



United States Department of the Interior

NATIONAL PARK SERVICE

Northeast Region
15 State Street
Boston, Massachusetts 02109-3572

IN REPLY REFER TO:

September 29, 2003

A4415 (NER-COS)

H4525037033

David K. Leff
Deputy Commissioner
Connecticut Department of
Environmental Protection
79 Elm Street
Hartford, CT 06106

Dear Mr. Leff:

Please find enclosed one (1) fully executed original copy of Cooperative Agreement H4525037033, between the National Park Service and the State of Connecticut Department of Environmental Protection.

Thank you very much for your support. We look forward to a continuing mutually beneficial relationship.

Sincerely,

Susan Gray
Procurement Assistant

Enclosures

cc: Elizabeth Johnson/NPS

COOPERATIVE AGREEMENT
H4525037033
Between

THE UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

And

State of Connecticut
Department of Environmental Protection

Beginning Date: Date of last signature

Completion Date: 5 Years from the effective date

Fiscal Year 2003 Funding Account: 2111-NII

Not to Exceed: \$12,900

Budget Object Class: 412A

Project Title: **Vegetation Classification and Mapping of Weir Farm National Historic Site**
Ridgefield/Wilton, Connecticut

COR: Elizabeth Johnson, Northeast Region, Inventory and Monitoring Coordinator

This Cooperative Agreement is entered into by and between the **State of Connecticut Department of Environmental Protection** (hereinafter also known as the Cooperator) and the United States Department of the Interior, National Park Service (hereinafter also known as the Service).

ARTICLE I – BACKGROUND AND OBJECTIVES

The Cooperator is organized and maintained to conduct a program of education, research, and extension designed to benefit all people of the state and to conduct studies over the broad spectrum of natural, cultural, social and management sciences.

Such studies, whether performed and/or financed by the Service, the Cooperator, or other institutions or persons, will be valuable to the educational, research and management programs of the Cooperator and will be valuable and necessary for the management of the areas and resources under the jurisdiction of the Service.

The Service and the Cooperator mutually desire to cooperate in executing this Cooperative Agreement (hereinafter also known as the Agreement) in order to conduct scientific research, inventory, monitoring, and interpretive activities so as to increase basic knowledge and understanding in areas of inquiry of relevance to the Service's mission (for the general good of the scientific community) and to protect and manage the natural and cultural resources of the national park system and other similar areas elsewhere.

Both parties to this Cooperative Agreement desire to cooperate with one another for their mutual benefit and for the general benefit of the people of the United States and future generations.

It is contemplated that there will be substantial involvement, as specified in Article III of this Cooperative Agreement, by the Service in the work of the Cooperator.

ARTICLE II - AUTHORITY

The Act of August 25, 1916, as amended, *16 U.S.C. § 1, 2-4 (1988)*, declares that the Service will promote and regulate the use of the various federal areas known as units of the national park system by such means and measures as conform to the fundamental purpose of the national park system, which purpose is to conserve the scenery and natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

16 U.S.C. § 1g provides broad authority for the National Park Service to, "in fiscal year 1997 and thereafter enter into cooperative agreements that involve the transfer of National Park Service appropriated funds to state, local, and tribal governments, other public entities, educational institutions, and private non-profit organizations for the public purpose of carrying out National Park Service programs pursuant to *section 6305 of Title 31* to carry out public purposes of National Park Service programs."

16 U.S.C. § 1a-2(j) authorizes the Secretary of the Interior, in order to facilitate the administration of the national park system, to carry out the following activity under such terms and conditions as he may deem advisable: "Enter into cooperative agreements with public or private educational institutions, States, and their political subdivisions, for the purpose of developing adequate coordinated, cooperative research and training programs concerning the resources of the national park system, and, pursuant to any such agreements, to accept from and make available to the cooperator such technical and support staff, financial assistance for mutually agreed upon research projects, supplies and equipment, facilities, and administrative services relating to cooperative research units as the Secretary deems appropriate; except that this paragraph shall not waive any requirements for research projects that are subject to the *Federal procurement regulations*."

ARTICLE III - STATEMENT OF WORK

The Cooperator agrees to:

- (1) complete the work as described in the proposal attached (Attachment A);
- (2) submit a progress report by October 1, 2003;
- (3) work closely with NatureServe in developing the classification, keys and products;

- (4) provide access to computer facilities and services to Service personnel at the same rate and on the same basis as equivalent members and staff of the Cooperator;
- (5) encourage appropriate staff cooperation to provide consultation services to the Service on natural and cultural resources management issues, including participation in resources management scoping sessions held periodically in selected parks;
- (6) organize and conduct field trips, seminars, and workshops which would take place in or feature units of the national park system and which would provide scientific or management information useful to the Service and the Department; and
- (7) provide the Service with comprehensive reports, project papers, maps and research data generated by personnel from projects conducted under this Cooperative Agreement or from unfunded projects conducted by Cooperator personnel within units of the national park system.

The Service agrees to:

- (1) provide NPS personnel time to assist with project development, to assist with field data collection and to familiarize Cooperator staff with Park resources and locations, to evaluate work in progress, consult with the Cooperator, and to participate in workshops and scoping sessions and review of interim and final products related to vegetation mapping, resources management and other management needs of the Service;
- (2) provide the cooperator with digital ortho-corrected aerial photographs of Weir Farm NHS;
- (3) provide the cooperator with ArcView shapefiles of park boundaries for each of the parks as well as a boundary that falls outside of park boundaries that will be included in this mapping project;
- (4) provide any maps, reports, photography, and databases from the parks containing information relevant to this project;
- (5) provide access to and use of the natural and cultural resources of units of the national park system for appropriate inventory, research, monitoring, and educational activities of the Cooperator, except for those activities which may conflict with the values and purposes of the area as stated in federal law or policy;
- (6) provide a description of Service management needs through appropriate planning documents and from direct contacts between specific park staff and the Cooperator;
- (7) provide space in park areas for Cooperator personnel for storage and temporary office needs, and provide prearranged logistical support, when available and when directly related to the intent of this Agreement;

- (8) issue research and scientific collection permits subject to park approval, and assist Cooperator scientists in securing Antiquities Act permits, as needed, for work conducted under this Cooperative Agreement; and,
- (9) to make available to the cooperator not to exceed \$12,900 to complete the work identified herein.

The Service and Cooperator jointly agree to:

- (1) meet together periodically, and with other cooperators, to coordinate activities and track progress and expenditures of individual projects; and
- (2) plan and develop interpretive and educational materials and programs about individual projects, such as brochures, news releases, media contacts, signs, exhibits, field trips, and school activities, and acknowledge involvement of all partners in published materials and project information/publicity.

ARTICLE IV – TERM OF AGREEMENT

This Cooperative Agreement will become effective upon signature of both parties and extend (through midnight *Month Day, Year* or for a period of five (5) years from the effective date), unless terminated earlier in accordance with Article X.

ARTICLE V – KEY OFFICIALS

A. Key officials are essential to ensure maximum coordination and communications between the parties and the work being performed. They are:

1. For the Service:

Elizabeth A. Johnson
Regional I&M Coordinator
Northeast Region
105 Coastal Institute in Kingston
University of Rhode Island
Kingston, RI 02881

email: beth_johnson@nps.gov
phone (401) 874-7060
Fax: (401) 874-4561

2. For the Cooperator:

Kenneth J. Metzler
State Geological & Natural History Survey of Connecticut
Department of Environmental Protection

79 Elm Street
Hartford, CT 06106
kenneth.metzler@po.state.ct.us
860 424-3585 (voice)
860 424-4058 (fax)

David K. Leff
Deputy Commissioner
Connecticut Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106
860.424.3005 (voice)
860.424.4070 (FAX)
david.leff@po.state.ct.us

- B. Communications - The Cooperator will address any communication regarding this Agreement to the Service key official.
- C. Changes in Key Officials - Neither the Service nor the Cooperator may make any permanent change in a key official without written notice to the other party reasonably in advance of the proposed change. The notice will include a justification with sufficient detail to permit evaluation of the impact of such a change on the scope of work specified within this Agreement. Any permanent change in key officials will be made only by modification to this Agreement.

ARTICLE VI – AWARD AND PAYMENT

A work plan and budget specifying the tasks the Connecticut Geological and Natural History Survey, Natural Diversity Data Base will accomplish during the term of this Agreement are attached to this Agreement. The NPS will award funds to the Cooperator on a reimbursable basis, based on the attached work plan and budget.

Payment shall be made no more frequently than monthly and will be paid by Electronic Fund Transfer directly into the Cooperator's account located at the financial institution as designated on Standard Form 3881 (Attachment E of Article XIII).

The chargeable appropriation for this Agreement is account number 2111-NII. Nothing in this Agreement shall be construed as binding the NPS to expend in any fiscal year any sum in excess of the appropriation made by Congress for purposes of this Agreement in that fiscal year.

The Cooperator shall contribute its standard indirect cost rate as services-in-kind support according to the workplan and budget attached.

The Cooperator will submit requests for reimbursement on Standard Form 270 (SF-270), Request for Advance or Reimbursement, original and two copies, to the Service key official. Payment will be made no more frequently than quarterly and will be paid by Electronic Funds Transfer.

ARTICLE VII – PRIOR APPROVAL

The Cooperator shall obtain prior written approval of the Service for the items specified in 43 CFR §12.70.

ARTICLE VIII - LIABILITY

The Cooperator agrees:

- A. To indemnify, save and hold harmless, and defend the United States against all fines, claims, damages, losses, judgments, and expenses arising out of, or from, any act or omission of the Cooperator, its officers, employees, or (members, participants, agents, representatives, agents as appropriate) arising out of or in any way connected to activities authorized pursuant to this Agreement. This obligation shall survive the termination of this Agreement.

[In the event the state or local government law prohibits the state or local government partner from indemnifying, use the following alternate language for Paragraph (A).]

- A. To accept responsibility for any property damage, injury, or death caused by the acts or omissions of their employees or representatives, acting within the scope of their employment arising under this Agreement, to the fullest extent permitted by law.
- B. To provide workers' compensation protection to Cooperator officers, employees, and representatives.
- C. To pay the United States the full value for all damage to the lands or other property of the United States caused by the Cooperator, its officers, employees, or representatives.
- D. In the event of damage to or destruction of Service buildings and facilities assigned for the use of the Cooperator in whole or in part by any cause whatsoever, nothing herein contained shall be deemed to require the Service to replace or repair the buildings or facilities. If the Service determines in writing, after consultation with the Cooperator, that damage to the buildings or portions thereof renders such buildings unsuitable for continued use by the Cooperator, the Service shall assume sole control over such buildings or portions thereof. If the buildings or facilities rendered unsuitable for use are essential for conducting operations authorized under this Agreement, then failure to substitute and assign other facilities acceptable to the Cooperator will constitute termination of this Agreement by the Service.

- E. To cooperate with the Service in the investigation and defense of any claims that may be filed with the Service arising out of the activities of the Cooperator, its agents, and employees.

ARTICLE IX – REPORTS AND/OR DELIVERABLES

- A. **Where to Submit** – In accordance with 43 CFR Part 12, the Cooperator will submit the financial reports to the NPS Contracting Officer at the address specified in Article V. The Cooperator also will submit a copy of each technical report to the Key Official of the area at the address specified in Article V.
- B. **What and When to Submit** – The Cooperator will submit to the NPS the following reports at the specified times:
1. **Financial Status Report** – An SF-269, Financial Status Report, annually, prior to each anniversary date of this Agreement.
 2. **Technical Progress Reports** – An annual progress report must be submitted by October 1 to allow inclusion of progress in the Annual Administrative Report and Work Plan. Each annual progress report will include:
 - (a) A summary of overall progress on the work plan, including results to date;
 - (b) Any problems or favorable or unfavorable developments;
 - (c) Other information pertinent to this Agreement.
 3. **Final Technical Report** – A final report will be provided to the Key Official according to the schedule of deliverables as described in the attached workplan and budget. Deliverables may include, but not be restricted to, performance and technical reports, oral briefings, photographs, slides, maps, and data.
- C. **Recordkeeping** – The Cooperator will keep records concerning this Agreement in accordance with the requirements of Article XII, Paragraph A, General Provisions, and all applicable Office of Management and Budget Circulars.

A. Access to Records

The Cooperator will give the NPS and the Comptroller General of the United States, or any authorized representative, access to and the right to examine all records related to this Agreement.

The NPS will give the Cooperator or any authorized representative the right to examine any records related to this Agreement that otherwise would be available to the Cooperator under the *Freedom of Information Act*, 5 U.S.C. § 552.

ARTICLE X – PROPERTY UTILIZATION

Any tools, equipment, and facilities furnished by the Service will be on a loan basis and will be returned in the same condition received except for normal wear and tear in project use. The Cooperator will utilize, manage, and dispose of property funded by this Agreement as specified in 43 *CFR* §12.71 through 12.73. The specific method for disposition of equipment acquired by the Cooperator with funds obligated by Task Agreements under this Cooperative Agreement will be mutually agreed to prior to any disposition.

ARTICLE XI – MODIFICATION AND TERMINATION

- A. This Cooperative Agreement may be modified only by a written instrument executed by the parties.
- B. Either party may terminate this Cooperative Agreement by providing the other party with thirty (30) days advance written notice. In the event that one party provides the other party with notice of its intention to terminate, the parties will meet promptly to discuss the reasons for the notice and to try to resolve their differences.

ARTICLE XII - GENERAL AND SPECIAL PROVISIONS

A. General Provisions

- 1. **OMB Circulars and other Regulations** - The following OMB Circulars and other regulations are incorporated by reference into this Cooperative Agreement:
 - (a) *OMB Circular A-87*, "Cost Principles for State, Local, and Indian Tribal Governments."
 - (b) *OMB Circular A-97*, "Provisions for Specialized and Technical Services to State and Local Governments."
 - (c) *OMB Circular A-102*, as codified by 43 *CFR Part 12*, Subpart C, "Uniform Administrative Requirements for Grants-in-Aid to State Governments."
 - (d) *OMB Circular A-133*, "Audits of States, Local Governments, and Non-Profit Organizations."
 - (e) *FAR Clause 52.203-12*, Paragraphs (a) and (b), "Limitation on Payments to Influence Certain Federal Transactions."
- 2. **Non-Discrimination** - All activities pursuant to this Agreement shall be in compliance with the requirements of Executive Order 11246; Title VI of the *Civil Rights Act of 1964*, as amended, (78 Stat. 252; 42 U.S.C. §§ 2000d et seq.); Title V,

Section 504 of the *Rehabilitation Act of 1973*, as amended, (87 Stat. 394; 29 U.S.C. §794); the *Age Discrimination Act of 1975* (89 Stat. 728; 42 U.S.C. §§ 6101 *et seq.*); and with all other federal laws and regulations prohibiting discrimination on grounds of race, color, sexual orientation, national origin, disabilities, religion, age, or sex.

3. **Lobbying Prohibition** - 18 U.S.C. § 1913, Lobbying with Appropriated Moneys - No part of the money appropriated by any enactment of Congress shall, in the absence of express authorization by Congress, be used directly or indirectly to pay for any personal service, advertisement, telegram, telephone, letter, printed or written matter, or other device, intended or designed to influence in any manner a Member of Congress, to favor or oppose, by vote or otherwise, any legislation or appropriation by Congress, whether before or after the introduction of any bill or resolution proposing such legislation or appropriation; but this shall not prevent officers or employees of the United States or of its departments or agencies from communicating to Members of Congress on the request of any Member or to Congress, through the proper official channels, requests for legislation or appropriations which they deem necessary for the efficient conduct of the public business.
4. **Anti-Deficiency Act** - 31 U.S.C. § 1341 - Nothing contained in this Agreement shall be construed as binding the Service to expend in any one fiscal year any sum in excess of appropriations made by Congress for the purposes of this Agreement for that fiscal year, or other obligation for the further expenditure of money in excess of such appropriations.
5. **Minority Business Enterprise Development** - *Executive Order 12432* - It is national policy to award a fair share of contracts to small and minority firms. The Service is strongly committed to the objectives of this policy and encourages all recipients of its Cooperative Agreements to take affirmative steps to ensure such fairness by ensuring procurement procedures are carried out in accordance with 43 CFR § 12.944 for Institutions of Higher Education, Hospitals and Other Non-Profit Organizations, and 43 CFR § 12.76 for State and Local Governments.

B. Special Provisions

Publication of results of studies

No party will unilaterally publish a joint publication without consulting the other party. This restriction does not apply to popular publication of previously published technical matter. Publications pursuant to individual Task Agreements under this Cooperative Agreement may be produced independently or in collaboration with others, however, in all cases proper credit will be given to the efforts of those parties' contribution to the publication. In the event no agreement is reached concerning the manner of publication or interpretation of results, either party may publish data after due notice and submission of the proposed manuscripts to the other. In such instances, the party publishing the data will give due credit to the cooperation but assume full responsibility for any statements on which there is a difference of opinion.

Websites applicable to this Agreement:

OMB Circulars: <http://www.whitehouse.gov/omb/circulars>

Federal Acquisition Regulations (FAR): www.arnet.gov

ARTICLE XIII --- ATTACHMENTS

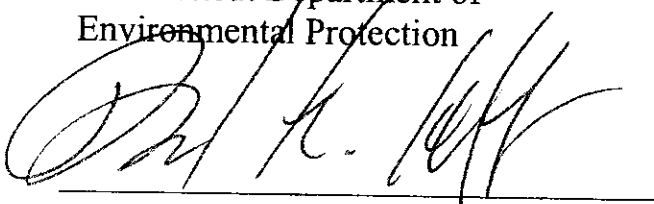
In addition to the attachments previously specified in this Agreement, the following documents, provided by Connecticut Department of Environmental Protection, Geological and Natural History Survey attached to and made part of this Agreement.

- A. The Cooperator's Work Plan and Budget
- B. Standard Form 424, "Application for Federal Assistance" (Incorporated by reference).
- C. Form SF-424A, "Budget Information" (incorporated by reference).
- D. DI-2010
- E. Standard Form 3881.

ARTICLE XIV - SIGNATURES

IN WITNESS HEREOF, the parties hereto have executed this Cooperative Agreement on the latter date set forth below.

Connecticut Department of
Environmental Protection



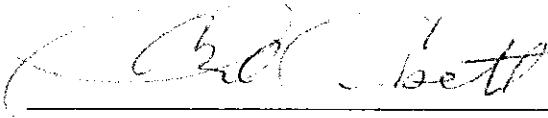
7/10/03

Date

David K. Leff
Deputy Commissioner
Connecticut Department of Environmental
Protection
79 Elm Street
Hartford, Connecticut 06106
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860.424.4070 (FAX)

david.leff@po.state.ct.us

THE NATIONAL PARK SERVICE



8/13/03
Date

~~CHERYL CORBETT~~
~~Lorna Gunning~~, Contracting Officer
Northeast Region
National Park Service
15 State Street
Boston, MA 02109

**Vegetation Classification and Mapping of
Weir Farm National Historic Site
Ridgefield/Wilton, Connecticut**

Proposal and Scope of Work

**Connecticut Geological and Natural History Survey
Department of Environmental Protection
79 Elm Street
Hartford, Connecticut 06106**

April 2003

OBJECTIVE

To classify and map the vegetation and ecological habitat types of Weir Farm National Historic Site in Ridgefield/Wilton Connecticut with the major objective to provide the National Park Service with the floristic and ecological information necessary for future inventories, monitoring, and the management of the natural resources within the Site.

INTRODUCTION

Congress established the Weir Farm National Historic Site in 1990 with the major purpose to preserve and interpret the historically significant properties and landscapes associated with the life and work of J. Alden Weir. The Weir Farm Site is a consortium of conservation efforts by private citizens, the State of Connecticut, and most recently, the National Park Service (NPS). Adjoining the Site is additional open space, owned in part by The Nature Conservancy (TNC), the Town of Ridgefield, and the State of Connecticut.

Since 1976, the Weir Farm area has received considerable ecological attention starting with an initial ecological inventory of the adjoining TNC Weir Nature Preserve (Peterson, *et al.* 1976). This was followed by a preliminary ecological survey of the main portion of the Weir Farm National Historic Site (Natural Diversity Data Base 1991) as part of the development of the Weir Farm General Management Plan (1995). Both of these inventories described the vegetation and ecological habitat types of their study areas and provided a generalized map depicting the distribution of the vegetation and habitat types for their appropriate area. More recently, a botanical inventory of the Weir Farm Site was conducted by the Brooklyn Botanical Garden (Glenn 1998), in which several, previously unrecorded State-listed plants were found.

Presently, the Connecticut Geological and Natural History Survey is preparing a vegetation classification for Connecticut (Metzler and Barrett 2003). This classification is closely associated with the National Vegetation Classification (NVC), a system developed by TNC, NatureServe, and the fifty State Natural Heritage Programs, and is the mapping standard selected by NPS for this project.

Given our familiarity of the Weir Farm Site and the wealth of data that is housed in the Natural Diversity Data Base files, we propose to describe and map the vegetation and

ecological habitats types of Weir Farm National Historic Site following the sampling methods and mapping standards developed by TNC for the USGS/NPS Vegetation Mapping Program. Any variation from guidelines due to time, budget, or other constraints will be documented. Details of the methodology and the proposed products are outlined below:

METHODS

1. Conduct site reconnaissance visits and meet with Service staff (DEP Staff & contractor).

- NDDDB Staff and contractor will meet with Weir Farm staff to discuss the project's scope and purpose, to learn of any special NPS staff needs, and to gather available site information.
- During these visits, reconnaissance tours will be undertaken to become familiar with broad ecological patterns of Weir Farm and to discuss any special NPS staff needs on site.

2. Compile and assess background information (DEP Staff).

- All existing NPS and NDDDB information will be reviewed to identify the potential NVC vegetation types that occur on the Weir Farm Site and to prioritize the field inventory. This information will help us ensure that all natural community types identified in previous surveys are sampled and that any exemplary occurrences are identified.
- Digital ortho-corrected aerial photos supplied by NPS will be interpreted to identify the major ecological gradients and habitat types at the Weir Farm Site. Collateral data in both digital and hard copy formats will also be reviewed to supplement these interpretations: *e.g.* soil maps (USDA Natural Resource Conservation Service Digital maps), bedrock and surficial geology maps (Connecticut Department of Environmental Protection and U.S. Geological Survey digital data and maps), wetland maps (National Wetlands Inventory Maps), NDDDB data, 1995 digital ortho-corrected quadrangles, and 2000 1:12,000 B&W aerial photos.

3. Collect transect and plot data (DEP Staff & contractor).

- After reviewing and interpreting the aerial photographs and collateral information, transects will be established perpendicular to topographic and hydrologic gradients. Information on vegetation structure, species composition, and habit conditions will be collected in each area of uniform habitat along these transects. Repetitive areas of uniform habitat will form the basis for plot sampling. Unique and other obviously different areas will be sampled with plots as well.
- Plots will be sampled using the established standards adopted by the international network of Natural Heritage Programs and the USGS/NPS Vegetation Mapping Program (Grossman *et al.* 1998, Sneddon 1994). Plot size will be determined by physiognomic type following the guidelines outlined in Mueller-Dumbois and Ellenberg (1974). Minimally, one plot will be sampled for all significant vegetation types within the Weir Farm Site. Plots will also be sampled in cases where type classification is problematic. Minimum plot data will include plant species composition and sociability for all vegetative strata, and soil information such as texture, drainage, moisture regime, pH, depth to bedrock or other restrictive layer, and depth of wetland organic material. Additional data will include notes on surficial materials, slope, aspect, elevation, presence and abundance of non-native invasive species, and other disturbances as appropriate. All plots and observation points will be recorded using GPS.

4. **Produce a preliminary vegetation and ecological habitat classification** (DEP Staff & contractor).
 - NDDB staff will assign NVC associations types to the Weir Farm Site based on field assessments and statistical analyses. Plot data will also be compared to the draft Connecticut Vegetation Classification (Metzler and Barrett 2003) for NVC type identification. Since the Connecticut classification is closely cross-walked to NVC, local descriptions may help in the assignment of marginal plots. All anomalous or otherwise unassignable plots will be further analyzed using statistical method for comparison.
5. **Perform statistical analyses of plot data as needed to ensure accurate classification of types encountered** (DEP Staff & contractor).
 - Pertinent plot data will be entered into an Excel spreadsheet for analysis using one of several analytical programs available in the PC-ORD version 4.0 Multivariate Analysis package (McCune and Mefford 1999). Statistical analyses may help clarify any classification issues. Any new or apparently new associations resulting from this analysis will be discussed with and approved by NatureServe staff prior to inclusion on the final map.
6. **Produce a final classification** (DEP Staff & contractor).
 - Following comparison of the plot data with NVC and the Connecticut Vegetation Classification, and any statistical analysis of problematic plots, a final classification will be proposed. This classification may include vegetation units at the association or sub-association level, as approved by NPS, and an ecological habitat classification for additional types.
7. **Develop preliminary digital maps of NVC associations and ecological habitats** (DEP Staff & contractor).
 - Preliminary vegetation maps will be produced by delineating preliminary polygons on aerial photos supplied by the National Park Service and color infrared National Aerial Photography Program photos using a stereoscope and mylar overlays. Minimum vegetation mapping units will be 0.5 ha, except for unique vegetation types that occur only in small patches (bogs, glades, vernal pools, etc.).
 - These polygons will then be screen-digitized on ortho-corrected aerial photos supplied by the National Park Service. This will produce a preliminary digital map of National Vegetation Classification associations and ecological habitats at the Weir Farm Site. Screen digitizing will allow the simultaneous use of aerial photography and supplemental digital data layers that are useful in delineating National Vegetation Classification association boundaries, including USGS quadrangle maps, road coverage, hydrographic coverage, soils coverage, and NPSW property boundaries. All polygons will be attributed with a code at the time of digitizing.
 - Preliminary vegetation maps will be made for the entire Weir Farm Sites and for any additional area requested by the NPS staff.
8. **Produce a final vegetation map** (DEP Staff & contractor).
 - The preliminary draft vegetation maps will be finalized based on ground truthing the preliminary polygons and adjusting their boundaries as appropriate. On-the-ground GPS point, lines, and polygons will additionally substantiate the map boundaries. When significant natural community polygons extend beyond National Park Service property

boundaries, NY Natural Heritage will use aerial photo interpretation to digitize each occurrence's full extent.

- The attribute table for each polygon will then be automatically populated with area (m2), perimeter (m), and total acres data using an ArcView script. As a final step, the ArcView shapefile will be converted to an ArcInfo polygon coverage through the use of the SHAPEARC and REGIONPOLY commands in ArcInfo. The final digital product will include a shapefile, an ArcInfo polygon coverage, and a DBF file containing information on each National Vegetation Classification association.
9. **Complete final project report** (DEP Staff & contractor).
- NDDDB will deliver a final report for the Weir Farm National Historic Site that includes: methods of study; results, including a description of each NVC associations and ecological habitat identified; the location, population size, and viability of any State or Federal-listed plant species identified; site descriptions and management recommendations for anthropological natural habitats; and a discussion on the distribution, threats, and management recommendations for non-native invasive plant species. Paper maps of National Vegetation Classification associations and ecological habitats will be included as an appendix. All polygons, attribute tables, and metadata will be delivered on CD in ArcView 3.2 format or other ArcInfo format acceptable to the Service and in a projection compatible for Service needs. GPS locations of all sample plots and observation points will be provided as part of the attribute files. Field plot data will be provided in a format for entry into the USGS/NPS Vegetation Mapping Program Plots Database.
 - All digital geospatial data developed for this project will have Federal Geographic Data Committee (FGDC) compliant metadata in digital form. The metadata will be parsed using the metadata parser provided by the FGDC (<http://www.fgdc.gov>) or the FGDC Metadata Editor in ESRI ArcGIS software. The metadata will be supplied as ASCII text with a .txt extension, hypertext markup language with a .html extension, and standard general markup language with a .sgml extension.
 - Pertinent data collected during this study will also be integrated into the NDDDB files, which may be used in the future to refine the National Vegetation Classification and the Connecticut Vegetation Classification. All State-listed species occurrences will be documented using standard NDDDB Rare Plant Field Forms with all pertinent information entered into the NDDDB Biotics database.

SCHEDULE & DELIVERABLES

Deliverables and invoices will be delivered as follows:

June – December 2003

Compile background data, conduct reconnaissance visits, collect plot and observation point data, analyze observations and field data, prepare preliminary map and report.
Submit invoice for \$6,900.00.

January – June 2004

Produce final classifications and maps, conduct accuracy assessment, and complete final reports.
Submit final invoice \$6,000.00.

BUDGET

Personnel - contractual	
Plant Ecologist (20 days @ \$280/day)	\$5,600.00
GIS Specialist (10 days @ \$280/day)	2,800.00
Equipment and software upgrades -	
PC-ORD Upgrade, CANOCO upgrade	200.00
Trimble GIS TSCe field device	4,300.00
Project Total	\$ 12,900.00

EQUIPMENT JUSTIFICATION

The TSCe field device, running Terra Sync Software, utilizes a real-time map display that supports raster images (ortho photos, digital topographic images, etc), ArcView shapefiles, and existing GPS data. This equipment will enhance our ability to map the vegetation of Weir Farm National Historic Site in the field, as the field data will be simultaneously displayed on existing orthophotos and/or other digital collateral maps (geology, soils, hydrography, etc.). As a result, mapping and field verification decisions are made with much less duplicity of effort.

REFERENCES

- Glenn, S.D. 1998. Weir Farm National Historic Site – Vascular Plant Survey 1996 –1997. Unpublished report. Brooklyn Botanical Garden. New York.
- Grossman, D.H., D. Faber-Langendoen, A.S. Weakley, M. Anderson, P. Bourgeron, R. Crawford, K. Gooden, S. Landaal, K. Metzler, K. Patterson, M. Pyne, M. Reid, and L. Sneddon. 1998. International Classification of Ecological Communities: Terrestrial Vegetation of the United States. Volume I. The National Vegetation Classification System: Development, status, and applications. The Nature Conservancy, Arlington, Virginia. 126 pp.
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