by access road upgrades and use.
- The existing access to poles 3838-3840 is through Wetland 167 (Segment 150). Upgrading this access will result in permanent fill within the floodplain wetland. This access also requires crossing several inundated areas. Access between poles 3839 and 3840 requires crossing a brook. The brook contained approximately one to two feet of water during the March site walk.
- It is unclear how access will be gained to poles 3829, 2322 and 5029 (Segment 154).

### **Water Authority Watershed Impacts**

The ROW from the vicinity of Rutland Road (Segment 154) south to just south of Oronoque Road (Segment 156) is located within a public water supply watershed operated by the South Central Connecticut Regional Water Authority. This area encompasses Wetland 171 which contains a watercourse. All efforts to maintain the water quality of this area should be employed.

### **Impact Summary**

A tabulation of wetland disturbance impacts is included as *Table 1. Wetland Impact Summary* in the Appendix. The table shows areas of wetland disturbances and areas of permanent wetland fills within the Milford portion of the right of way resulting from the proposed 345 kV upgrade. Areas of disturbance and permanent wetland fills were determined using the 100 scale aerial photographs (Volume 11, Segments 147-166) and the stated size of potential impact areas resulting from pole installation and removal, access road construction and conductor pulling sites included in Volume 1, Sections J and K.

Based on the Applicants' information, approximately 2.8 acres of wetlands will be disturbed temporarily and approximately 1.4 acres of wetlands will be permanently filled. Most of the wetland disturbance and filling activities will occur within Wetland 167. This wetland is associated with the Wepawaug River, has high functional value and is

partially located within Eisenhower Park. Four pole sets will be removed and replaced within this wetland. These activities will disturb about 2 acres of Wetland 167 and could result in the permanent loss of about 1 acre of wetland. Wetland filling will result in the loss of flood storage capacity and wildlife habitat. In addition, the close proximity of a vernal pool (not identified in the Application) to pole 5041 raises serious concerns regarding the ability to protect this sensitive habitat.

The Application proposes significant impacts to the wetlands systems including vernal pools and potentially nesting birds. The Applicants' statement that "the project will not result in any significant long-term adverse environmental impacts" is unfounded.

No vernal pools were identified by the Applicant in Milford. However, our investigation found a large well functioning system located a few feet from a pole to be removed and a second potential vernal pool adjacent to the ROW.

The Applicant has not offered any alternatives to mitigate or compensate for the proposed disturbances. Since not all impacts can be effectively restored or compensated, the preferred action is always avoidance.

From an environmental perspective, an underground route is preferred. The placement of the 345-kv line underground along existing public roads would eliminate most of the impact concerns. The installation of an underground line is not expected to significantly impact wildlife along the route, as minimal alteration to vegetation is required. Access roads and pole installations would not be required. The only impact to the environment would be a narrow trench that will be placed along the existing roads.

Impacts to wetlands and watercourses due to crossings are expected to be significantly less than the overhead alternative. The reason for this is two fold. The first is that an underground route could follow existing roads, which typically cross narrow portions of wetlands and watercourses. The second reason is that most of these sensitive habitats have already been spanned allowing the transmission line to be attached to the various bridges and, therefore, greatly minimize the required impacts to these systems.



Photo # 1 -Vernal Pool Located Southeast of Pole 3841, taken 04/12/04



Photo # 2 - Wet Meadow Community Within Vernal Pool, Containing Approximately 30 Wood Frog Egg Masses. Wet Meadow Located Within ROW, Just Northeast of Pole 5041.



Photo # 3 - Potential Vernal Pool Located West of Pole 3836, taken 04/12/04



Photo # 4 - Dead Fall In Potential Vernal Pool, Providing Substrate For Approximately 40 Wood Frog Egg Masses and 2 Spotted Salamander Egg Masses. Photo Taken 04/12/04

Table 1. Wetland Impact Summary

Segment Number	Pole Numbers	Wetland Number	Proposed Wetland Disturbance Activity				Area of Wetland Disturbance* (S.F.)	Area of Permanent Fill** (S.F.)	Comments
			Access Road	Pole Removal	Pole Installation	Area of Wetland Disturbance* (S.F.)			
148	5045, 3845,	163		X		13,000	8,000		
149	3841	167	X	X		17,000	12,000		
149	5041	167	X					Vernal pool	
149	5041	167		X		5,000			
150	3839-3840	167	X			5,500	5,500		
150	2331	167	X			9,000			
150	3839, 5039	167		X		35,000	10,000		
150	3838-3839	167	X			7,000	7,000		
150	2329, 3838, 5038	167		X		15,000	10,000		
151	3836							Amphibian Breeding Area/Potential Vernal Pool	
151	3837-3838	167	X			1,300	1,300		
151	3837	168	X	X		1,200	500		
153	3831	170		X		12,000	7,000		
			<b>Totals</b>			121,000 s.f.	61,300 s.f.		
						2.78 acres	1.41 acres		
			<b>Wetland 167 Totals</b>			94,800 s.f.	45,800 s.f.		
						2.18 acres	1.05 acres		

\* Area of Wetland Disturbance = 15 foot wide access road (Vol. 1, Section K.1), 100 by 100 foot disturbance area around existing and new poles (Vol. 1, Section J.1),

\*\* Area of Permanent Fill = 40 foot radius to be cleared and graded around each structure and guy wire location (Vol. 1, Section J.1.3)