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Vanasse Hangen Brustlin, Inc.

March 11, 2008

Ref: 40999.16

Mr. Charles Regulbuto
Optasite Towers LLC
One Research Drive, Suite 200C
Westborough, MA 01581

Re: NEPA Compliance Documentation
Proposed Optasite Facility – Montano CT-999-0101
497A Wickham Road
Glastonbury, CT

Dear Mr. Regulbuto:

Vanasse Hangen Brustlin, Inc. (VHB) has been retained by Optasite Towers LLC (Optasite), to review environmental resource information outlined in 47 CFR Ch.1 § 1.1307 sections (a) and (b) for environmental consequences pursuant to the Federal Communications Commission ("FCC or Commission") requirements. Optasite is proposing to install a new wireless telecommunications facility to be located on portions of property at 497A Wickham Road in north Glastonbury, Connecticut. The facility will consist of a ±130-foot tall monopole tower within a fenced-enclosed compound area to be developed for future use by wireless service providers. Future wireless service transmission/reception antennae will be mounted to the monopole and associated ground equipment will be installed at its base. Based on current Site Plans, the first slated tenant is Omnipoint. The proposed access/utilities easement will extend in a southerly direction off of Wickham Road Extension, then in a westerly direction towards the compound area. Specifically, VHB reviewed source information outlined below to determine if the proposed facility will be located in an environmentally sensitive area.

National Environmental Policy Act (NEPA) Requirements

As a licensing agency, the FCC complies with NEPA by requiring its licensees to review their proposed actions for environmental consequences. Rules implementing NEPA are found at Title 47 of the Code of Federal Regulations (CFR), Part 1, Subpart I, rule sections 1.1301 to 1.1319.

Section 1.1305 of these rules, states that the Commission "has found no common pattern which would enable it to specify" any particular Commission action as a "major action" under NEPA. Thus, section 1.1306 of the Rules "categorically excluded from environmental processing" all Commission actions except for those specifically identified in section 1.1307. If a licensee's proposed action falls within one of the categories of 1.1307, section 1.1308(a) requires the licensee to consider the potential environmental effects from its construction of antenna facilities or structures, and disclose those effects in an environmental assessment (EA) which is filed with the Commission for review.

54 Tuttle Place
Middletown, Connecticut 06457-1847
860.632.1500 ▪ FAX 860.632.7879
email: info@vhb.com
www.vhb.com

VHB has reviewed the following source information for identification, location, and impacts to environmentally sensitive areas:

1. **Officially designated wilderness areas** - State of Connecticut, Department of Environmental Protection (CTDEP) Geographic Information System (GIS) data layers, CTDEP Natural Resources Center and Natural Diversity Data Base (NDDB), and United States Department of Interior – Fish and Wildlife Service (USF&WS), New England Field Office. See attached NEPA screen map prepared by VHB, letter from CTDEP, and number 3 of this list regarding USF&WS review.

2. **Officially designated wildlife preserve** – CTDEP GIS data layers, CTDEP Natural Resources Center and NDDB, and USF&WS, New England Field Office. See attached NEPA screen map, letter from CTDEP, and number 3 of this list regarding USF&WS review.

3. **Threatened or Endangered Species or designated critical habitats** – CTDEP GIS data, CTDEP's Natural Resources Center and NDDB, and USF&WS, New England Field Office. See attached NEPA screen map and letter from CTDEP. Due to the rapid expansion of the telecommunications industry, the USF&WS New England Field Office has determined that individual project review for certain types of activities associated with communication towers is not required. USF&WS has provided written project review procedures in a letter dated January 7, 2008 (attached). The proposed project area is located in Hartford County. In accordance with USF&WS New England Field Office's current review procedures, VHB subsequently conducted an investigation at the Site to determine if the project area has the potential to support habitats of federally-listed or proposed species for Hartford County. Please refer to VHB's USF&WS investigation memo attached, dated March 11, 2008. Based on VHB's investigation and USF&WS review procedures, we have determined that proposed project activities are not likely to adversely affect any federally-listed or proposed species. As a result, no further consultation with USF&WS is required.

4. **National Register of Historic Places** – State of Connecticut Commission on Culture & Tourism, State Historic Preservation Officer (SHPO); National Register and Reported Archeological Sites Connecticut Geographic Information System data layer provided by Heritage Consultants, LLC; and public notice. As part of the public notice, VHB published a legal notice in the Glastonbury Citizen newspaper on August 30, 2007, and submitted notification of the proposed project to the town of Glastonbury's municipal offices and Historic Commission on August 22, 2007. See attached NEPA screen map prepared by VHB, SHPO letter, and a copy of the public notice documents.

5. **Indian Religious Sites** - State of Connecticut, Connecticut Commission on Culture & Tourism, SHPO, National Register and Reported Archeological Sites Connecticut Geographic Information System data layer provided by Heritage Consultants, LLC, and all interested Native American Tribes (NAT) and/or Native Hawaiian Organizations (NHO) identified on FCC's online Tower Construction Notification System (TCNS). The proposed project area is not located on an American Indian federal reservation trust land; thus, consultation with the United States Department of Interior Bureau of Indian Affairs (BIA) is not necessary. VHB posted the proposed project on FCC's TCNS website on August 21, 2007 (TCNS #30363). As identified via TCNS, VHB consulted with the Mashantucket Pequot Tribe and the Narragansett Indian Tribe. See attached SHPO letter and letters from the above listed NATs. Please note that in the unlikely event that tribal artifacts or human remains are

encountered during construction activities, excavation is required to be halted immediately and the appropriate NATs and SHPO are to be contacted as pursuant to Title 47 CFR Sec. 1.1312 of the Commission's rules.

6. **Flood Plain** – Flood Insurance Rate Maps (FIRM) by Federal Emergency Management Agency (FEMA) Federal Insurance Administration, Office of Risk Assessment 50 C Street, SW Washington, DC 20472; CTDEP GIS data layer. See attached NEPA screen map prepared by VHB.

7. **Significant change in surface features** –Based on information provided by Optasite and its contractors, the proposed project does not appear to involve a significant change in surface features or result in wetland fill, deforestation or water diversion. Please see attached memo prepared by VHB dated March 10, 2008.

8. **High Intensity white lights located in residential neighborhoods** – No lighting information was provided to VHB. VHB understands that no lighting is required on this facility.

Based on the information currently available, VHB has found **that the proposed facility does not fall under any of the listed categories of Section 1.1307 under NEPA**. The NEPA checklist and NEPA screen map, which outlines the location of the site and the location of the environmental resources, and agency correspondence are attached to this letter.

Very truly yours,

VANASSE HANGEN BRUSTLIN, INC.

Nicole Dentamaro
Environmental/GIS Analyst

Attachments

Optasite

Optasite Towers, LLC.

Site Contact Name: Mr. Charles Regulbuto	Site type (*choose one*): ☒ Raw land ☐ Tower colo* ☐ Other colo*	Site Cascade ID: CT-999-0101	Site Name & Address: Montano 497A Wickham Road Glastonbury, CT

NEPA Land Use Screening Checklist

FCC NEPA Category	Consulting Agency to Contact	SSEO Document Reference	*Check appropriate box(es) below*		
			No Adverse Impact	Potential Adverse Impact	CNPA Applies Exempt From Review*
1. Designated Wilderness Areas	National Park Service, US Forest Service, Bureau of Land Management (BLM), CTDEP GIS data layers and CTDEP Natural Resources Center and Natural Diversity Data Base (NDDB), and United States Department of Interior – Fish and Wildlife Service (USF&WS), New England Field Office	Section 3.4.1	☒	☐	☐
2. Designated Wildlife Preserves	National Park Service, US Forest Service, BLM, CTDEP GIS data layers and Natural Resources Center and NDDB, and USF&WS, New England Field Office	Section 3.4.1	☒	☐	☐
3. Threatened or Endangered Species & Critical Habitats	CTDEP GIS data layers and Natural Resources Center and NDDB, and USF&WS, New England Field Office	Section 3.4.2	☒	☐	☐
4. Historic Places	State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO); Public Notice	Section 3.4.3	☒	☐	☐
5. Indian Religious Sites	SHPO, Tower Construction Notification System (TCNS) website –Native American Tribes (NATs), and/or Native Hawaiian Organizations (NHOs), Bureau of Indian Affairs (BIA)	Section 3.4.4	☒	☐	☐
6. Floodplain	Federal Emergency Management Agency (FEMA)	Section 3.4.5	☒	☐	☐
7. Wetlands & Surface Waterways	US Army Corps of Engineers (ACOE)	Section 3.4.6	☒	☐	☐
8. High Intensity White Lights in Residential Neighborhoods	Lighting information, if applicable, to be provide by client via FAA form or other relevant lighting documentation	Section 3.4.7	☒	☐	☐

**Based on the Collocation Nationwide Programmatic Agreement (CNPA), the proposed collocation project is exempt from review of the FCC NEPA Category.*

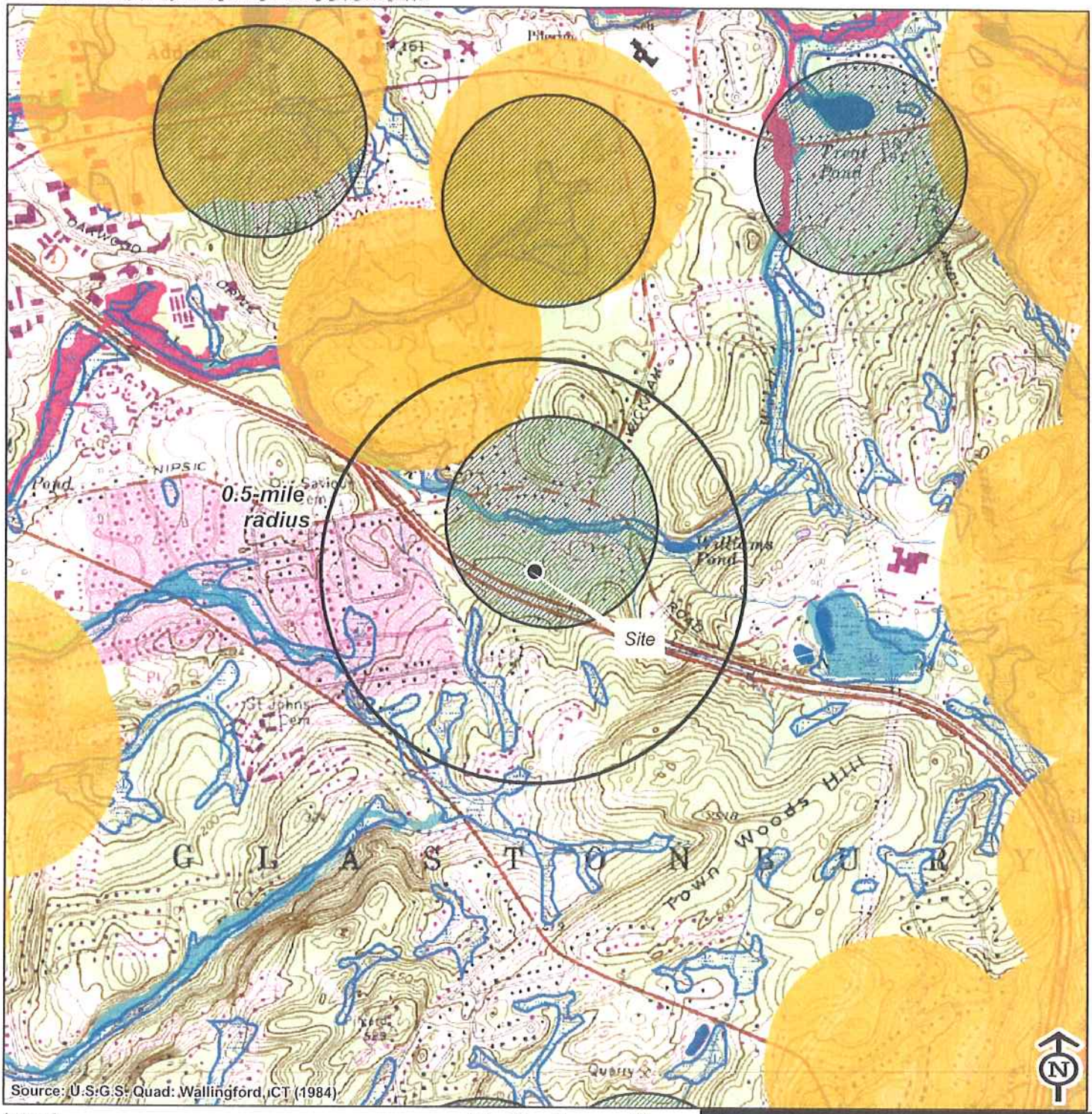
Prepared By: Nicole Dentamaro
(print name): Nicole Dentamaro

Company: Vanasse Hangen Brustlin, Inc.
Date: March 11, 2008

The undersigned has reviewed and approved this Checklist prior to commencement of site construction.

By: _____ Date: _____
Site Development Manager or Director

\\ctmiddat\projects\40989.16\graphics\figures\SiteB_Montano_Rd\wickham_rd_nepa_screen_map.pdf



Legend

- Site
- Natural Diversity Database Threatened and Endangered Species (updated December 2007, buffered)
- National Register Historic Sites*
- National Register Historic Districts*
- Reported Archaeological Sites (buffered)
- Open Water
- Wetlands

Floodplains

- 100 Year Floodplain
- 500 Year Floodplain
- Floodway

Protected Properties (CT DEP; May 2007)

- State Forest
- State Park
- DEP Owned Waterbody
- State Park Scenic Reserve
- Historic Preserve
- Natural Area Preserve
- Fish Hatchery
- Flood Control
- Other
- State Park Trail
- Water Access
- Wildlife Area
- Wildlife Sanctuary
- Protected Properties (Federal; 2002)

*none within 1/2 mile of APE

Vanasse Hangen Brustlin, Inc.

NEPA Screen Map
Proposed Optasite Facility
497A Wickham Road
Glastonbury, Connecticut

March 11, 2008

Optasite

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VHB Vanasse Hangen Brustlin, Inc.

54 Tuttle Place
Middletown, Connecticut 06457
860 632-1500
FAX 860 632-7879

Memorandum

To: Nicole Dentamaro
Environmental/GIS Analyst

Date: March 11, 2008

Project No.: 40999.16

From: Matthew Davison
Registered Soil Scientist
CT Certified Forester 193

Re: Proposed Optasite Facility
497A Wickham Road
Glastonbury, Connecticut

The following Site was evaluated with respect to possible federally-listed, threatened or endangered species in order to determine if the proposed communications facility would result in a potential adverse effect to federally-listed species. This evaluation was performed in accordance with the January 7, 2008 policy statement of the United States Department of the Interior Fish and Wildlife Service (USFWS) New England Field Office. A copy of this policy statement is enclosed for reference.

Project Site:

State: Connecticut
County: Hartford
Address: Wickham Road, Glastonbury
Latitude/Longitude Coordinates: N41°42'04.0" W72°33'50.5"
Size of Property: ±12.15 acres
Watershed: Hubbard Brook (basin # 4007)

The following federally listed endangered and threatened species occur in Hartford County according to the USFWS January 7, 2008 policy.

Common Name	Species	Status	County/General Distribution
Eagle, bald*	*Haliaeetus leucocephalus*	T	**Nesting:** Hartford, Litchfield **Wintering:** entire state, major rivers
Wedge mussel, dwarf	*Alasmidonta heterodon*	E	Hartford
Beetle, Puritan tiger	*Cicindela puritana*	T	Hartford, Middlesex (Connecticut River floodplain)
Sandplain gerardia	*Agalinus acuta*	E	Hartford

* Note: Bald Eagle was officially delisted in the lower 48 states from the List of Endangered and Threatened Wildlife (Federal Register, July 9, 2007).

Habitat Description & Proposed Facility Location

The proposed communications facility and associated infrastructure (e.g., access drive, utilities, etc.) are located on the west side of a 12.15± acre property. The west side of the property in the vicinity of the proposed facility is characterized as a mixed hardwood forest type dominated by poletimber (4 to 11 inches diameter breast height [DBH]) with scattered sawtimber (11 inches DBH and greater) occurring. Dominant tree species include red oak *(Quercus rubra)*, beech *(Fagus grandifolia)*, yellow birch *(Betula lutea)*, black birch *(Betula lenta)*, tulip poplar *(Liriodendron tulipifera)*, red maple *(Acer rubrum)* and eastern hemlock *(Tsuga canadensis)*. A forested wetland system consisting of an unnamed, shallow perennial watercourse and associated bordering wetlands transects the property from south to north. In addition to containing the aforementioned tree species, portions of this wetland system are vegetated with emergent species such as skunk cabbage *(Symplocarpus foetidus)*, sensitive fern *(Onoclea sensibilis)* and cinnamon fern *(Osmunda cinnamomea)*. The watercourse receives inputs from associated bordering hillside seeps as well as runoff from Route 2. Evidence of road runoff and stormwater inputs are apparent in the presence of alluvial (road) sand deposits on terraces above the eroded stream channel. The eastern portion of the property contains clearings associated with existing houses and a motorcycle track. The proposed access road would enter the property in the northeast corner, south of the existing driveway. The access road would generally follow the east and south property boundary lines, within a narrow forested strip adjacent to cleared areas, before entering the forested portion of the lot east of the riparian corridor. The access road would cross the watercourse (a 10 foot wide channel) and associated bordering wetlands, a distance of approximately 52 linear feet, before entering the facility compound located west of the riparian corridor.

Dwarf Wedge Mussel

Dwarf wedge mussel is a small (shell rarely exceeds 1.5 inches) freshwater mussel occurring on muddy sand, sand, and gravel bottoms in creeks and rivers of varying sizes, in areas of slow to moderate current and little silt deposition.[1] Its reproductive cycle is typical of other freshwater mussels and requires a host fish on which its larvae (glochidia) parasitize and metamorphose into juvenile mussels, at which time they drop to the stream bed.[2] The decline of dwarf wedge mussel may be the forerunner of a general decline in mussel species of the Atlantic slope drainages[3]. Factors that may be contributing to the decline of dwarf wedge mussel include: impoundment of waterways, siltation, pollution, land use changes and geographic isolation resulting in genetic bottlenecking[4]. Only one known population currently exists in Connecticut, in a one mile stretch of the Muddy Brook in Hartford County. This population is described as poor and is not reproducing.[5]

The proposed access road for the telecommunications facility will require a crossing of an unnamed perennial watercourse. Dwarf wedge mussel is known to occur in only one location in Connecticut (Muddy Brook). It is susceptible to siltation and pollutants and requires a host fish species to complete its reproductive cycle. The perennial watercourse located on the subject property is a shallow system consisting of a scoured channel, with a hydrology driven largely by stormwater events. Evidence of alluvial deposits on adjacent stream terraces indicate that road runoff from Route 2 is likely entering this system. In addition, due to the shallow nature of this watercourse, as well as upstream and downstream impoundments, this portion of the system is unlikely to support a viable fish population. Therefore, the Site watercourse is unlikely to support dwarf wedge mussel habitat and the proposed development will not result in an adverse impact to this listed species.

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[1] United States, U.S. Fish and Wildlife Service, Northeast Region, Dwarf Wedge Mussel Recovery Plan (Hadley: Region Five, 1993), pg. 2.
[2] "Dwarf wedge mussel," 18 Dec. 2007 http://en.wikipedia.org/wiki/Dwarf_wedge_mussel.
[3] United States, U.S. Fish and Wildlife Service, Northeast Region, Dwarf Wedge Mussel Recovery Plan (Hadley: Region Five, 1993), pg. 11.
[4] United States, U.S. Fish and Wildlife Service, Northeast Region, Dwarf Wedge Mussel Recovery Plan (Hadley: Region Five, 1993), pgs. 11-19.
[5] United States, U.S. Fish and Wildlife Service, Northeast Region, Dwarf Wedge Mussel Recovery Plan (Hadley: Region Five, 1993), pg. 20.

Puritan Tiger Beetle

Puritan tiger beetle is a medium-sized (11.5 to 12.4mm) terrestrial beetle of the family Cicindelidae.[6] Like many tiger beetles, this species has very specific habitat requirements.[7] The only known extant population of this species in Connecticut occurs on the Connecticut River in Cromwell.[8] The larvae utilize burrows located among scattered herbaceous vegetation at the upper portions of sandy beaches and occasionally near the water's edge.[9] Adults are likely to be found on sediment deposits along large river bends[10].

The proposed communications facility and associated infrastructure (e.g., access drive, utilities, etc.) are not located within or near habitats that have the potential to support the Puritan tiger beetle. The watercourse located on the subject property does not contain sandy beaches or sediment deposits that could provide suitable habitat for this species. Therefore, the Site is unlikely to support Puritan tiger beetle habitat and the proposed development will not result in an adverse impact to this listed species.

Sandplain gerardia

Sandplain gerardia is an annual pale green herb, from 5.0 cm to 30.0 cm tall and occasionally up to 40.0 cm tall.[11] Leaves are opposite, linear, scabrous above and up to 2.5 cm long. The pink or puple flowers, which appear from mid-August to mid-October, are 1.0 cm to 1.3 cm long and borne on slender pedicels 1.0 cm to 2.0 cm long. It typically occurs on dry, sandy, nutrient-poor soils of sparsely vegetated sandplain environments and serpentine barrens, whose harshness may eliminate potentially competitive species.[12] While potential habitat for this species exists in Connecticut, no known extant populations are known to occur.

The proposed communications facility and associated infrastructure (e.g., access drive, utilities, etc.) are not located within or near habitats that have the potential to support sandplain gerardia. Upland soils on the property include Wethersfield and Ludlow soil types. These soils contain a nutrient rich surface horizon capable of growing a wide variety of vegetation. Therefore, since the Site is unlikely to provide sandplain gerardia habitat, the proposed development will not result in an adverse impact to this listed species.

[6] United States, U.S. Fish and Wildlife Service, Northeast Region, Puritan Tiger Beetle Recovery Plan (Hadley: Region Five, 1993), pg 8.
[7] United States, U.S. Fish and Wildlife Service, Northeast Region, Puritan Tiger Beetle Recovery Plan (Hadley: Region Five, 1993), pg. 10.
[8] United States, U.S. Fish and Wildlife Service, Northeast Region, Puritan Tiger Beetle Recovery Plan (Hadley: Region Five, 1993), pg 5.
[9] United States, U.S. Fish and Wi0ldlife Service, Northeast Region, Puritan Tiger Beetle Recovery Plan (Hadley: Region Five, 1993), pg 10.
[10] United States, U.S. Fish and Wildlife Service, Northeast Region, Puritan Tiger Beetle Recovery Plan (Hadley: Region Five, 1993), pg. 11.
[11] United States, U.S. Fish and Wildlife Service, Northeast Region, Sandplain Gerardia Recovery Plan (Hadley: Region Five, 1989), pg 1.
[12] United States, U.S. Fish and Wildlife Service, Northeast Region, Sandplain Gerardia Recovery Plan (Hadley: Region Five, 1989), pg. 12.

USFWS January 7, 2008 Telecommunications Policy Statement

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

January 7, 2008

To Whom It May Concern:

The U.S. Fish and Wildlife Service's (Service) New England Field Office has determined that individual project review for certain types of activities associated with communication towers **is not required.** These comments are submitted in accordance with provisions of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Due to the rapid expansion of the telecommunication industry, we are receiving a growing number of requests for review of **existing** and **new** telecommunication facilities in relation to the presence of federally-listed or proposed, threatened or endangered species, critical habitat, wilderness areas and/or wildlife preserves. We have evaluated our review process for proposed communications towers and believe that individual correspondence with this office is not required for the following types of actions relative to **existing** facilities:

1. the re-licensing of existing telecommunication facilities;
2. audits of existing facilities associated with acquisition;
3. routine maintenance of existing tower sites, such as painting, antenna or panel replacement, upgrading of existing equipment, etc.;
4. co-location of new antenna facilities on/in existing structures;
5. repair or replacement of existing towers and/or equipment, provided such activities do not significantly increase the existing tower mass and height, or require the addition of guy wires.

In order to curtail the need to contact this office in the future for individual environmental review for **existing** communication towers or antenna facilities, please note that we are not aware of any federally-listed, threatened or endangered species that are being adversely affected by any existing communication tower or antenna facility in the following states: Vermont, New Hampshire, Rhode Island, Connecticut and Massachusetts. Furthermore, we are not aware of any **existing** telecommunication towers in federally-designated critical habitats, wilderness areas or wildlife preserves. Therefore, no further consultation with this office relative to the impact of the above referenced activities on federally-listed species is required.

Future Coordination with this Office Relative to **New** Telecommunication Facilities

We have determined that proposed projects are not likely to adversely affect any federally-listed or proposed species when the following steps are taken to evaluate new telecommunication facilities:

1. If the facility will be installed within or on an existing structure, such as in a church steeple or on the roof of an existing building, no further coordination with this office is necessary. Similarly, new antennas or towers in urban and other developed areas, in which no natural vegetation will be affected, do not require further review.

2. If the above criteria cannot be met, your review of the attached lists of threatened and endangered species locations within Vermont, New Hampshire, Rhode Island, Connecticut and Massachusetts may confirm that no federally-listed endangered or threatened species are known to occur in the town or county where the project is proposed.

3. If a listed species is present in the town or county where the project is proposed, further review of our enclosed lists of threatened and endangered species may allow you to conclude that suitable habitat for the species will not be affected. Based on past experiences, we anticipate that there will be few, if any, projects that are likely to impact piping plovers, roseate terns, bog turtles, Jesup's milk-vetch or other such species that are found on coastal beaches, riverine habitats or in wetlands because communication towers typically are not located in these habitats.

For projects that meet the above criteria, there is no need to contact this office for further project review. A copy of this letter should be retained in your file as the Service's determination that no listed species are present, or that listed species in the general area will not be affected. Due to the high workload associated with responding to many individual requests for threatened and endangered species information, we will no longer be providing response letters for activities that meet the above criteria. This correspondence and the enclosed species lists remain valid until January 1, 2009. Updated consultation letters and species list are available on our website:

(http://www.fws.gov/northeast/newenglandfieldoffice/EndangeredSpec-Consultation.htm)

Thank you for your cooperation, and please contact me at 603-223-2541 for further assistance.

Sincerely yours,

Anthony P. Tur

Anthony P. Tur
Endangered Species Specialist
New England Field Office

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN CONNECTICUT

There is no federally-designated Critical Habitat in Connecticut. The following are federally-listed species by county:

Common Name	Species	Status	County/General Distribution
Shortnose sturgeon[1]	*Acipenser brevirostrum*	E	Atlantic coastal waters and Connecticut River
Indiana bat	*Myotis sodalis*	E	New Haven/hibernaculum
Bald eagle	*Haliaeetus leucocephalus*	D[2]	**Nesting**: Hartford, Litchfield, Middlesex, New Haven, New London, Tolland **Wintering**: entire state, major rivers
Piping plover	*Charadrius melodus*	T	**Nesting**: Fairfield, Middlesex, New Haven, New London (coastal beaches only) **Migratory:** Atlantic Coast
Roseate tern	*Sterna dougallii dougallii*	E	**Nesting**: New Haven (Faulkner Island) **Migratory:** Atlantic Coast
Bog turtle	*Clemmys muhlenbergii*	T	Fairfield, Litchfield
Dwarf wedgemussel	*Alasmidonta heterodon*	E	Hartford (Connecticut River watershed)
Puritan tiger beetle	*Cicindela puritana*	T	Hartford, Middlesex (Connecticut River floodplain)
Northeastern beach tiger beetle	*Cicindela dorsalis dorsalis*	T	Coastal beaches/extirpated
Small whorled pogonia	*Isotria medeoloides*	T	Litchfield, New Haven
Sandplain gerardia	*Agalinus acuta*	E	Hartford
Chaffseed	*Scwalbea americana*	E	New London/historic

[1] Principal responsibility for this species is vested with the National Marine Fisheries Service.
[2] Delisted. Protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

9/27/2007

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WILDLIFE DIVISION

SESSIONS WOODS WILDLIFE MANAGEMENT AREA
P.O. BOX 1550 • BURLINGTON, CT 06013 - 1550
TELEPHONE (860) 675-8130 • FAX (860) 675-8141

October 10, 2007

Ms. Nicole Dentamaro
Vanasse Hangen Brustlin, Inc.
54 Tuttle Place
Middletown, CT 06457-1847

Re: Proposed cell tower and associated facilities at 497A Wickham Road in Glastonbury, Connecticut

Dear Ms. Dentamaro:

I apologize for the confusion with regard to the letter dated 10/3/07 that was sent to you referencing the proposed cell tower in Litchfield. Although the information in the body of the letter was correct, that reference should have indicated the proposed cell tower at 497A Wickham Road in Glastonbury. Please replace the 10/3/07 letter with this version.

Materials pertaining to the above project were forwarded to me for review by the DEP Natural Diversity Database (NDDB) on 9/14/07. The NDDB indicated that the state-species of special concern brown thasher (*Toxostoma rufum*) occurs in the vicinity of proposed "Candidate B" site.

The brown thrasher nests in brushy second-growth tangles, briers and dense thickets. Its breeding season is approximately from April through August. It is during this time that it is most susceptible to disturbance in its feeding and nesting habitat. Minimizing impacts to shrubby habitats during this time period will likewise minimize impacts to this species. From the description you provided of the primary vegetation type on-site (wooded), this project is unlikely to have a direct negative impact to this state-listed species.

It appears from the materials I received that the height and style of the proposed tower are consistent with current recommendations for minimizing bird strikes. Tower lighting and lighting of the equipment shelter and metering areas should be minimized to the greatest extent possible.

The Wildlife Division has not made an on-site inspection of the project area. Consultation with this office should not be substituted for site-specific surveys that may be required for environmental assessments. This is a preliminary site review and is not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to the DEP for the proposed site. Please be advised that should state permits be required or should state involvement occur in some other fashion, specific restrictions or conditions relating to the species discussed above may apply. In this situation, additional evaluation of the proposal by the DEP Wildlife Division should be requested and species-specific surveys may be required.

Please feel free to contact me if you have additional questions regarding brown thrashers. Again, please accept my apologies for any confusion arising from my previous correspondence.

Sincerely,

Jenny Dickson
Wildlife Biologist

JD/ls
cc: D. McKay – 15651

RECEIVED
VANASSE HANGEN BRUSTLIN, INC.

An Equal Opportunity Employer
(Printed on Recycled Paper)

LEGAL NOTICE

Optasite Towers LLC is proposing to install a new wireless telecommunications facility to be located in north central Glastonbury, Connecticut and is currently evaluating two potential properties: 58 Montano Road (Candidate A) and 497A Wickham Road (Candidate B). Depending upon which property is selected, the facility will consist of either a ±120-foot tall monopole at Candidate A or a ±150-foot tall monopole at Candidate B with antennas and support equipment. This facility will provide improved wireless coverage to select areas of Glastonbury.

Parties interested in submitting comments regarding any potential effects of the proposed facility on historic properties may do so by sending comments to Vanasse Hangen Brustlin, Inc., 54 Tuttle Place, Middletown, CT, 06457, to the attention of Nicole Dentamaro. Questions about this proposed project may be submitted via regular mail, email to ndentamaro@vhb.com, or by calling (860) 632-1500 ext. 2317.

VHB will be accepting comments and/or questions within 30 days of the date of this publication. Therefore, all comments or questions regarding this matter should be postmarked/ submitted by no later than September 29th.

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Vanasse Hangen Brustlin, Inc.

August 22, 2007

Ms. Joyce Mascena, Town Clerk
Town of Glastonbury
2155 Main Street
Glastonbury, CT 06033-6523

To comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, Optasite Towers LLC (Optasite) has retained Vanasse Hangen Brustlin, Inc. (VHB) to evaluate proposed tower facilities for any adverse effect it may have on historic properties. As part of this evaluation, and in conformance with the Nationwide Programmatic Agreement (NPA) for review of effects on historic properties for proposed undertakings, VHB is submitting this tower construction notification to the Town of Glastonbury municipal offices and Historic District Commission members.

Optasite Towers LLC is proposing to install a new wireless telecommunications facility to be located in north central Glastonbury, Connecticut and is currently evaluating two potential properties: 58 Montano Road (Candidate A) and 497A Wickham Road (Candidate B). Depending upon which property is selected, the facility will consist of either a ±120-foot tall monopole at Candidate A or a ±150-foot tall monopole at Candidate B with antennas and support equipment. This facility will provide improved wireless coverage to select areas of Glastonbury.

The purpose of this letter is to notify the Town of Glastonbury that public notice of this proposed facility will be published in the Glastonbury Citizen newspaper on Thursday, August 30, 2007 and to invite comments regarding any potential effects that the proposed facility may have upon historic properties from relevant individuals or groups that you may be aware of.

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VHB will be accepting comments and/or questions within 30 days of the date of this publication. Therefore, all comments or questions regarding this matter should be postmarked/submitted by no later than September 29, 2007.

cc: Mr. Ken Leslie, Community Development
Town of Glastonbury

54 Tuttle Place
Middletown, Connecticut 06457-1847
860.632.1500 ▪ FAX 860.632.7879
email: info@vhb.com
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Vanasse Hangen Brustlin, Inc.

August 22, 2007

Mr. Michael Stassen
Historic District Commission
2068 Main Street
Glastonbury, CT 06033

To comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, Optasite Towers LLC (Optasite) has retained Vanasse Hangen Brustlin, Inc. (VHB) to evaluate proposed tower facilities for any adverse effect it may have on historic properties. As part of this evaluation, and in conformance with the Nationwide Programmatic Agreement (NPA) for review of effects on historic properties for proposed undertakings, VHB is submitting this tower construction notification to the Town of Glastonbury municipal offices and Historic District Commission members.

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Vanasse Hangen Brustlin, Inc.

August 22, 2007

Ms. Barbara Theurkauf
Historic District Commission
2055 Main Street
Glastonbury, CT 06033

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Vanasse Hangen Brustlin, Inc.

August 22, 2007

Ms. Mary Lou Varrett
Historic District Commission
127 Goodrich Road
Glastonbury, CT 06033

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Vanasse Hangen Brustlin, Inc.

August 22, 2007

Mr. Steven Snyder
Historic District Commission
2200 Main Street
Glastonbury, CT 06033

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Vanasse Hangen Brustlin, Inc.

August 22, 2007

Dr. Trish Mamfredi
Historic District Commission
1044 Main Street
Glastonbury, CT 06033

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Connecticut Commission on Culture & Tourism

Historic Preservation
& Museum Division

59 South Prospect Street
Hartford, Connecticut
06106

(v) 860.566.3005
(f) 860.566.5078

November 5, 2007

Ms. Nicole Dentamaro
Vanasse Hangen Brustlin Inc.
54 Tuttle Place
Middletown, CT 06457-1847

Subject: Telecommunications Facilities
Candidate A – 58 Montano Road (TCNS #30364)
Candidate B – 497A Wickham Road (TCNS #30363)
Glastonbury, CT
Optasite #CT-999-0101

Dear Ms. Dentamaro:

The State Historic Preservation Office has reviewed the above-named projects. This office expects that the proposed undertakings will have no effect on historic, architectural, or archaeological resources associated with this significant cultural resource.

This office appreciates the opportunity to have reviewed and commented upon the proposed undertakings.

This comment is provided in accordance with the National Historic Preservation Act and the Connecticut Environmental Policy Act.

For further information, please contact Dr. David A. Poirier, Staff Archaeologist.

Sincerely,

Karen Senich
Deputy State Historic Preservation Officer

cc: Ms. Catherine Labadia/HC

RECEIVED
NOV 12 2007
VANASSE HANGEN BRUSTLIN, INC.

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: ORGANIZATION(S) WHICH WERE SENT PROPOSED TOWER CONSTRUCTION NOTIFICATION INFORMATION - Email ID #1(

From: towernotifyinfo@fcc.gov
Sent: Friday, August 24, 2007 3:00 AM
To: Dentamaro, Nicole
Cc: kim.pristello@fcc.gov; diane.dupert@fcc.gov
Subject: NOTICE OF ORGANIZATION(S) WHICH WERE SENT PROPOSED TOWER CONSTRUCTION NOTIFICATION INFORMATION - Email ID #1628422

Dear Sir or Madam:

Thank you for using the Federal Communications Commission's (FCC) Tower Construction Notification System (TCNS). The purpose of this electronic mail message is to inform you that the following authorized persons were sent the information you provided through TCNS, which relates to your proposed antenna structure. The information was forwarded by the FCC to authorized TCNS users by electronic mail and/or regular mail (letter).

Persons who have received the information that you provided include leaders or their designees of federally-recognized American Indian Tribes, including Alaska Native Villages (collectively "Tribes"), Native Hawaiian Organizations (NHOs), and State Historic Preservation Officers (SHPOs). For your convenience in identifying the referenced Tribes and in making further contacts, the City and State of the Seat of Government for each Tribe and NHO, as well as the designated contact person, is included in the listing below. We note that Tribes may have Section 106 cultural interests in ancestral homelands or other locations that are far removed from their current Seat of Government. Pursuant to the Commission's rules as set forth in the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission (NPA), all Tribes and NHOs listed below must be afforded a reasonable opportunity to respond to this notification, consistent with the procedures set forth below, unless the proposed construction falls within an exclusion designated by the Tribe or NHO. (NPA, Section IV.F.4).

The information you provided was forwarded to the following Tribes and NHOs who have set their geographic preferences on TCNS. If the information you provided relates to a proposed antenna structure in the State of Alaska, the following list also includes Tribes located in the State of Alaska that have not specified their geographic preferences. For these Tribes and NHOs, if the Tribe or NHO does not respond within a reasonable time, you should make a reasonable effort at follow-up contact, unless the Tribe or NHO has agreed to different procedures (NPA, Section IV.F.5). In the event such a Tribe or NHO does not respond to a follow-up inquiry, or if a substantive or procedural disagreement arises between you and a Tribe or NHO, you must seek guidance from the Commission (NPA, Section IV.G). These procedures are further set forth in the FCC's Declaratory Ruling released on October 6, 2005 (FCC 05-176).

1. THPO Kathleen Knowles - Mashantucket Pequot Tribe - Mashantucket, CT - electronic mail
Exclusions: For every tower construction this Tribe requires a site location map, site plans for every project that will result in ground disturbance, and a detailed description of the proposed site. If the proposed tower construction is on an already existing building, the Tribe would like to be informed of that as well.

2. Cell Tower Coordinator Sequahna Mars - Narragansett Indian Tribe - Wyoming, RI - electronic mail and regular mail

The information you provided was also forwarded to the additional Tribes and NHOs

: ORGANIZATION(S) WHICH WERE SENT PROPOSED TOWER CONSTRUCTION NOTIFICATION INFORMATION - Email ID #1(

listed below. These Tribes and NHOs have NOT set their geographic preferences on TCNS, and therefore they are currently receiving tower notifications for the entire United States. For these Tribes and NHOs, you are required to use reasonable and good faith efforts to determine if the Tribe or NHO may attach religious and cultural significance to historic properties that may be affected by its proposed undertaking. Such efforts may include, but are not limited to, seeking information from the relevant SHPO or THPO, Indian Tribes, state agencies, the U.S. Bureau of Indian Affairs, or, where applicable, any federal agency with land holdings within the state (NPA, Section IV.B). If after such reasonable and good faith efforts, you determine that a Tribe or NHO may attach religious and cultural significance to historic properties in the area and the Tribe or NHO does not respond to TCNS notification within a reasonable time, you should make a reasonable effort to follow up, and must seek guidance from the Commission in the event of continued non-response or in the event of a procedural or substantive disagreement. If you determine that the Tribe or NHO is unlikely to attach religious and cultural significance to historic properties within the area, you do not need to take further action unless the Tribe or NHO indicates an interest in the proposed construction or other evidence of potential interest comes to your attention.

None

The information you provided was also forwarded to the following SHPOs in the State in which you propose to construct and neighboring States. The information was provided to these SHPOs as a courtesy for their information and planning. You need make no effort at this time to follow up with any SHPO that does not respond to this notification. Prior to construction, you must provide the SHPO of the State in which you propose to construct (or the Tribal Historic Preservation Officer, if the project will be located on certain Tribal lands), with a Submission Packet pursuant to Section VII.A of the NPA.

3. SHPO John W Shannahan - Connecticut Historical Commission - Hartford, CT - electronic mail

4. SHPO Cara Metz - Massachusetts Historical Commission - Boston, MA - electronic mail

5. Deputy SHPO Brona Simon - Massachusetts Historical Commission - Boston, MA - electronic mail

6. Director Ruth L Pierpont - Bureau of Field Services, NY State Parks &* Hist. Pres. - Waterford, NY - electronic mail

7. SHPO Frederick C Williamson - Rhode Island Historic Preservation & Heritage Comm - Providence, RI - regular mail

8. Deputy SHPO Edward F Sanderson - Rhode Island Historic Preservation & Heritage Comm - Providence, RI - electronic mail

"Exclusions" above set forth language provided by the Tribe, NHO, or SHPO. These exclusions may indicate types of tower notifications that the Tribe, NHO, or SHPO does not wish to review. TCNS automatically forwards all notifications to all Tribes, NHOs, and SHPOs that have an expressed interest in the geographic area of a proposal, as well as Tribes and NHOs that have not limited their geographic areas of

: ORGANIZATION(S) WHICH WERE SENT PROPOSED TOWER CONSTRUCTION NOTIFICATION INFORMATION - Email ID #1(

interest. However, if a proposal falls within a designated exclusion, you need not expect any response and need not pursue any additional process with that Tribe, NHO, or SHPO. Exclusions may also set forth policies or procedures of a particular Tribe, NHO, or SHPO (for example, types of information that a Tribe routinely requests, or a policy that no response within 30 days indicates no interest in participating in pre-construction review).

If you are proposing to construct a facility in the State of Alaska, you should contact Commission staff for guidance regarding your obligations in the event that Tribes do not respond to this notification within a reasonable time.

Please be advised that the FCC cannot guarantee that the contact(s) listed above opened and reviewed an electronic or regular mail notification. The following information relating to the proposed tower was forwarded to the person(s) listed above:

Notification Received: 08/21/2007
Notification ID: 30363
Tower Owner Individual or Entity Name: VHB/Optasite
Consultant Name: Nicole Dentamaro
Street Address: 54 Tuttle Place
City: Middletown
State: CONNECTICUT
Zip Code: 06457
Phone: 860-632-1500
Email: ndentamaro@vhb.com

Structure Type: POLE - Any type of Pole
Latitude: 41 deg 42 min 4.0 sec N
Longitude: 72 deg 33 min 50.5 sec W
Location Description: 497A Wickham Road
City: Glastonbury
State: CONNECTICUT
County: HARTFORD
Ground Elevation: 65.5 meters 39.6
Support Structure: ~~45.7~~ meters above ground level
39.6 Overall Structure: ~~45.7~~ meters above ground level
Overall Height AMSL: 111.2 meters above mean sea level

If you have any questions or comments regarding this notice, please contact the FCC using the electronic mail form located on the FCC's website at:

http://wireless.fcc.gov/outreach/notification/contact-fcc.html.

You may also call the FCC Support Center at (877) 480-3201 (TTY 717-338-2824). Hours are from 8 a.m. to 7:00 p.m. Eastern Time, Monday through Friday (except Federal holidays). To provide quality service and ensure security, all telephone calls are recorded.

Thank you,
Federal Communications Commission

FINAL REPORT

OCTOBER 2007

PHASE I CULTURAL RESOURCES RECONNAISSANCE SURVEY OF PROPOSED CELLULAR COMMUNICATIONS FACILITY CT-999-0101, GLASTONBURY, CONNECTICUT

PREPARED FOR:

VANASSE HANGEN BRUSTLIN, INC.
54 TUTTLE PLACE
MIDDLETOWN, CONNECTICUT 06457

HERITAGE CONSULTANTS, LLC
877 MAIN STREET
NEWINGTON, CONNECTICUT 06111

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1.0 Introduction

This report summarizes the results of a Phase I cultural resources reconnaissance survey of proposed cellular communications facility CT-999-0101 to be constructed off of Wickham Road in Glastonbury, Connecticut. Heritage Consultants, LLC, completed the field investigation portion of this project, performed on behalf of Vanasse Hangen Brustlin, Inc., on September 19, 2007. All work was conducted in accordance with the National Historic Preservation Act of 1966, as amended; the National Environmental Policy Act of 1969, as amended; and the *Environmental Review Primer for Connecticut's Archaeological Resources* (Poirier 1987). The remainder of this document presents a description of the Areas of Potential Effect, information used as project context, the methods for the current Phase I cultural resources reconnaissance survey, results of the investigation, and management recommendations for the project.

2.0 Project Description

As mentioned above, the proposed cellular communications facility will be located in Glastonbury, Connecticut (Figure 1). The Areas of Potential Effect are situated at an approximate elevation of 61 m (200 ft) NGVD; mixed woodlands and residential housing border the project area to the north, and east, with Connecticut Route 2 situated to the west and south. The Areas of Potential Effect consist of a proposed lease area measuring 21 x 21 m (70 x 70 ft) in size and a single proposed access road and utility easement that will extend from Wickham Road for a distance of 800 m (2625 ft) to the lease area (Figure 2). The access road will consist of dirt and gravel thoroughfare. The proposed lease area will house an equipment shelter, and a 49.5 m (150 ft) monopole type tower; all of these items will be enclosed within a chain link fence with a gate. A meter bank, , a transformer and utility cabinet, and protective bollards will be situated just outside the lease area in the vicinity of the access road.

At the time of survey, the Areas of Potential Effect were characterized by mixed deciduous forest (Figures 3 through 6). The Areas of Potential Effect associated with the proposed lease area were surveyed using moderate interval shovel testing (ca. 23.1 m [70 ft] intervals) in an effort to identify evidence of intact soil strata and cultural deposits. The proposed access road, however, was subjected to visual reconnaissance and photo-documentation only since it consisted of an extremely compacted, graded, and eroded surface that exhibited signs of previous disturbances. Field methodologies employed during the current investigation consisted of pedestrian survey, mapping, photo-documentation, and subsurface testing. The details of the field methods, as well as the results of this field effort, are reviewed below.

3.0 Background Research

The current Phase I cultural resources reconnaissance survey was completed using a three-step approach. The first step consisted of historic research and records review that focused on the area of Glastonbury encompassing the Areas of Potential Effect. This was followed by a review of all previously recorded archeological sites situated within the vicinity of the project area in an effort to determine the archeological context of the region. Finally, this approach entailed the completion of the current Phase I cultural resources reconnaissance survey.

Background research included analysis of readily available historic maps and aerial imagery depicting the area encompassing proposed project area; an examination of the pertinent 1983 USGS 7.5' series topographic quadrangle; and a review of all archeological and historic standing structure data maintained by the Connecticut State Historic Preservation Office and digital records archived by Heritage Consultants, LLC. The intent of this review was to identify all previously recorded cultural resources situated within and/or immediately adjacent to the Areas of Potential Effect. This information was used to develop the archeological context for assessing cultural resources that may be identified during survey.

4.0 Project Context: Previous Investigations, Natural & Prehistoric Settings, and Historic Overview

The following sections provide an overview of the region's natural and prehistoric settings, historic backdrop, and previous cultural resources investigations completed within the vicinity of the Areas of Potential Effect. These brief discussions are included in an effort to provide contextual information relative to the location of the Areas of Potential Effect, its natural characteristics, and its prehistoric and historic use and occupation. It concludes with an overview of the previous cultural resources investigations that have taken place in the area and a discussion of their results.

4.1 Natural Setting

The Areas of Potential Effect are situated within the North-Central Lowlands ecoregion of Connecticut. The North-Central Lowlands region consists of a broad valley located between approximately 40.2 and 80.5 km (25 and 50 mi) to the north of Long Island Sound (Dowhan and Craig 1976). It is characterized by extensive floodplains, backwater swamps, and lowland areas situated near large rivers and tributaries. Physiography in this region is composed of a series of north-trending ridge systems, the easternmost of which is referred to as the Bolton Range (Bell 1985:45). These ridge systems comprise portions of the terraces that overlook the larger rivers. Elevations in the North-Central Lowlands generally range from 15.2 to 76.2 m (50 to 250 ft) above sea level, reaching a maximum of nearly 274 m (900 ft) above sea level along the trap rock ridges that surround the central valley. The bedrock of the region is composed of Triassic sandstone, interspersed with very durable basalt or "traprock" (Bell 1985). Soils found in the upland portion of this ecoregion are developed on red, sandy to clayey glacial till, while those soils situated nearest to the rivers are situated on widespread deposits of stratified sand, gravel, silt, and alluvium resulting from the impoundment of glacial Lake Hitchcock (Sheanin and Hill 1953).

4.2 Prehistory of Connecticut

The earliest inhabitants of Connecticut, referred to as Paleo-Indians, probably arrived in the area after ca. 14,000 B.P. (Gramly and Funk 1990; Snow 1980). While there have been numerous finds of Paleo-Indian projectile points throughout Connecticut, only two sites, the Templeton Site (6-LF-21) and the Hidden Creek Site (72-163), have been studied in detail (Jones 1997; Moeller 1980). The Templeton Site (6-LF-21) is located in Washington, Connecticut on a terrace overlooking the Shepaug River. Carbon samples recovered during excavation of the site area produced a radiocarbon date of 10,190±300 B.P., for the occupation. In addition to a single large and two small fluted points, the Templeton Site produced gravers, drills, core fragments, scrapers, and channel flakes, indicating that the full range of lithic reduction took place within the site area (Moeller 1980). Moreover, use of both exotic and local raw materials was documented in the recovered lithic assemblage, suggesting that not only did the site's occupants spend some time in the area, but they also had access to distant lithic sources.

The only other Paleo-Indian site studied in detail is the Hidden Creek Site (72-163) (Jones 1997). Paleo-Indian artifacts recovered from this site include bifaces, side scrapers, a fluted preform, gravers, and end scrapers. While no direct date for the Paleo-Indian assemblage yet has been obtained, Jones (1997:76) argues that based on typological considerations the artifacts likely date from ca., 10,000 to 9,500 years ago. Further, based on the types and number of tools present, Jones (1997:77) has hypothesized that the Hidden Creek Site represents a short-term occupation. Excavation of both sites suggest that the Paleo-Indian settlement pattern consisted of a high degree of mobility, with groups moving regionally in search of seasonal food resources, as well as for high quality lithic materials.

The Archaic Period began by ca., 10,000 B.P. (Ritchie and Funk 1973; Snow 1980). Later, Griffin (1967) and Snow (1980) divided the Archaic Period into three subperiods: the Early Archaic (10,000 to 8,000 B.P.), Middle Archaic (8,000 to 6,000 B.P.), and Late Archaic (6,000 to 3,400 B.P.). To date, very few Early Archaic sites have been identified in southern New England. Like Paleo-Indian sites, Early Archaic

sites tend to be very small and produce few artifacts, most of which are not diagnostic. Sites of this age are identified based on the recovery of a series of ill-defined bifurcate-based projectile points. These projectile points are identified by their characteristic bifurcated base, and they generally are made from high quality lithics, though some quartz and quartzite specimens have been recovered. Current archeological evidence suggests that Early Archaic groups became more focused on locally available and smaller game species. Occupations of this time period are represented by camps that were moved periodically to take advantage of seasonal resources (McBride 1984).

By the onset of the Middle Archaic Period, increased numbers and types of sites are noted in the region (McBride 1984). The most well known Middle Archaic site in New England is the Neville Site (Dincauze 1976). Analysis of the Neville Site indicated that the Middle Archaic occupation dated from between ca., 7,700 and 6,000 years ago. These sites are associated with the recovery of Neville, Stark, and Merrimac projectile points. McBride (1984) noted that Middle Archaic sites in the lower Connecticut River Valley tend to be represented by moderate density artifact scatters representing a "diversity of site types, with both large-scale occupations and small special purpose present" (McBride 1984:96). Thus, based on the available archeological evidence, the Middle Archaic Period is characterized by continued increases in diversification of resources exploited, as well as by sophisticated changes in the settlement pattern to include different site types, including both base camps and task-specific sites (McBride 1984:96).

The Late Archaic Period in southern New England is divided into two major cultural traditions: the Laurentian and Narrow-Stemmed Traditions (Funk 1976 McBride 1984; Ritchie 1969a and b). Laurentian artifacts include ground stone axes, adzes, gouges, ulus (semi-lunar knives), pestles, atlatl weights and scrapers. The diagnostic projectile point forms of this time period include the Brewerton Eared-Notched, Brewerton Eared and Brewerton Side-Notched varieties (McBride 1984; Ritchie 1969a). Current archeological evidence suggests that Laurentian populations consisted of groups of mobile hunter-gatherers. While a few large Laurentian Tradition occupations have been identified and studied, they generally encompass less than 500 m^2 in area. These base camps reflect frequent movements by small groups of people in search of seasonally abundant resources. The overall settlement pattern of the Laurentian Tradition was dispersed in nature, with base camps located in a wide range of microenvironments, including riverine as well as upland zones (McBride 1984:252).

The latter portion of the Late Archaic is represented the Narrow-Stemmed Tradition. It is recognized by the presence of quartz and quartzite narrow stemmed projectile points, triangular quartz Squibnocket projectile points, and a bipolar lithic reduction strategy (McBride 1984). In general, the Narrow-Stemmed Tradition corresponds to when Late Archaic populations in southern New England began to "settle into" well-defined territories. Further, Narrow-Stemmed Tradition settlement patterns are marked by an increase in the types of sites utilized. That is, the Narrow-Stemmed Tradition witnessed the introduction of large base camps supported by small task-specific sites and temporary camps. The increased number of Narrow Stemmed Traditions temporary and task specific sites indicates frequent movements out of and back into base camps for the purpose of resource procurement; however, the base camps were relocated seasonally to position groups near frequently used, but dispersed, resources (McBride 1984:262).

The Terminal Archaic, which lasted from ca., 3,700 to 2,700 B.P., is represented by the Susquehanna Tradition (McBride 1984; Ritchie 1969b). The Susquehanna Tradition is based on the classification of several Broadspear projectile point types and associated artifacts. Temporally diagnostic projectile points of this tradition include the Snook Kill, Susquehanna Broad, Mansion Inn, and Orient Fishtail types (Lavin 1984; McBride 1984; Pfeiffer 1984). In addition, the material culture of the Terminal Archaic includes soapstone vessels, chipped and ground stone adzes, atlatl weights, drills, net sinkers, plummets and gorgets (Lavin 1984; McBride 1984; Ritchie 1969a and 1969b; Snow 1980). Susquehanna Tradition settlement patterns are centered around large base camps located in on terrace edges overlooking floodplains. Acting as support facilities for the large Terminal Archaic base camps were numerous task

specific sites and temporary camps. Such sites were used as extraction points for the procurement of resources not found in the immediate vicinity of the base camps, and they generally were located adjacent to upland streams and wetlands (McBride 1984:282). Finally, there also are a large number of Terminal Archaic cremation cemeteries with burials that have produced broadspear points and radiocarbon dates between 3,700 and 2,700 B.P. (Pfeiffer 1990). Among the grave goods are ritually "killed" (intentionally broken) steatite vessels, as well as ground stone and flaked stone tools (Snow 1980:240); however, this represents an important continuation of traditions from the Late Archaic and it should not be regarded as a cultural trait unique to the Susquehanna Tradition (Snow 1980:244).

Traditionally, the advent of the Woodland Period in southern New England has been associated with the introduction of pottery (Ritchie 1969a; McBride 1984). Like the Archaic Period, the Woodland Period has been commonly divided into three subperiods: Early, Middle, and Late Woodland. The Early Woodland period of the northeastern United States dates from ca., 2,700 to 2,000 B.P. In his study of the lower Connecticut River Valley, McBride (1984) described Early Woodland sites as "characterized by a quartz cobble lithic industry, narrow-stemmed points, an occasional Meadowood projectile point, thick, cord-marked ceramics, and perhaps human cremations" (McBride and Soulsby 1989:50). Early Woodland sites tend to be located in a variety of different ecozones; however, the largest settlements associated with this period were focused on floodplain, terrace, and lacustrine environments (McBride 1984:300), suggesting "population aggregations along major rivers, interior lakes, and wetlands" (McBride and Soulsby 1989:50). In sum, archeological evidence indicates that Early Woodland populations consisted a mobile hunter/gatherers that moved seasonally throughout a diversity of environmental zones in search of available plant and animal resources.

The Middle Woodland Period of southern New England prehistory is marked by an increase in the number of ceramic types and forms utilized (Lizee 1994a), as well as an increase in the amount of exotic lithic raw material used in stone tool manufacture (McBride 1984). In Connecticut, the Middle Woodland Period is represented archeologically by the use of narrow stemmed and Jack's Reef projectile points; increased amounts of exotic raw materials in recovered lithic assemblages, including chert, argillite, jasper, and hornfels; and conoidal ceramic vessels decorated with dentate stamping. Ceramic types indicative of the Middle Woodland period include Linear Dentate, Rocker Dentate, Windsor Cord Marked, Windsor Brushed, Windsor Plain, and Hollister Stamped (Lizee 1994a: 200). In terms of settlement patterns, the Middle Woodland period is characterized by the occupation of village sites by large co-residential groups. These sites were the principal place of occupation, and they were positioned in close proximity to major river valleys, tidal marshes, estuaries, and the nearby coastline, all of which would have supplied an abundance of plant and animal resources (McBride 1984:309). In addition to villages, numerous temporary and task-specific sites were utilized in the surrounding upland areas, as well as in closer ecozones such as wetlands, estuaries, and floodplains.

The Late Woodland period in southern New England dates from ca., 1,200 to 350 B.P., and it is characterized by the earliest evidence for the use of maize in the lower Connecticut River Valley (Bendremer 1993; Bendremer and Dewar 1993; Bendremer et al. 1991; George 1997; McBride 1984); an increase in the frequency of exchange of non-local lithics (Feder 1984; George and Tryon 1996; McBride 1984; Lavin 1984); increased variability in ceramic form, function, surface treatment, and decoration (Lavin 1980, 1986, 1987; Lizee 1994a, 1994b); and a continuation of a trend towards larger, more permanent settlements in riverine, estuarine, and coastal ecozones (Dincauze 1973, 1974; McBride 1984; Snow 1980). Late Woodland lithic assemblages typically contain up to 60 to 70 percent exotic lithics. Finished stone tools include Levanna and Madison projectile points; drills; side-, end-, and thumbnail scrapers; mortars and pestles; nutting stones; netsinkers; and celts, adzes, axes, and digging tools (McBride 1984; Snow 1980). In addition, ceramic assemblages recovered from Late Woodland sites include Windsor Fabric Impressed, Windsor Brushed, Windsor Cord Marked, Windsor Plain, Clearview

Stamped, Sebonac Stamped, Selden Island, Hollister Plain, Hollister Stamped, and Shantok Cove Incised types (Lavin 1980; Lizee 1994a; Pope 1953; Rouse 1947; Salwen and Ottesen 1972; Smith 1947).
Finally, McBride (1984:323-329) characterized Late Woodland settlement patterns as more nucleated than the preceding Middle Woodland ones, with fewer, larger sites situated in estuarine and riverine ecozones. Both river confluences and coastal zones were favored areas for the establishment of large village sites that contain numerous hearths, storage pits, refuse pits, ceramic production areas, house floors, and human and dog burials (Lavin 1988b; McBride 1984). McBride (1984:326) has argued that these sites certainly reflect multi-season use, and were perhaps occupied on a year-round basis (see also Bellantoni 1987). In addition to large village sites, McBride (1984:326) identified numerous temporary and task-specific sites in the uplands of the lower Connecticut River Valley and along the coastline. These sites likely were employed for the collection of resources such as plant, animal, and lithic raw materials. These sites tend to be very small, lack internal organizational structure, and usually contain a limited artifact assemblage and few cultural features, suggesting that they were occupied from only a few hours to perhaps overnight. Temporary camps, on the other hand reflect a longer stay than task-specific camps, perhaps on the order of a few days to a week, and they contain a more diverse artifact assemblage indicative of more on-site activities, as well as more features (McBride 1984:328-329). In sum, settlement patterns of the Late Woodland period are characterized by "1) aggregation in coastal/riverine areas; 2) increasing sedentism, and; 3) use of upland areas by small task groups of individuals organized for specific tasks" (McBride 1984:326).

In sum, the prehistory of Connecticut spans from ca., 12,000 to 350 B.P., and it is characterized by numerous changes in tool types, subsistence pattern, and land use strategies. For the majority of the prehistoric era, local Native American groups practiced a subsistence pattern based on a mixed economy of hunting and gathering wild plant and animal resources. It is not until the Late Woodland period that incontrovertible evidence for the use of maize horticulture as an important subsistence pursuit is available. Further, settlement patterns throughout the prehistoric era shifted from seasonal occupations of small co-residential groups to large aggregations of people in riverine, estuarine, and coastal ecozones. In terms of the region containing the proposed project parcel, a variety of prehistoric site types may be expected. These range from seasonal camps utilized by Archaic populations to temporary and task-specific sites of the Woodland era.

4.3 History of the Proposed Project Region

The town of Glastonbury, Hartford County, is on the banks of the Connecticut River, in one of the earliest-colonized areas of the state and one of the areas that also was most attractive to Native Americans. Originally part of Wethersfield, one of the first three towns settled in Connecticut in the 1630s, Glastonbury became a separate town in 1690 and has changed its boundaries only a little since then. The Area of Potential Effect is located near the center of Glastonbury, west of Wickham Road and immediately north of Connecticut Route 2, a limited-access highway. This section of the town saw very little development during the historic period, and in the modern era remained a quiet backwater until the construction of the highway. The documentary evidence does not indicate the existence of any historic resources that would be impacted by the proposed construction.

4.31 Native American History

At the time of European contact, the Glastonbury area was occupied by members of the Wongunk or Wangunk tribe of Native Americans and various sub-groups, especially the Nayaugs. The tribe's leader, Sowheag (or Sequin), resided primarily on the west side of the river, possibly at Pyquag (the future Wethersfield) and or else at Mattabesett (the future Middletown). The records of the earliest land transactions are lost; the General Court's records indicate that in 1639 negotiations were still ongoing, as a commissioner was appointed to finalize the matter, but no other record is known. In 1671, however, a confirmatory deed by the Sowheag's heirs (Turramuggus and others) included the land within

Wethersfield's bounds as established by the General Court. This was a piece of land six miles in length along the Connecticut River, six miles west from the river, and three miles east of the river. The compensation for this deed was twelve yards of cloth. In 1672, the General Court permitted Wethersfield to add a further five miles of territory on its east boundary, and in 1673 the town voted to purchase the land from Turramuggus and others, for an estimated value of £24 (Adams 1886, DeForest 1852, McNulty 1995).

Sowheag died in or before 1664, and seems to have been succeeded by Turramuggus, though other heirs identified in the deed of 1671 included Sepanamaw (a female), Speunno, Nabowhee, Weesumpshie, and Waphanke. These leaders resided in Middletown, but in the 1690s, however, South Glastonbury, or Nayaug, may have been the residence of most of the surviving Wongunks, and possibly others who had fled the wars with the Narragansetts. By about 1705 they moved to a three-hundred acre reservation in Wongum (now East Hampton). There, Turramuggus's son Peetoosoh was sachem in 1706. The last known sachem was Cushoy, who died before 1765. In 1774, there were fewer than forty survivors of the tribe, and in 1785 the remaining reservation land in East Hampton was sold off (Adams 1886, DeForest 1852).

4.32 Seventeenth and Eighteenth Centuries

The Connecticut River was first explored by the Dutchman Adriaen Block in 1614. In the 1620s, at least one Dutch trading post was set up at the future side of Hartford, but the Dutch were displaced by English colonists there in 1636. Wethersfield began to be colonized in 1634, on the west bank of the river, by perhaps eight families from Watertown, Massachusetts, who were joined by thirty more the following year. In 1636, the new settlement joined with the other new settlements of Hartford and Windsor to form a General Court to be their common government, and received the name Wethersfield (having been called Watertown to that point). The three-mile section on the east side of the river was initially known as "Naubuck Farms," and was divided into three-mile-wide strips in 1639. The 1673 purchase noted above, containing some thirty square miles, was paid for by taxing 114 inhabitants of Wethersfield, and completed the transfer from Native American ownership of the entire area of the future Glastonbury (Adams 1886). Rough measurement from the western boundary of Glastonbury indicates that the Area of Potential Effect's location is about a half-mile inside the original three-mile-wide section of the eastern part of Wethersfield. According to John Warner Barber, writing in the 1830s, Glastonbury's landscape included "some fine meadows upon the borders of the Connecticut, back of which, upon the rise of land, the soil is a sandy loam, generally fertile and productive. In Eastbury ... the lands to a considerable extent are rough and stony" (Barber 1837).

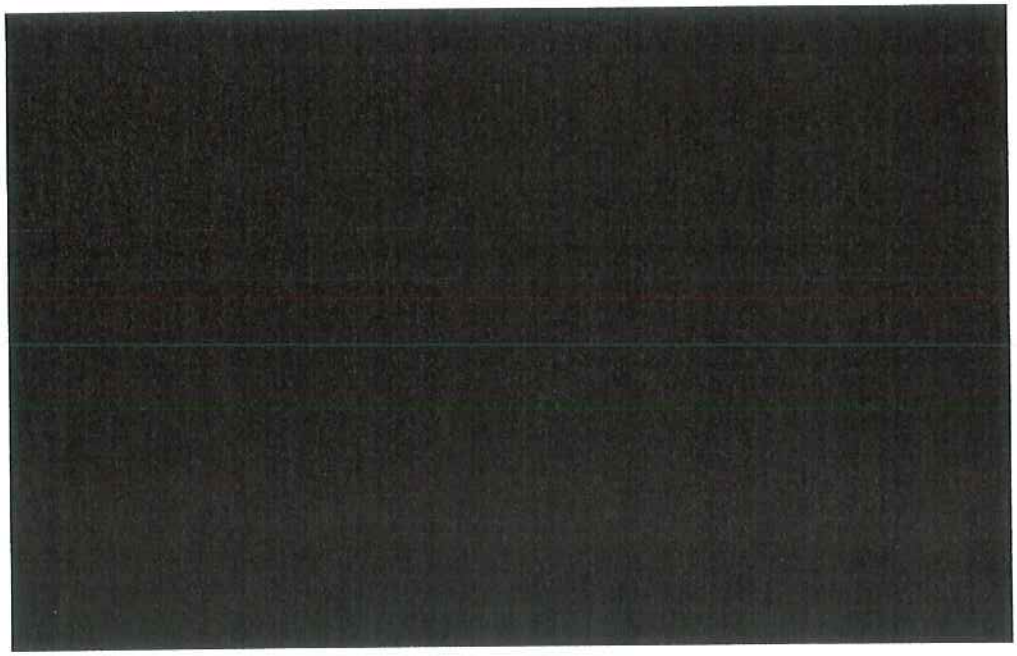
European settlement in the future Glastonbury began by 1650, when two families are known to have lived there, and others followed. A road had already been laid out through one of the Naubuck Farms lots by 1640; in 1674, the General Court ordered the laying out of a highway eight rods (132 feet) wide from the north line to what is now South Glastonbury, then known as Nayaug. Wethersfield's total population in 1756 was 3,598, of whom 1,115 lived in what is now Glastonbury. At the time, of course, Wethersfield included not only Glastonbury but Newington and Rocky Hill, so its population was distributed through a very large area (Adams 1886). The actual survey of the lots in the first three miles east of the river took place before 1684, each share being a varying length north to south and, in theory, three miles east to west. In 1690, the General Court granted the petition of a group of Wethersfield residents owning land on the east side of the Connecticut River to become a separate town, the first such episode of town division in the Connecticut colony. The townsmen selected the name "Glassenbury" (a spelling the town retained until the late eighteenth century, when it was changed to Glastenbury; in 1870, the town voted to change it again, to the present Glastonbury). The fourth mile of the town, measured east from the river, was designated as common land after Glastonbury's founding, although various individual grants were made from it even before 1700. The Neipsic or Nipsic section, to which the Area of Potential Effect is closest,

included a mineral spring and Nipsic Pond, which by the late nineteenth century had been drained by nearby farmers. By 1768, the distribution of all the town's lands, out to the eastern border, had been completed (Goslee 1886). The "Pool at Neipsic," according to Barber, had been known for over 100 years and was thought to have medicinal qualities (Barber 1837). This location, also known as Red Spring because of its ferriginous nature, is now known as "Neipsic Bog," and is a short distance east of the Area of Potential Effect (Figure 1; Hughes and Allen 1976).

The first minister, Timothy Stevens, settled there in 1692. The town's first meeting-house was built in 1693, on the main street by the river; after it burned down in 1734, it was rebuilt a little south of the first location. The eastern end of the town, known as East Farms, became a separate ecclesiastical society called Eastbury in about 1730. Their meeting house was built near Little Nipsic Pond between 1733 and 1736. In 1765, the mile commons were made part of the East Society. During the Revolutionary War, the town apparently was entirely behind the effort; when word of the events at Concord and Lexington arrived in Glastonbury, a company left for Boston the next day. Tories were held in Easbury, and according to tradition, so many men enlisted that there were times when only the town's women were available to plant and harvest the crops (Goslee 1886).

4.33 Nineteenth and Twentieth Centuries

In 1803, the south-east corner of was separated to be part of the new town of Marlborough; in about 1813 another piece was given to Marlborough, and in 1859 a farm owned by one Henry Finley. In 1874, the General Assembly formally set the western boundary as the Connecticut River, as a result of the continual changes in the river's course and several lawsuits and petitions to the General Assembly (Goslee 1886). During the nineteenth century, as the following population chart shows, the town's population hovered between 2,000 and 4,000 persons (MAGIC 1996). The town's location on the Connecticut River made it possible for its farmers to ship many goods to the West Indies from its earliest days and into the nineteenth century; these included corn, oats, and other crops, as well as salted meat and live horses and mules. A ship-yard was carried on at Pratt's Ferry until the 1820s, but other locations carried out some modest ship construction through 1870 (Goslee 1886). In the 1830s, there was a cotton mill and



associated village located on the Roaring Brook, well south of the Area of Potential Effect, operated by the Hartford Manufacturing Company and employing 130 females and 40 males (Barber 1837). Other industrial activities included a carding-mill, saw mills, grist mills, distilleries, a maker of a hand coffee-mill, woollen mills, tanneries, iron works, and other miscellaneous activities (Goslee 1886). Paper-making also was carried out in town, and there were also significant quarries of feldspar, a material useful in the making of ceramics, near the present Portland town line. In the later nineteenth century, the Hale family pioneered the growing of peaches in town, which over several decades became a major cash crop (McNulty 1995). The population statistics suggest, however, that these enterprises never became large enough to substantially affect the town's nineteenth-century population.

The turnpike system that developed between about 1790 and 1850, under which private companies undertook to build and/or improve roads in order to speed the movement of people and goods, led to the development of the Hartford and New London turnpike beginning in 1800. Crossing Glastonbury on a diagonal from the northwest corner to the southeast, most of the road remained a private toll road even after 1852, although the northernmost five miles (being the main streets of Glastonbury and East Hartford) were turned over to the towns in 1839. A stagecoach line used the turnpike between 1818 and 1823, after which competition from a new steamboat line on the Connecticut River caused its owner to abandon the northern part of the business. Often, though not always, the presence of such roads did foster the development of commerce and industry (Wood 1919). In Glastonbury, this and the industrial activity appears to have been sufficient only to maintain the town's population – although, in an era when many small towns lost population, this was no small achievement. But railroad service seems to have bypassed the town entirely, and this is, in part, another explanation for the town's failure to grow much beyond its agricultural beginnings. Glastonbury seems to have relied on the river for transport, but in the later nineteenth century the railroads' competition and the building of railroad bridges across the Connecticut River forced river shipping into decline, and probably finished off Glastonbury's modest shipbuilding industry. The steamboat lines did continue until 1931, but were not true competition with the railroads (McNulty 1995).

The town's first ecclesiastical society divided in 1836, and in the next year the old meeting house (the second built) was demolished. The First Society and the South Glastonbury society both built new meeting houses in 1837. The Eastbury meeting house was relocated in 1821, and then in 1867 that was replaced and the society renamed Buckingham. An Episcopalian parish was established in town in 1806. A Methodist church was organized in 1796, but did not have a meeting house until 1810, when they built one near Wassuc; a Roman Catholic church was built in South Glastonbury in 1878. Also in 1837, an effort was begun to build a town hall, which was not successful until 1839 (Goslee 1886). Barber found only two Congregational churches, however, as his survey was made before the First Society's division; at that time he also noted two Methodist societies and the Episcopal church (Barber 1837). The War of 1812 enlisted a number of the town's men into military service along the coast. During the Civil War, some 334 men served, including commissioned officers and three doctors (Goslee 1886).

The population chart presented above shows that Glastonbury's population rose above 4,000 as of 1900 (MAGIC 1996). This slight growth may have been related to the construction of a trolley line through Glastonbury in 1892 and 1893, terminating at the entertainment venue Brookside Park in South Glastonbury. Continuing in operation until 1928, this trolley line also served freight purposes, and continued to be used so until the 1950s. The trolley also brought Italian laborers to town, some of whom settled there permanently. The increasing use of the automobile, combined with Glastonbury's proximity to the large population center of Hartford, brought further increases in population over time (McNulty 1995). In 1932, with its population standing at about 5,783, Glastonbury's major industries were "agriculture (largely tobacco raising), and the manufacture of paper, woolen and knit goods, cutlery, plated and sterling silver ware, soap, etc." (Connecticut 1932, 279). In 1810, cigar making began at East Windsor and Suffield, and by 1830 a new way of curing tobacco for cigar wrappers called "sweating" was

discovered by an East Windsor company. After that, high profit margins encouraged farmers to try their hand at growing it from the Housatonic valley to New Haven and as far north as Vermont and Maine (McDonald 1936:14). As of 1879, Hartford County has 5,112 acres planted in tobacco, which produced over nine million pounds of tobacco; the county produced 65% of the state's tobacco. The total produced continued to rise through at least 1880, with the volume rising from 8 million pounds statewide in 1870 to 14 million pounds in 1880 (Brown 1886). While in 1907 only 70 acres throughout New England were planted under shade, a technique introduced around the turn of the century, by 1919 there were 3,900 acres so planted in Connecticut alone. The Connecticut crop was valued at $4,830,000.00. Between 1923 and 1936, the value of the tobacco crop was over 33 percent of the total value of Connecticut agricultural products (McDonald 1936).

As the twentieth century progressed, the major influences on Glastonbury's population growth were suburbanization and certain new industries, especially the Pratt & Whitney Aircraft Corporation, located in East Hartford but only a short distance north of the Glastonbury line (McNulty 1995). Between 1940 and 1950, the population began to grow substantially, and the rate of growth only increased in the succeeding decades (see above chart; MAGIC 1996). Connecticut Route 2, constructed in the 1950s and 1960s, followed in part the route of the old Hartford and New London turnpike through Glastonbury. A western section in Glastonbury was completed in 1952, but the more eastern section extending to Marlborough did not open until 1965 (Oglesby 2006). The steep rise in the town's population between 1950 and 1990 is typical of towns located within short driving distances of cities during that period of American history, as city workers moved into the suburbs. A population of 28,000 in a town the size of Glastonbury still permits much of Glastonbury to retain a rural appearance, thought to be a preference of many of its residents (McNulty 1995). By 2000, the population had risen to 31,876, and agriculture was still the business of 4.1% of firms and 2.3% of workers employed in town. Manufacturing employed 6% of workers, while construction and mining employed 6.7%. The remainder, 85%, worked in tertiary sector jobs in real estate, trade, government, and especially (42.8%) in general "services." In 2000, the largest number of workers (4,663) stayed in Glastonbury, while many others traveled to Hartford (3,316), East Hartford (1,212), and Manchester (612), among others (CERC 2007).

4.34 History and Ownership of the Project Area

Historic maps of the Area of Potential Effect provide little detail about its past. The 1855 map, for example, shows nothing but a stream crossing the area south of the curve in what is presently known as Nipsic Road (Figure 7; Woodford 1855). The nearest neighbors shown on this map were members of the Hubbard, Andrews, and Wright families. The 1869 map shows a similar absence of structures in the immediate vicinity of the Area of Potential Effect; the rather distant nearest neighbors still included members of the Hubbard family, as well as A. Kerngiebel and M. Geery (Figure 8; Baker & Tilden 1869). An 1884 map shows a nearly identical situation (Figure 9; Hyde & Company 1884). The present configuration of the parcel containing the Area of Potential Effect is a 12.15-acre piece which was, even its most recent sale, transferred as two pieces, one south of the other (Glastonbury Land Records, Vol. 1410, Pg. 346).

Northern Piece (4 acres)

The earliest known owner of the northern piece was Cynthia P. Welles, whose estate (Henry L. Welles, Administrator) sold the four-acre parcel to Louisa B. Wadsworth for $40 in 1894. The description at the time gave the abutting owners as

N	Cyrus N. Carter
E	Alvin P. Cole
S	heirs of Chauncey Turner
W	George F. Hubbard

(Glastonbury Land Records, Vol. 41, Pg. 666). A slightly earlier deed identifies Cynthia as the widow of Alsop P. Welles (Glastonbury Land Records, Vol. 43, Pg. 45). According to the 1880 U.S. Census (the 1890 census being unavailable), Alsop Welles was a 51-year-old farmer, and his wife Cynthia was 52; they lived with their son Henry (12) and daughter Amelia (9), all of them born in Connecticut of Connecticut-born parents (U.S. Census, 1880, Series: T9 Roll: 99 Page: 15). Alsop Welles died testate in about 1892, appointing his son Henry executor (Glastonbury Land Records, Vol. 41, Pg. 407). He had been born in Glastonbury on September 8, 1806, a son of Gurdon and Polly Welles, and died of consumption at the age of 62 years, 1 month, and 24 days (Glastonbury Vital Records, Vol. 2, Pg. 189, and Deaths Vol. 7, Pg. 158). It is not known how or when the Welles family acquired the property, and given the documentary history of the property, it is unlikely that they ever lived on it.

The 1894 buyer, Louisa B. Wadsworth, was listed in the 1900 census as Louise Wadsworth, a 41-year-old widow living in a rented house and whose parents had both been born in Germany. Her household included four of the five children she had borne: Alice, 20, working as a finisher in a woolen mill; Gertrude, 18, working in a woolen mill; Henry, 15, working as a farm laborer; and George, 12, who was still at school. Louise's brother John Smith, 39, who worked as a day laborer, also lived with the family. In addition, there were five boarders in the house: Lucy Wadsworth, a 58-year-old widow, who worked as a servant; Arthur Vogel, 40, a mason whose father had been born in Germany; Jennie Turner, 18, who worked in a woolen mill; Allen Dryhurst, 2, whose exact parentage is unknown; and Charles Violets, 27, whose occupation is unclear and who had been born in Maine of French-born parents (U.S. Census, 1900, Series: T623 Roll: 136 Page: 117). This census entry is very suggestive of the economic difficulties of a first-generation immigrant widow at the turn of the last century; but Louise/Louisa's ability to spend $40 on a piece of land, however small, suggests that her efforts were relatively successful.

She only held the land for about six years, selling it in 1902 to Henry P. Smith (Glastonbury Land Records, Vol. 45, Pg. 685). The 1900 census lists a Henry P. Smith in Glastonbury, who was an unmarried 34-year-old farmer living with his sister Fannie, 33 a house keeper. The fact that both of them had German-born parents, and that Louise had a brother named Smith, suggests that these people were also her siblings (U.S. Census, 1900, Series: T623 Roll: 136 Page: 111). By 1910,. Henry P. Smith (43, and a tobacco farmer) lived on Colchester Avenue in Glastonbury and had married Elizabeth (33), who had been born in "Scotch Canada" of Scottish-born parents, according to the Census taker. Their children were Lincoln D. (5), Roy H. (3), and Elizabeth E. (1); also living with them was Henry's brother-in-law, Harold D. Tennant (22), who had been born in Massachusetts and worked as an assistant secretary in a soap factory (U.S. Census, 1910, Series: T624 Roll: 131 Page: 149).

Henry P. Smith sold the four-acre parcel to George W. Smith in 1917 (Glastonbury Land Records, Vol. 65, Pg. 6). In the 1910 census, George was listed on the same page as Henry, only two doors away from him, though he lived on Oak Street; he was 48 and also had German-born parents, and was a tobacco farmer. His wife was Mary A. (41), and his children Mildred L. (13), Emily M. (11), and Frederick J. (7) (U.S. Census, 1910, U.S. Census, 1910, Series: T624 Roll: 131 Page: 149). By 1920, George was 57, still living on Oak Street and working as a tobacco farmer; he lived with his wife Mary F. (51); son Frederick J. (18), a farm laborer; daughter Emily M. Avery (21), a clerical worker in a soap factory; and son-in-law Benjamin T. Avery (21), a truck driver for a soap factory (U.S. Census, 1920, Series: T625 Roll: 181 Page: 52). In 1930, the 67-year-old George W. Smith was still a tobacco farmer living on Oak street; he lived with his wife Mary A. (62); son-in-law Benjamin T. Avery (31), a truckman driving his own truck; daughter Emily S. Avery (31); and granddaughter Helen S. (9) (U.S. Census, 1930, Series: T626 Roll: 262 Page: 20).

It was also in 1930 that George sold the 4-acre parcel to Peter and Paulina Morowski (Glastonbury Land Records, Vol. 65, Pg. 6). The U.S. Census reported this couple as Peter Morawski (30), a laborer on a

general farm, who lived on Nypsic Road with his wife Pauline (29) and widowed mother Anna Cardinetti (60), who was listed with the occupation of general farmer. All three of them were Polish-born ; Peter and his mother had arrived in 1914, but Pauline had come in 1903 and had her first naturalization papers. She and Peter were both able to speak English, but the mother was not (U.S. Census, 1930, Series: T626 Roll: 262 Page: 40). Thus, the Morawaskis were part of the early twentieth-century wave of Eastern European immigrants who arrived in the United States before the First World War, many of whom left the cities for the countryside if they could arrange it.

Southern Piece (9.75 or 11 acres)

The earliest known owner of the southern piece of land was Lydia E. House, from whose estate it descended to a number of heirs in 1902. In fact, her estate consisted of three pieces of land: three acres of meadow known as the "Point Lot," a five-acre "Homestead" lot, and a 9.75 acre lot described as being bounded

N	Louise Wadsworth
E	Highway
S	Samuel C. Hardin, David H. Carrier
W	George F. Hubbard

(Glastonbury Land Records, Vol. 46, Pg. 297). The administratrix's certificate filed on the land records by Elizabeth T. H. Thresher indicates that Lydia died on September 16, 1899 (Glastonbury Land Records, Vol. 44, Pg. 618). According to another transaction in the land records, the "heirs of Chauncey Turner" referred to in the description of the northern piece were Norman A. Turner, Benjamin F. Turner, Lydia A. House, Mary E. Turner, Mercy W. Barber, Samuel C. Turner of Wasiega, Minnesota, and Charlotte A. and D. G. Markham of Providence, Rhode Island (Glastonbury Land Records, Vol. 41, Pg. 88). The town vital records reveal that Lydia A. Turner married Alvin House on January 7, 1839 (Glastonbury Vital Records, Vol. 3, Pg. 149). Chauncey Turner had died on April 9, 1866, at the age of 72 years, 10 months, and 1 day; he had been born in Glastonbury to William and Mercy Turner, and was a farmer who died of heart disease (Glastonbury Vital Records, Deaths Vol. 7, Pg. 34). It appears from these records and the deed reference that Lydia did inherited the subject property from Chauncey, presumably after his death in 1866.

According to the 1870 census, Alvin House was a 62-year-old farmer who owned $10,000 in real estate and $3,000 in personal estate, which made him a well-to-do man. He lived with his wife Lydia A. (53) and daughters Elizabeth (30, working in a woolen mill) and Harriet (15, in school) (U.S. Census, 1870, Series: M593 Roll: 103 Page: 382). In 1860, however, Alvin House (51) had been a joiner owning only $5,000 in real estate and $1,500 in personal estate, living with his wife Lydia (42) and children Elizabeth (20), Isaac (18), William (14), Ellen (9), and Harriet (4). His father-in-law "Chancy" Turner, who was recorded on the same census page as living three houses away, was a 65-year-old farmer owning $10,000 in real estate and $10,000 in personal estate. He lived with his wife, Hopestill (64), and children Charlotte (24) and Bryan (22 and a farm hand) (U.S. Census, 1860, Series: M653 Roll: 77 Page: 234). The Area of Potential Effect was only a small portion of the extensive lands owned by these families, and surely was not their place of residence. But the 1880 census shows Lydia House (63) as the head of her household, which included her son Isaac (38), who was a farmer and possibly divorced, although the writing on the form is unclear; her daughter Harriet (24); her widowed daughter Ella Porter (30); and a boarder named Orrin House (63), who worked on a farm (U.S. Census, 1880, Series: T9 Roll: 99 Page: 2).

The heirs of Lydia E. House in 1902 were listed on the deed as Isaac C. House; William W. (or M.) House of San Francisco, California; Elizabeth T. H. Thresher of Berlin, Connecticut; Ella M. Porter; and Hattie D. House (Glastonbury Land Records, Vol. 46, Pg. 297). The other heirs quit-claimed their interest

in the three parcels to their brother Isaac C. House only a few days after the administrator's deed was executed (Glastonbury Land Records, Vol. 46, Pg. 311). According to the 1900 census, Isaac House was a 57-year-old unmarried carpenter; he lived with his sisters Ella House (50) and Harriet (44), who both worked as servants (U.S. Census, 1900, Series: T623 Roll: 136 Page: 109). In the 1910 census, Isaac House was a 68-year-old self-employed carpenter living on Hebron Avenue, and his household included his unmarried sister Harriet B. House (53), his widowed sister Elizabeth H. Thresher (70), who had had no children, and his widowed sister Ellen M. Porter (61), whose three children had all died (U.S. Census, 1910, Series: T624 Roll: 131 Page: 155). At this time in history, these failures to marry or become a parent, and the loss of children, may be enough in itself to explain the decline of the fortunes of this branch of the House family.

In 1911, Isaac C. House sold a parcel described as 11 acres of woodland from the estate of his mother Lydia A. House to one Henry Limberg (Glastonbury Land Records, Vol. 50, Pg. 581). A 1911 map prepared by the U.S. Postal Service shows no structures along Neipsic Road near the Area of Potential Effect (Figure 10; USPS 1914). The 1910 census found a Henry Limburg living on Oak Street in Glastonbury; he was 47, unmarried, a German-born naturalized citizen who spoke English and had immigrated in 1865, and worked his own tobacco farm (U.S. Census, 1910, Series: T624 Roll: 131 Page: 148). He only kept the parcel until 1915, when he sold it to Charles G. Rankin and Delbert Evans. Again identified as 11 acres of woodland, the parcel was described as being abutted

N	Henry P. Smith
E	Alvin P. Cole
S	David H. Carrier, Raymond A. Hardin, Charles G. Rankin
W	Richard S. Williams

(Glastonbury Land Records, Vol. 52, Pg. 650). Rankin and Evans sold 9 acres of the land to Thomas and Annie Cardonetti in 1918, the deed noting that "all cut wood on the property is reserved by the Grantors, the same to be removed within six months." The names of the abutters had changed slightly:

N	George Smith
E	William Calhoun
S	Raymond Hardin, Charles G. Rankin, and W. H. Carrier
W	Charles Cameron

(Glastonbury Land Records, Vol. 54, Pg. 654). The reference to the cut wood confirms the previous description of it as "woodland," which was worth some money when the wood was harvested.

According to the 1920 census, Thomas Cardonetti was 61 years old, born in Italy, and working as a farm laborer; he had immigrated in 1881 and was still an alien. His wife, Anna, was 51 and worked as a laborer in a silver factory. His stepson, Peter Morowski, was 26, and was a laborer at a silver plate factory. The census form reports that both Anna and Peter had been born in Tremboula and their native language was Polish; both had immigrated in 1913 and were still aliens (U.S. Census, 1920, Series: T625 Roll: 181 Page: 89). Anna purchased the 9 acres from the Administrator of the estate of Thomas Cardonetti for $175 in 1926 (Glastonbury Land Records, Vol. 59, Pg. 458). The 1930 census report on Morowski and his mother was discussed above. The 1934 aerial photograph is difficult to interpret because of the absence of landmarks, but the Area of Potential Effect may have been within the partly cleared area west of the southward jog in Neipsic Road (Figure 11). This possibility is supported by the fact that in 1936, Annie Cardonetti quit-claimed the property as 9 acres with buildings to Peter Morawski of Glastonbury and Nellie Kaneski of Mystic. Cardonetti retained, however, life use of the premises "as a place of residence, and also the use of the land and any income therefrom." The description was as follows:

McDonald, Adrian Francis.
1936 *The History of Tobacco Production in Connecticut.* Tercentenary Commission of the State of Connecticut Series, No. LII. New Haven, CT: The Tercentenary Commission by Yale University Press.

McNulty, Marjorie Grant
1995 *Glastonbury: From Settlement to Suburb.* The Historical Society of Glastonbury: Glastonbury, CT.

Moeller, R.
1980 *6-LF-21: A Paleo-Indian Site in Western Connecticut.* American Indian Archaeological Institute, Occasional Papers No. 2.

Oglesby, Scott
2006 "Route 2." *Connecticut Roads.* <http://www.kurumi.com/roads/ct/ct2.html>

Pfeiffer, J.
1983 Bashan Lake:4500 Years of Prehistory. Archaeological Society of Connecticut Bulletin 46:45-53.

1984 The Late and Terminal Archaic Periods in Connecticut Prehistory. *Bulletin of the Archaeological Society of Connecticut* 47:73-88.

1986 Dill Farm Locus I: Early and Middle Archaic Components in Southern Connecticut. *Archaeological Society of Connecticut Bulletin* 49:19-36.

1990 The Late and Terminal Archaic Periods in Connecticut Prehistory: A Model of Continuity. In *Experiments and Observations on the Archaic of the Middle Atlantic Region.* R. Moeller, ed.

Poirier, David A.
1987 *Environmental Review Primer for Connecticut's Archaeological Resources.* Connecticut Historical Commission, State Historic Preservation Office, Hartford, Connecticut.

Pope, G.
1953 The Pottery Types of Connecticut. *Bulletin of the Archaeological Society of New Haven* 27:3-10.

Ritchie, W.A.
1969a *The Archaeology of New York State.* Garden City: Natural History Press.

1969b *The Archaeology of Martha's Vineyard: A Framework for the Prehistory of Southern New England; A study in Coastal Ecology and Adaptation.* Garden City: Natural History Press.

Ritchie, W.A., and R.E. Funk
1973 *Aboriginal Settlement Patterns in the Northeast.* New York State Museum Memoir 20. The State Education Department, Albany.

Rouse, I.
1947 Ceramic Traditions and sequences in Connecticut. *Bulletin of the Archaeological Society of Connecticut* 21:10-25.

Salwen, B., and A. Ottesen
1972 Radiocarbon Dates for a Windsor Occupation at the Shantok Cove Site. *Man in the Northeast* 3:8-19.

Smith, C.
1947 An Outline of the Archaeology of Coastal New York. *Bulletin of the Archaeological Society of Connecticut* 21:2-9.

Snow, D.
1980 *The Archaeology of New England.* Academic Press, New York.

Spiess, Mathias
1937 "Podunk Indian Sites." *Bulletin of the Archaeological Society of Connecticut* 5: 2-6.

United States Postal Service (USPS)
1911 *Map of Hartford County, Connecticut, Showing Rural Delivery Service.* Connecticut State Library: Hartford, CT.

Wood, J. S.
1919 *The Turnpikes of New England.* Boston: Marshall Jones Company; reprinted, Pepperell, MA: Branch Line Press, 1997.

Woodford, E. M.
1855 *Smith's Map of Hartford County, Connecticut, from Actual Surveys.* Philadelphia: H. & C. T. Smith.

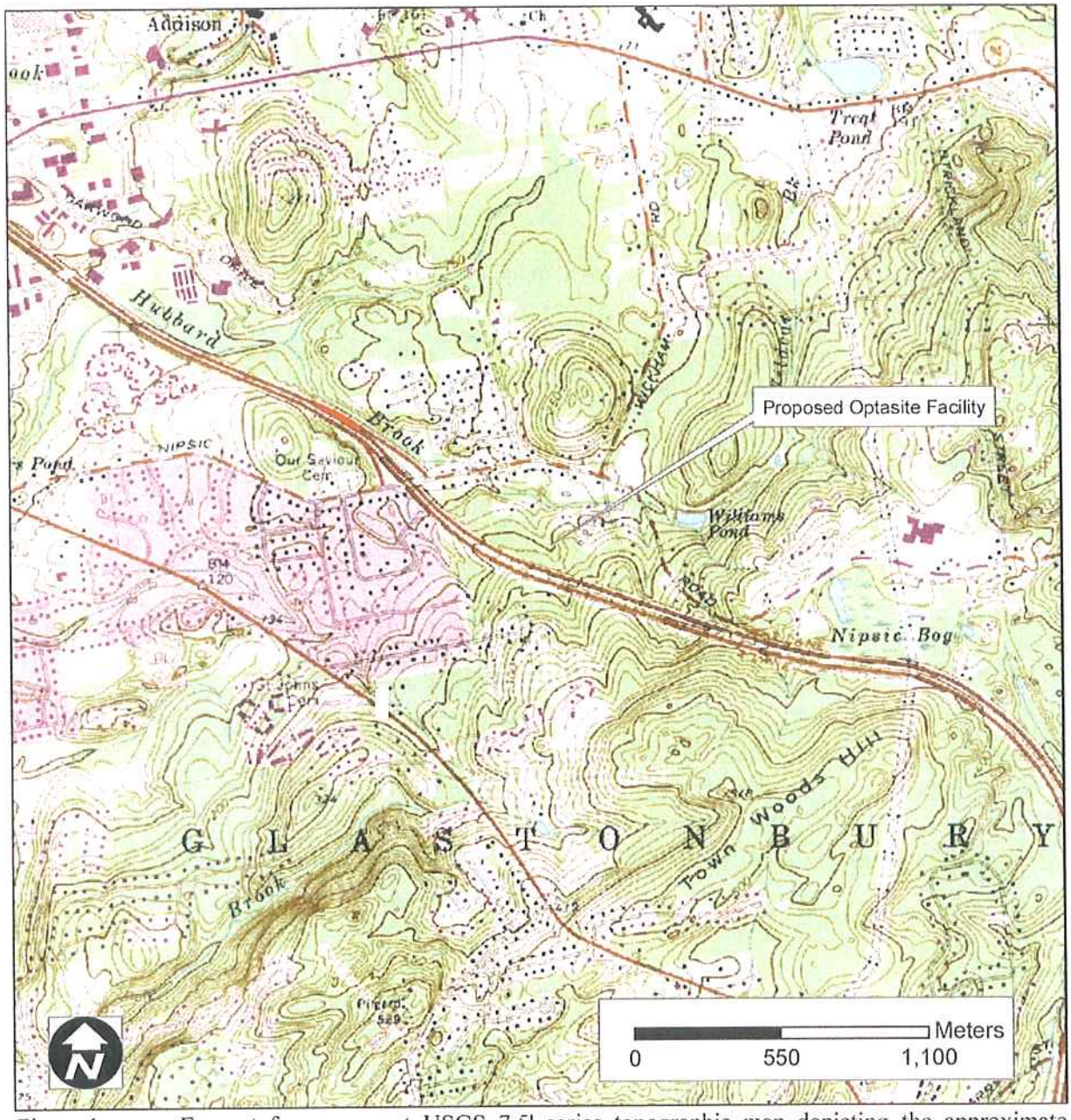


Figure 1. Excerpt from a recent USGS 7.5' series topographic map depicting the approximate location of a proposed cellular communications tower in Glastonbury, Connecticut.

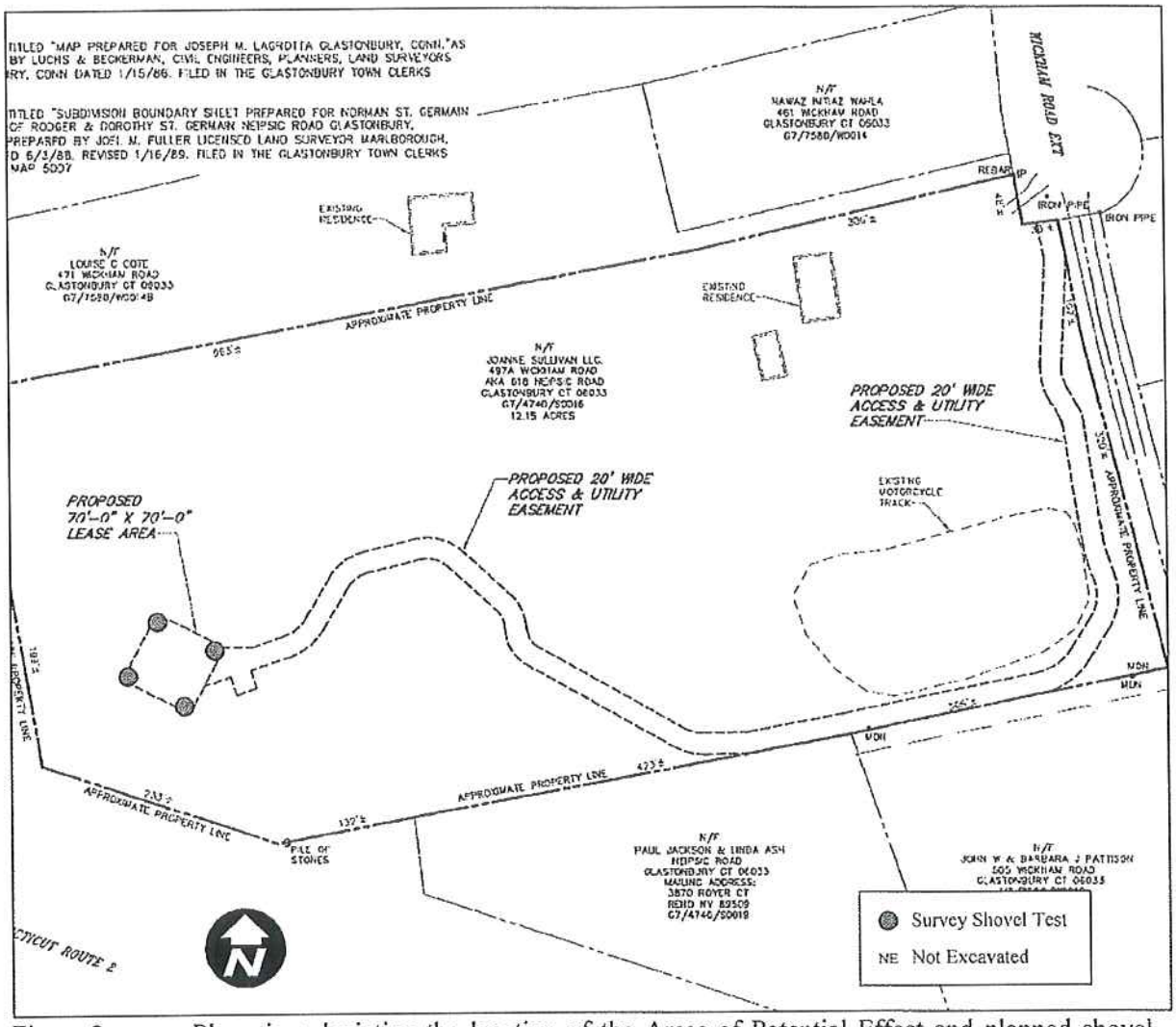


Figure 2. Plan view depicting the location of the Areas of Potential Effect and planned shovel tests.

Figure 3. Overview photo of the proposed lease area, facing east.

Figure 4. Overview of the proposed lease area, facing southwest.

Figure 5. Overview photo of the proposed access road, facing southeast.

Figure 6. Overview of the proposed access road, facing north.

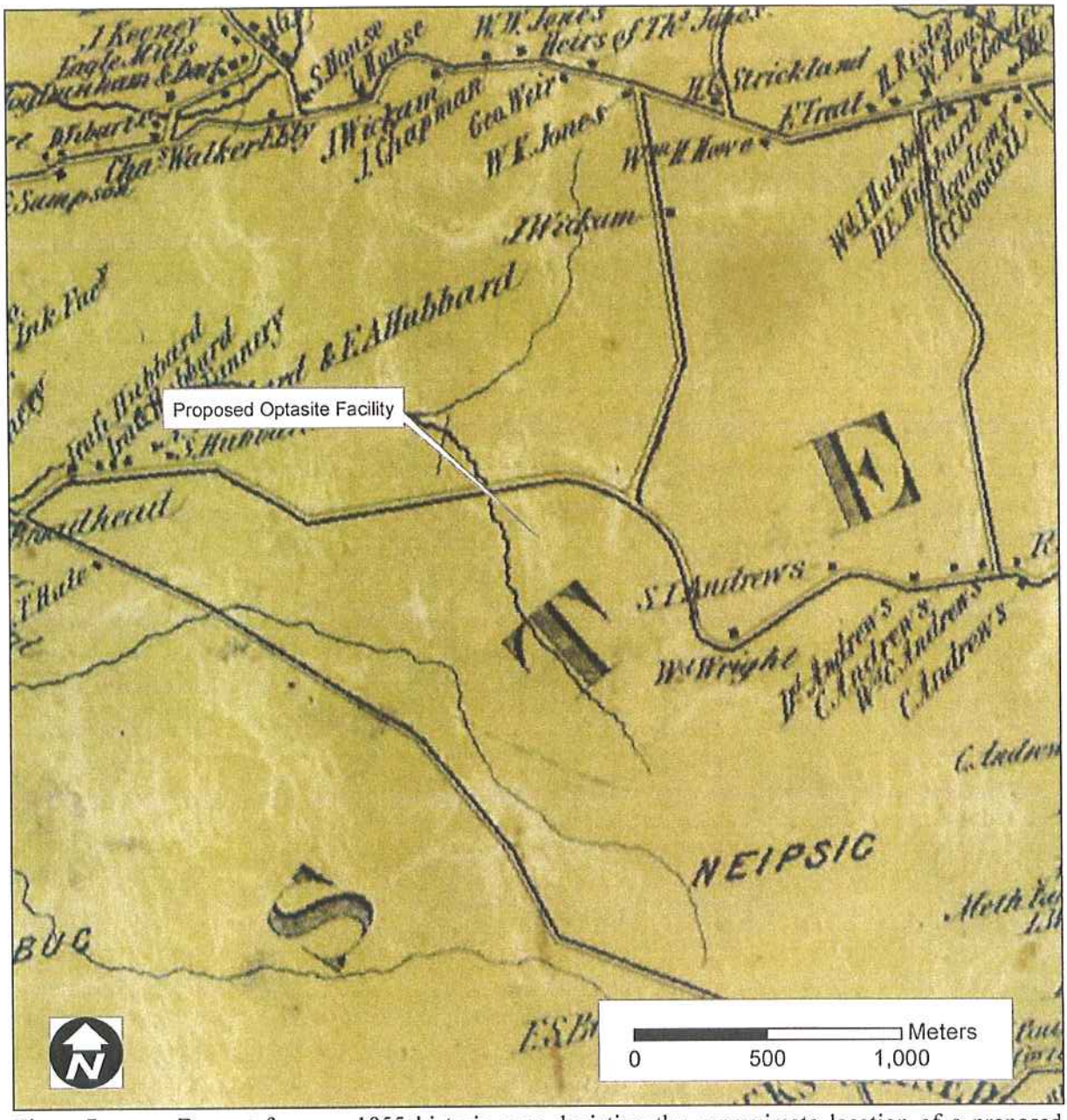


Figure 7. Excerpt from an 1855 historic map depicting the approximate location of a proposed cellular communications tower in Glastonbury, Connecticut.

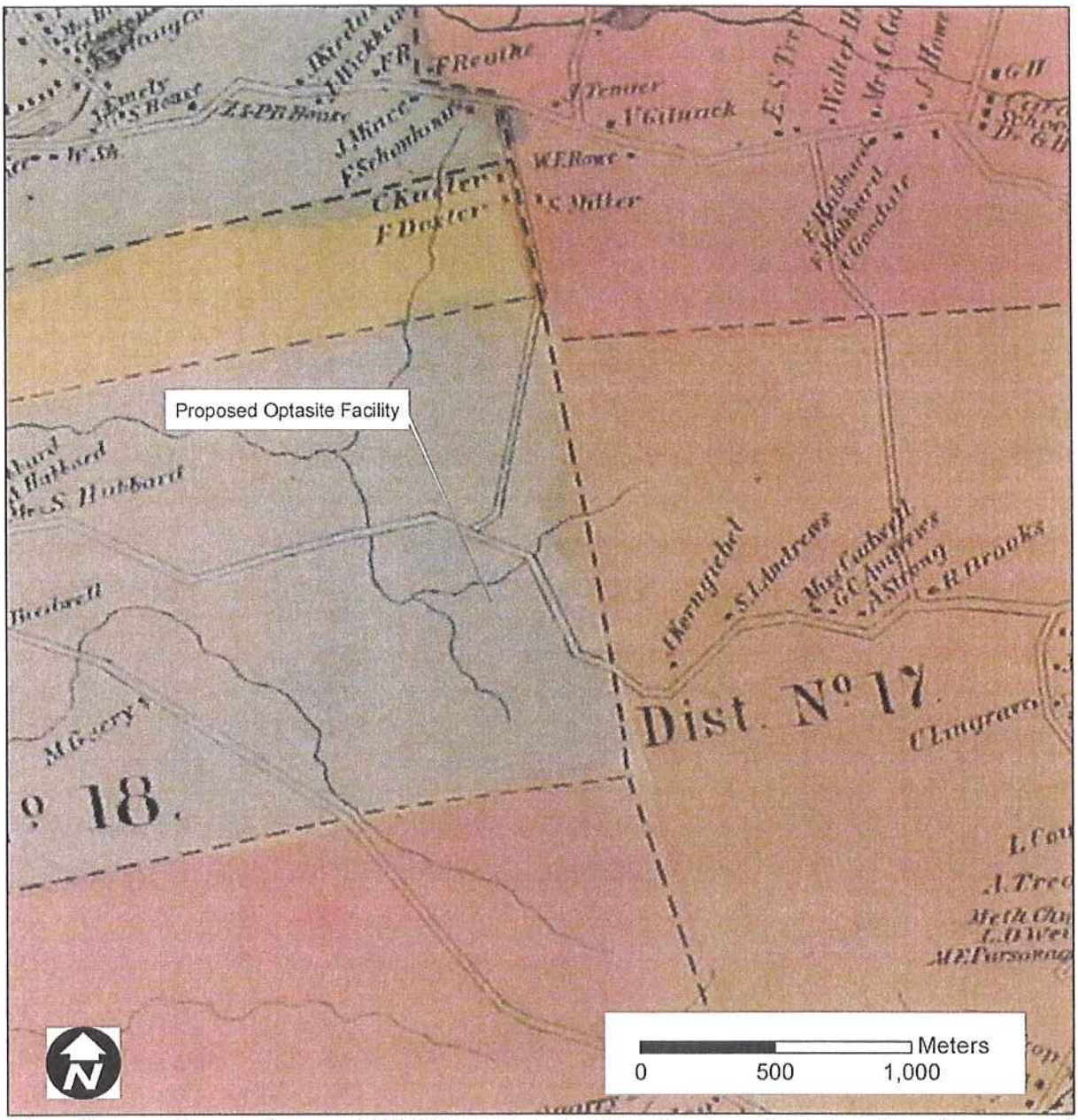


Figure 8. Excerpt from an 1869 historic map depicting the approximate location of a proposed cellular communications tower in Glastonbury, Connecticut.

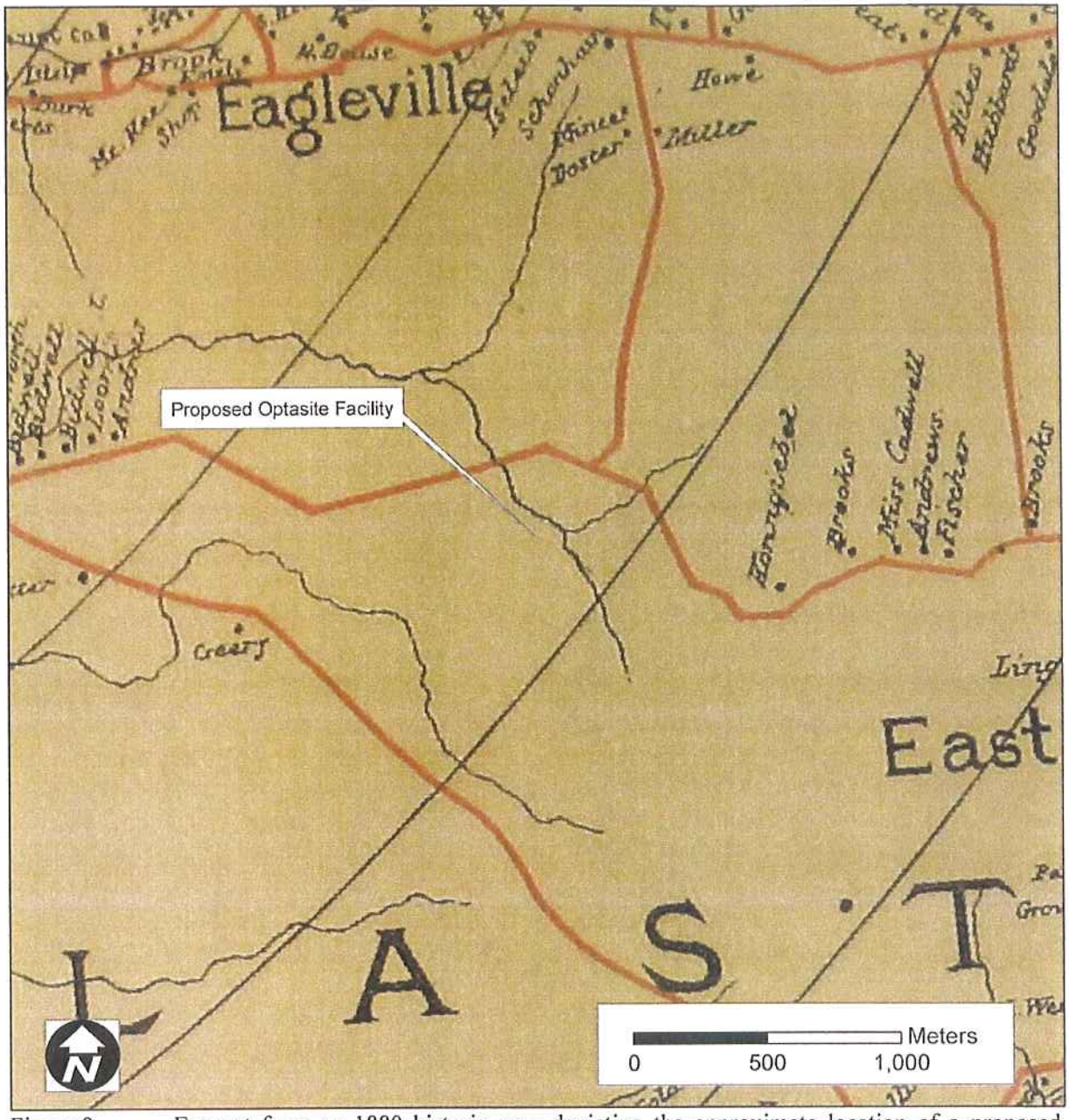


Figure 9. Excerpt from an 1880 historic map depicting the approximate location of a proposed cellular communications tower in Glastonbury, Connecticut.

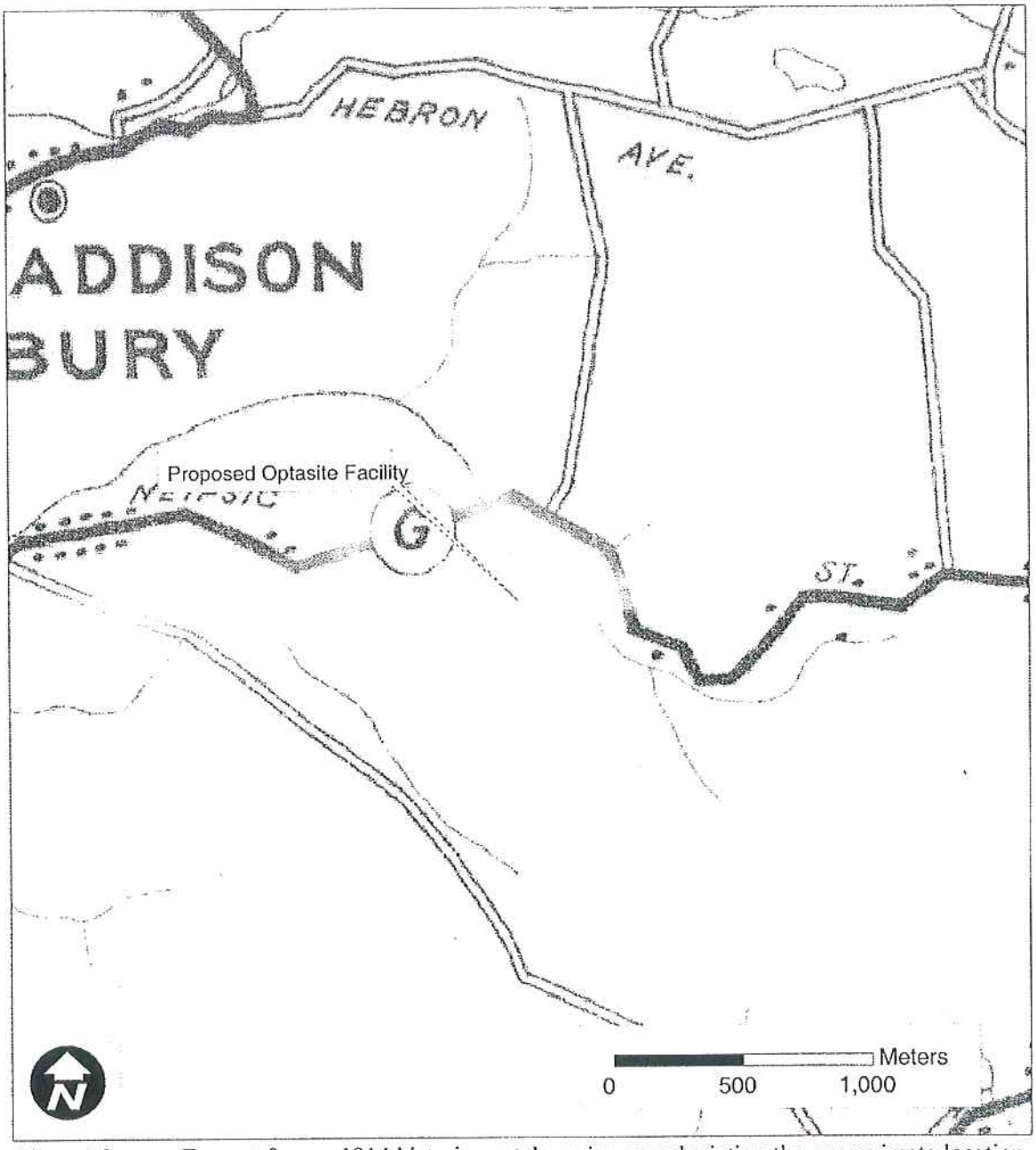


Figure 10. Excerpt from a 1914 historic postal service map depicting the approximate location of a proposed cellular communications tower in Glastonbury, Connecticut.

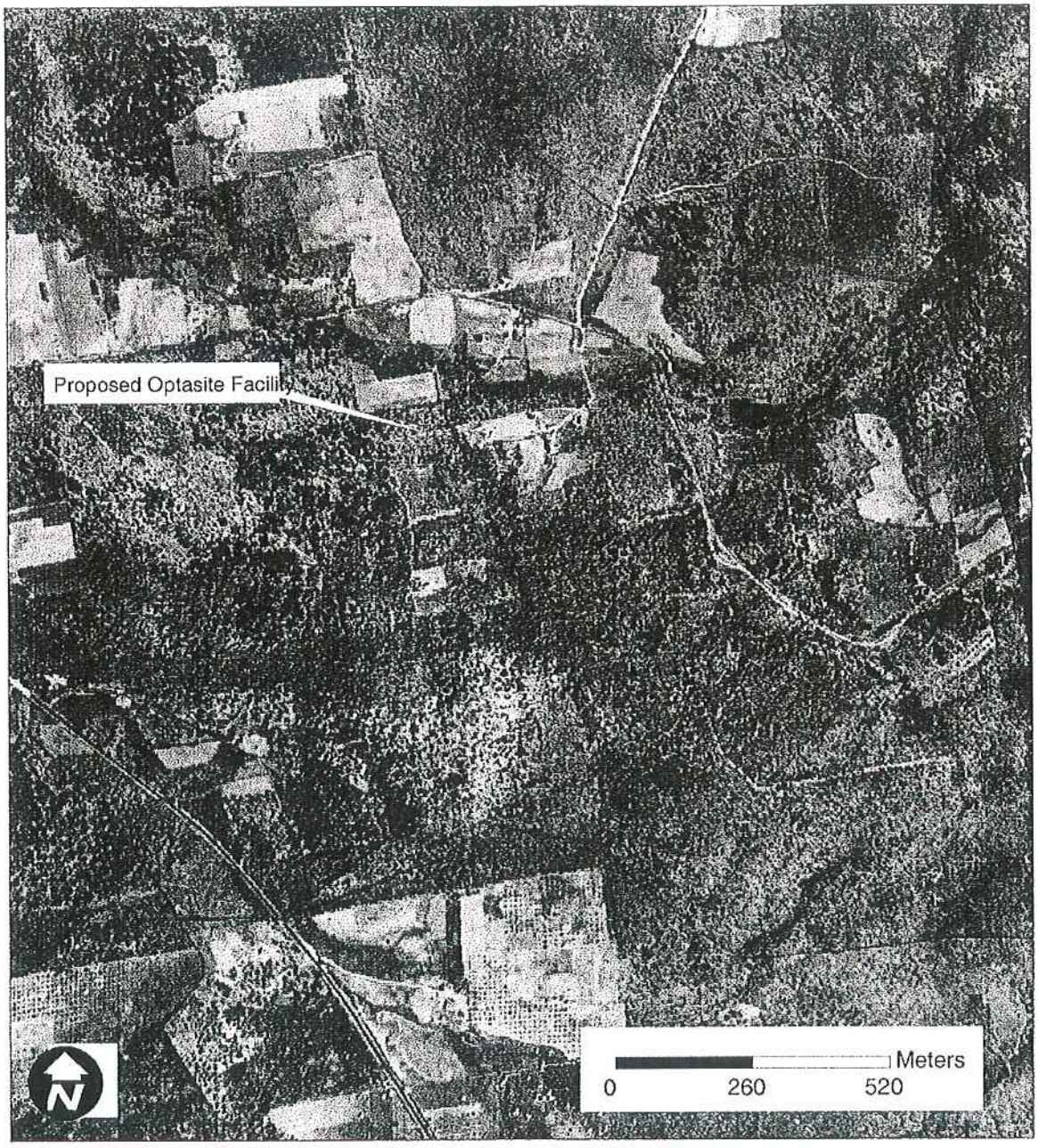


Figure 11. Excerpt from a 1934 aerial photograph depicting the approximate location of a proposed telecommunications tower in Glastonbury, Connecticut.

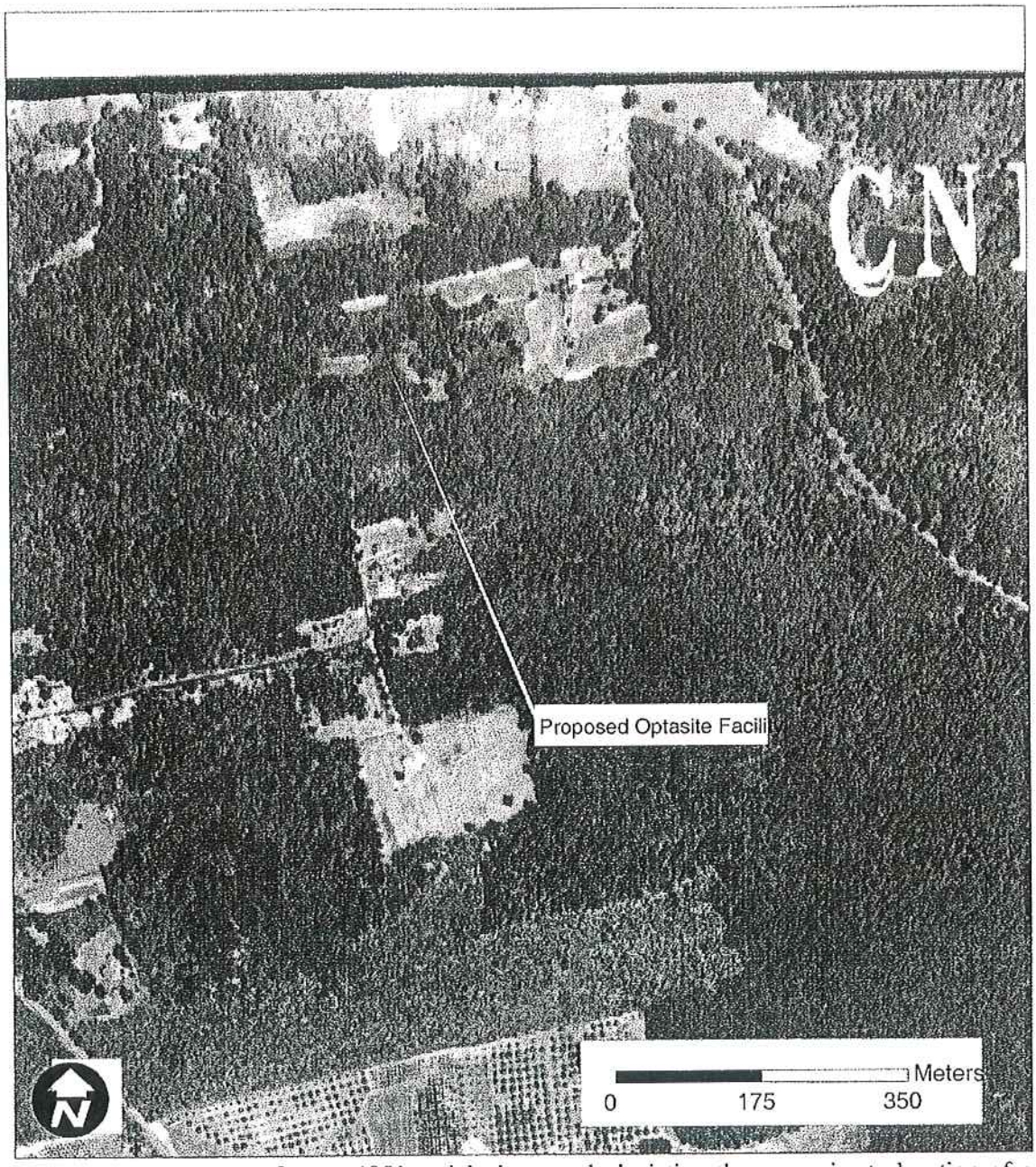


Figure 12. Excerpt from a 1951 aerial photograph depicting the approximate location of a proposed telecommunications tower in Glastonbury, Connecticut.

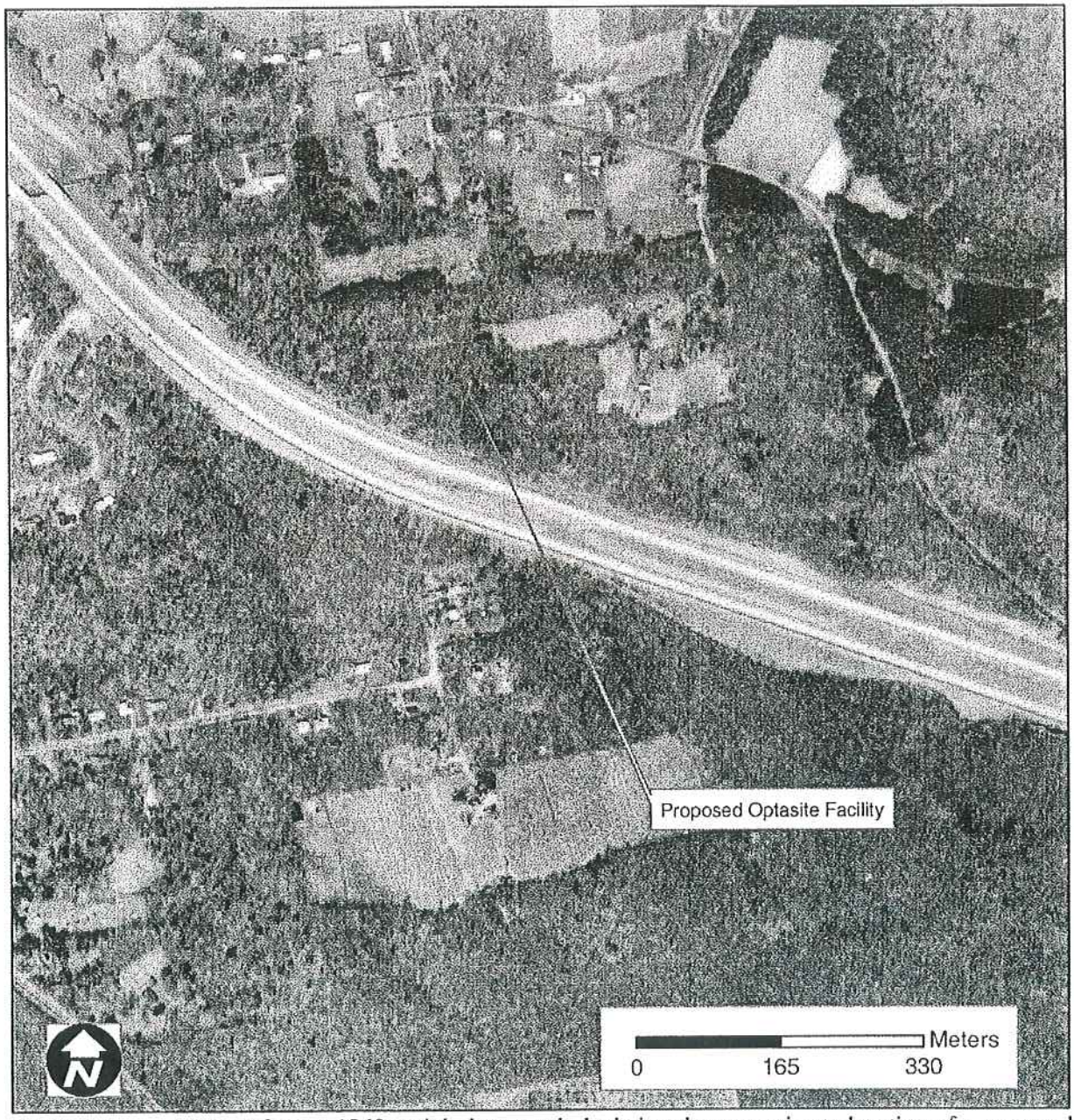


Figure 13. Excerpt from a 1968 aerial photograph depicting the approximate location of a proposed telecommunications tower in Glastonbury, Connecticut.

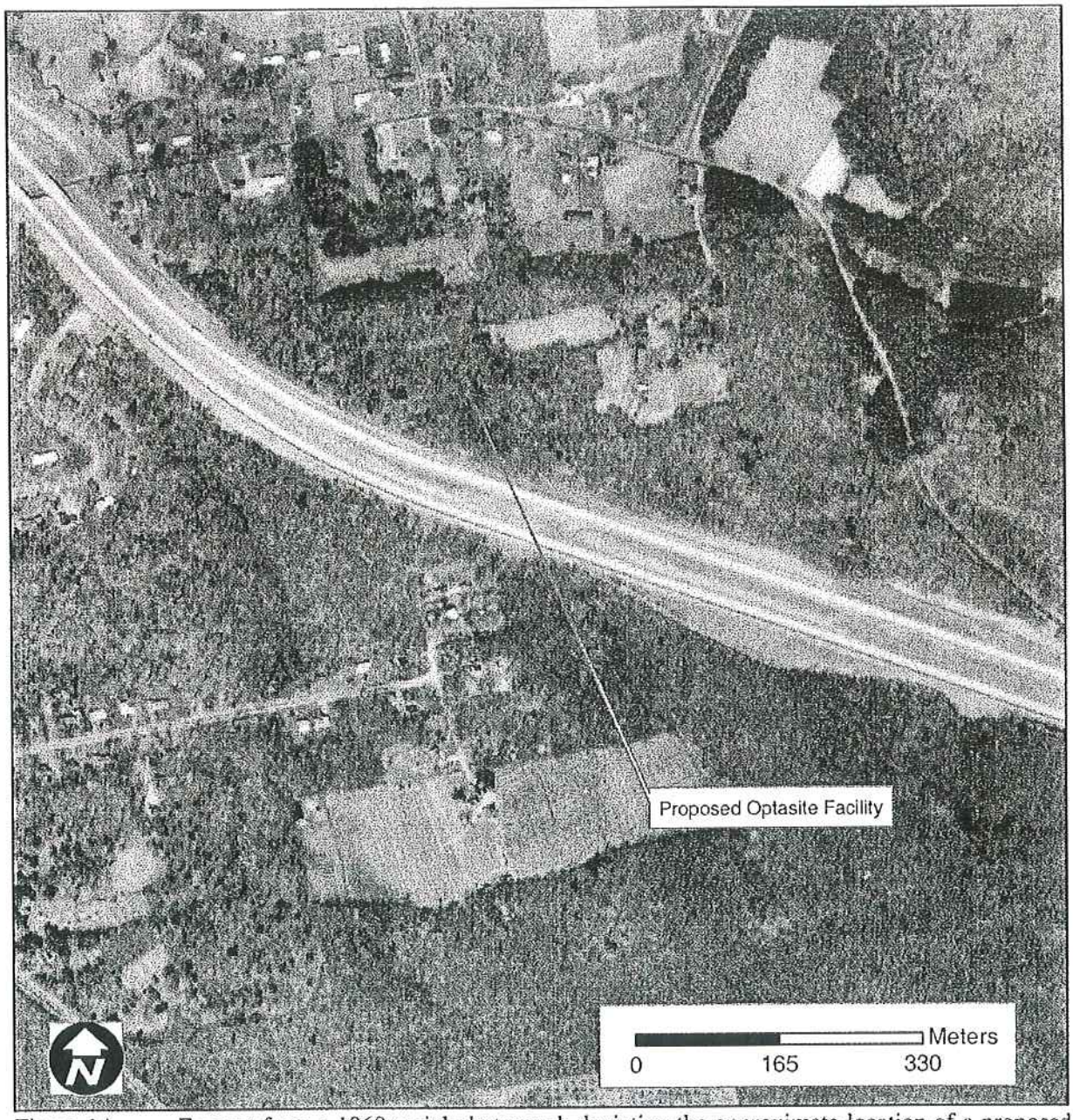


Figure 14. Excerpt from a 1968 aerial photograph depicting the approximate location of a proposed telecommunications tower in Glastonbury, Connecticut.

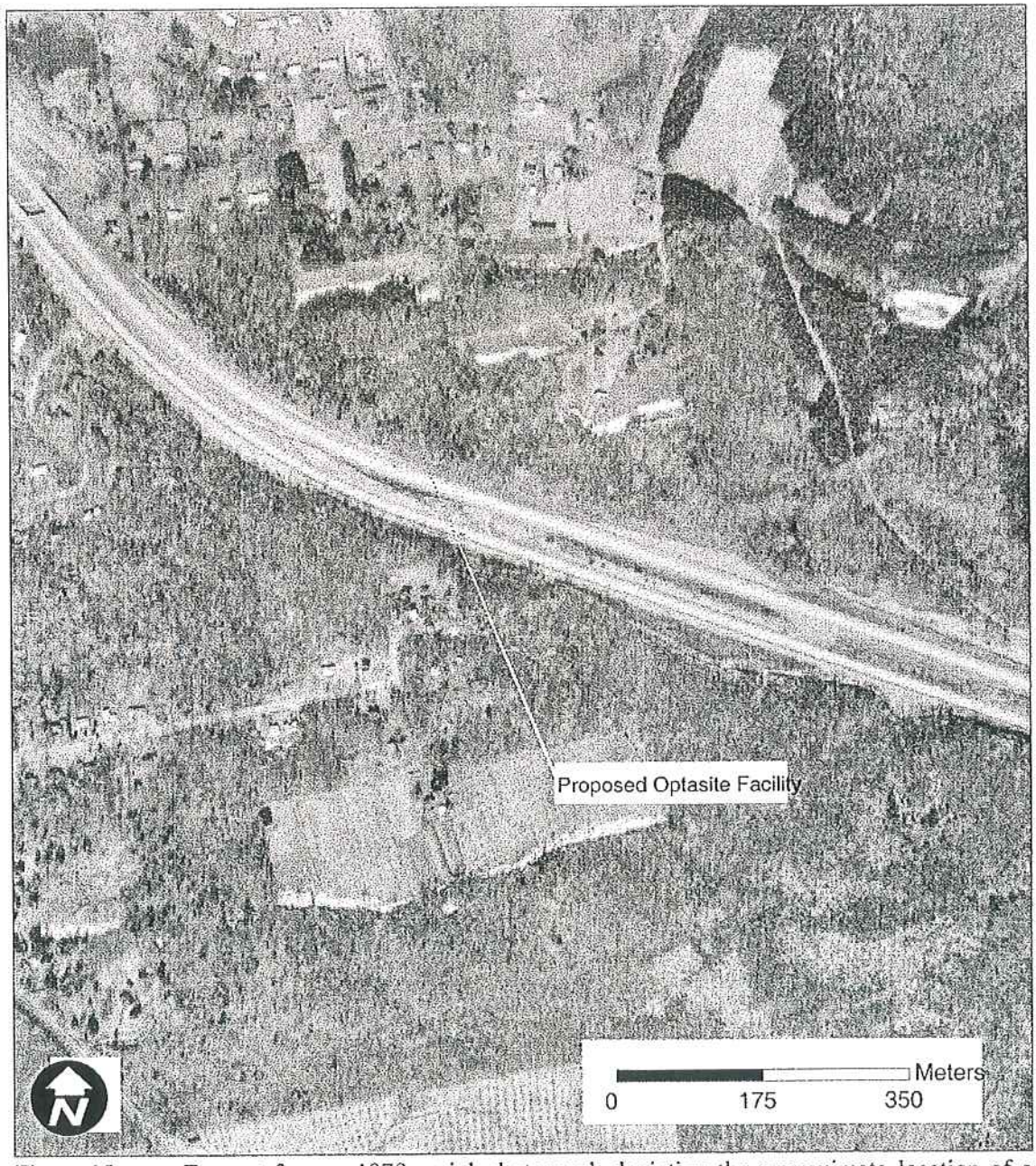


Figure 15. Excerpt from a 1970 aerial photograph depicting the approximate location of a proposed telecommunications tower in Glastonbury, Connecticut.

Figure 16. Excerpt from a 1986 aerial photograph depicting the approximate location of a proposed telecommunications tower in Glastonbury, Connecticut.

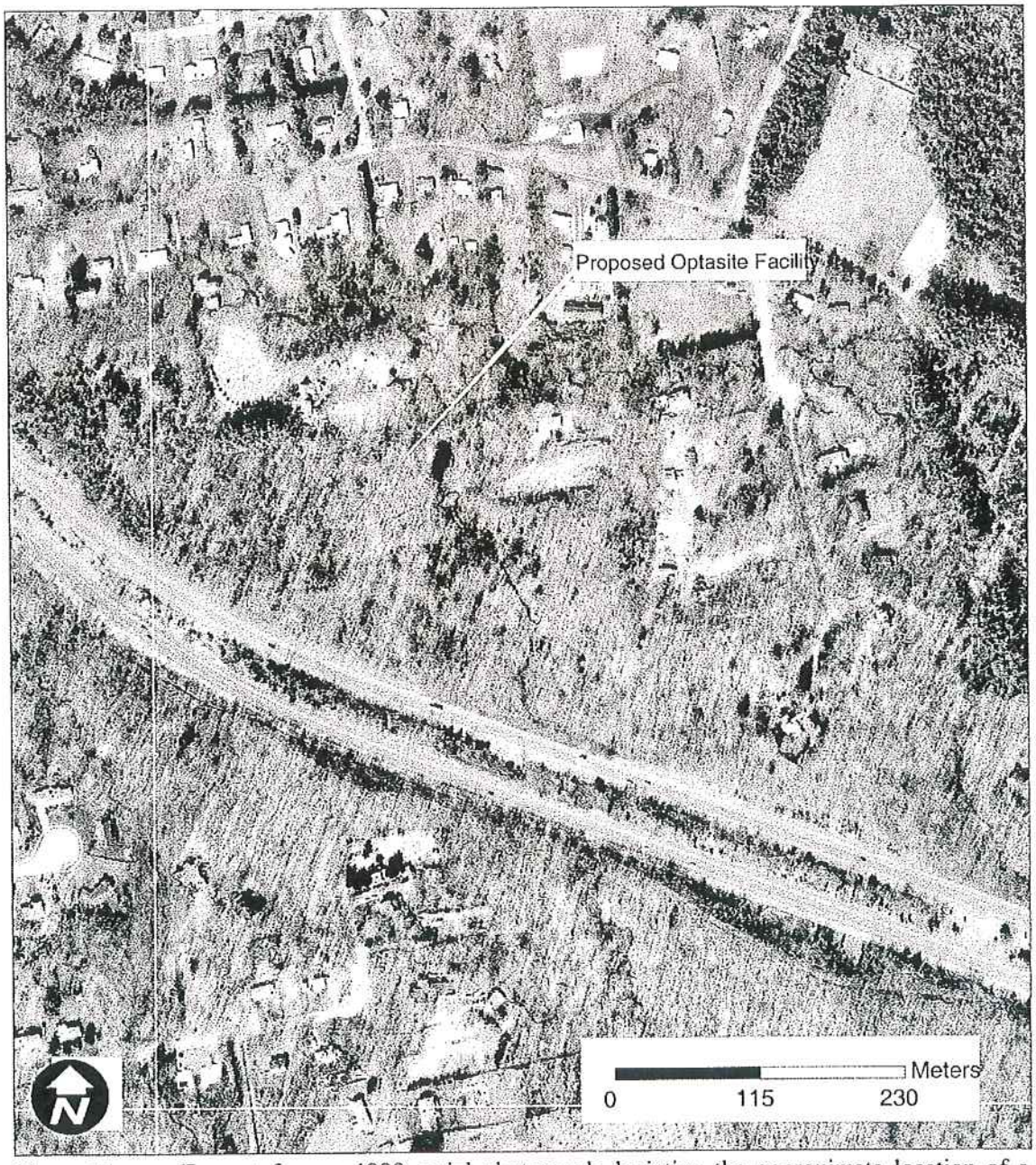


Figure 17. Excerpt from a 1998 aerial photograph depicting the approximate location of a proposed telecommunications tower in Glastonbury, Connecticut.

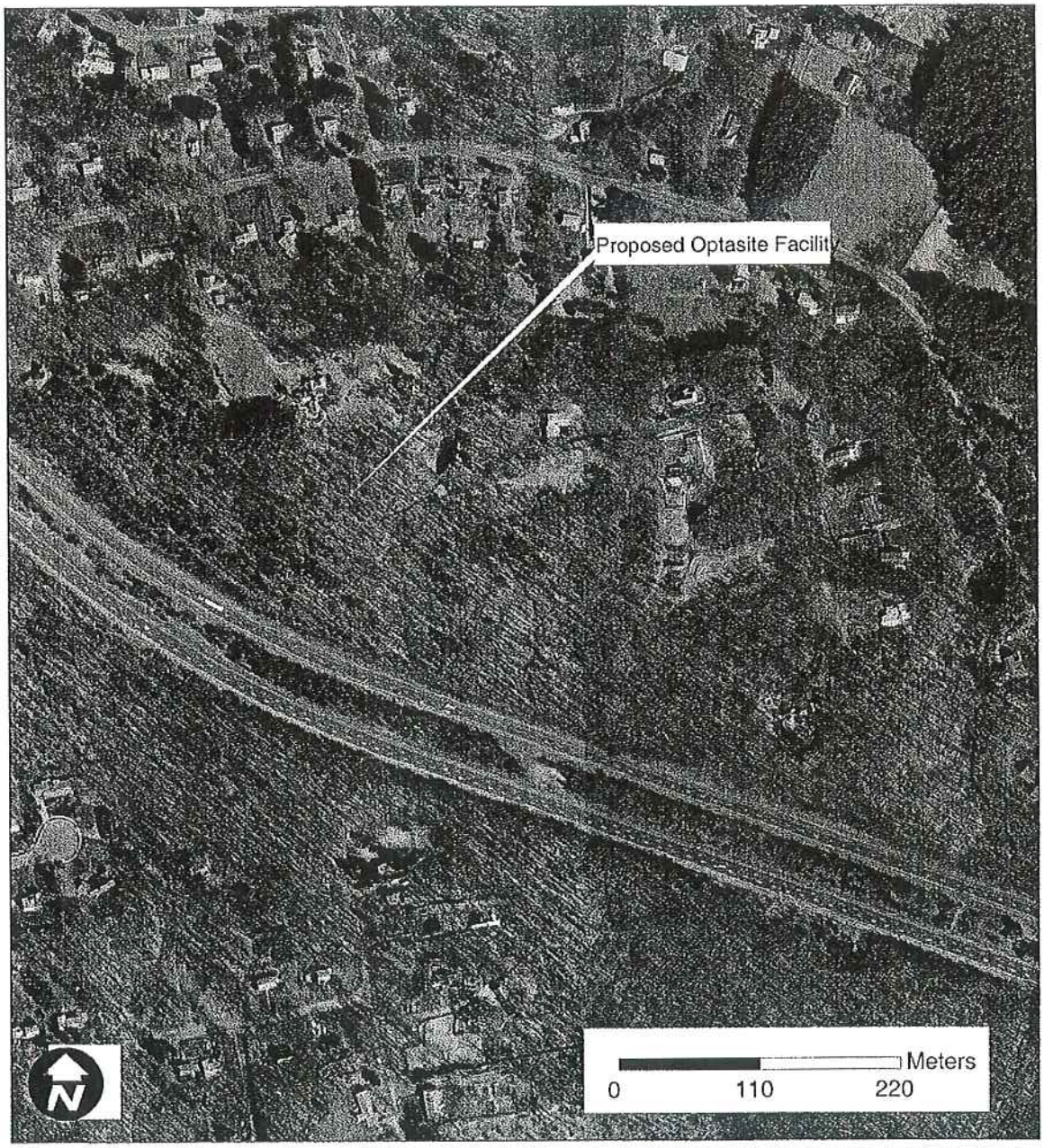


Figure 18. Excerpt from a 2004 aerial photograph depicting the approximate location of a proposed telecommunications tower in Glastonbury, Connecticut.

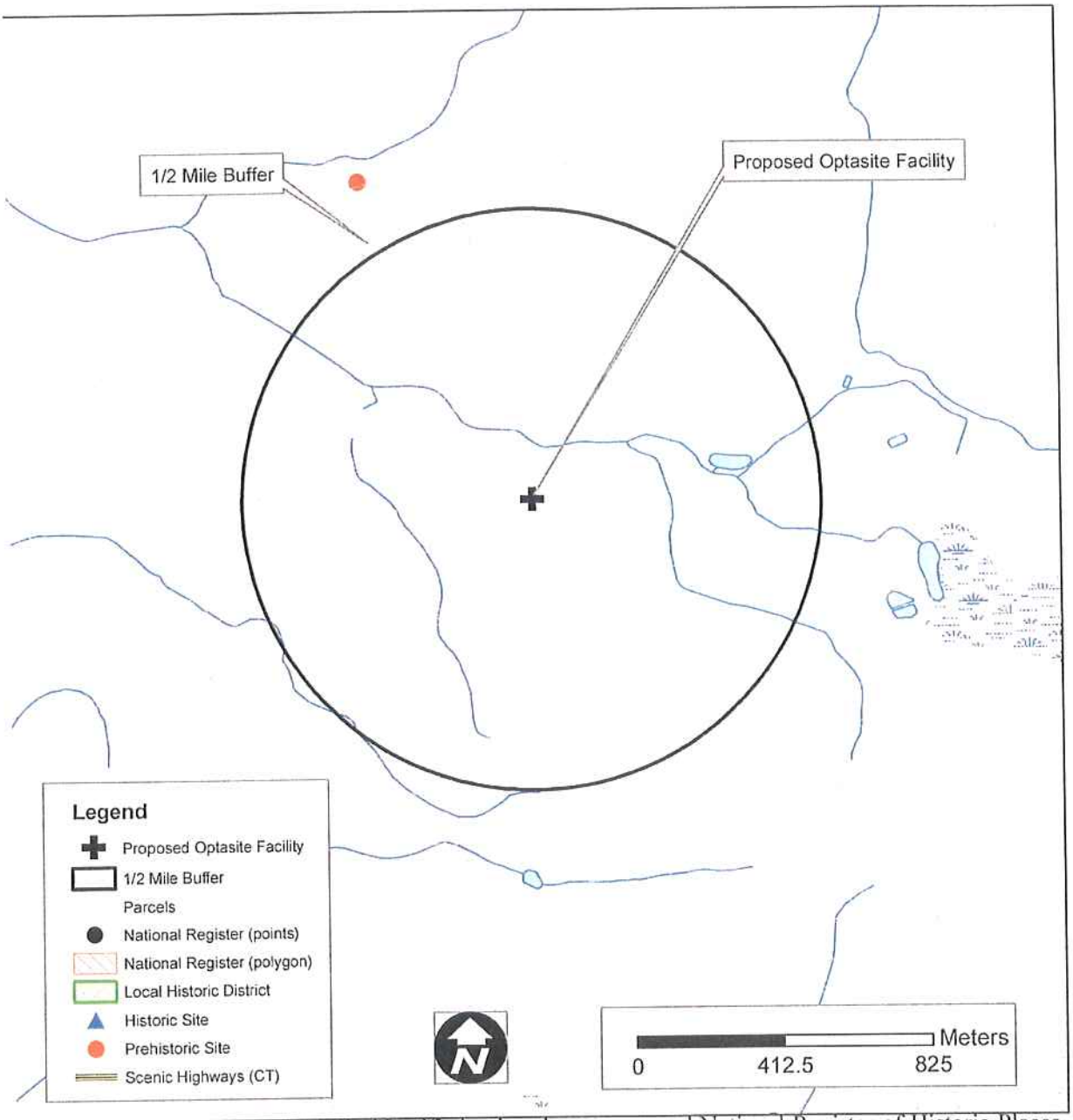


Figure 19. Map of previously identified cultural resources and National Register of Historic Places properties situated in the vicinity of a proposed cellular communication tower in Glastonbury, Connecticut.

NITHPO

NARRAGANSETT INDIAN TRIBAL HISTORIC PRESERVATION OFFICE

Cell Tower Division

P.O. Box 350 Wyoming, RI 02898

11 December 2007

Nicole Dentamaro
Environmental Engineer
Vanasse Hangen Brustlin, Inc.
54 Tuttle Place
Middletown, CT 06457-1847

RE: NITHPO Section 106 Clearance
TCNS #30363
947A Wickham Road
Glastonbury, CT

SITE CLEARED of Narragansett Tribe's Section 106 concerns

Greetings, Nicole:

On behalf of the Narragansett Indian Tribe, the NITHPO considers project TCNS #30363 cleared of the Narragansett Tribe's Section 106 concerns.

If, however, during your construction excavation artifacts, features or human remains or other significant tribal cultural resources are encountered, please halt excavation and contact our Office and the State Historic Preservation Office for evaluation.

Thank you for your support of the FCC's government-to-government consultation with the Narragansett Indian Tribe under Section 106 of the National Historic Preservation Act.

Sincerely,

Doug Harris

Doug Harris,
Senior Deputy Tribal Historic Preservation Officer
(401) 742-4035 dh@nithpo.com
TCNS #30363

Dec 12 07 12:05a Doug Harris 401 539 4217 p.4
Dec-12-2007 01:15 PM 401 539 4217 4/5

MASHANTUCKET PEQUOT MUSEUM & RESEARCH CENTER

12-14-07

Ms Nicole Dentamaro,
Environmental / GIS Analyst
Vanasse Hangen Brustlin, Inc.
54 Tuttle Place
Middletown, CT 06457-1847

Re: PHASE I CULTURAL RESOURCES RECONNAISSANCE SURVEY OF PROPOSED CELLULAR COMMUNICATIONS FACILITY CT-999-0101, GLASTONBURY, CONNECTUCUT
TCNS NOTIFICATION ID # 30363

Dear Ms Dentamaro,

I have reviewed the Phase I Cultural Resources Reconnaissance Survey entitled "PHASE I CULTURAL RESOURCES RECONNAISSANCE SURVEY OF PROPOSED CELLULAR COMMUNICATIONS FACILITY CT-000-0101, GLASTONBURY, CONNECTICUT," submitted by Heritage Consultants, LLC.
The research design and testing strategy meets acceptable professional standards, and I agree with the recommendations and conclusions.
Please keep me informed of any further developments with respect to this project.

Sincerely,

Kathleen Knowles

Kathleen Knowles,
Tribal Historic Preservation Officer
Mashantucket Pequot Tribe

RECEIVED
VANASSE HANGEN BRUSTLIN, INC.

MASHANTUCKET PEQUOT MUSEUM
& RESEARCH CENTER

110 Pequot Trail, PO Box 3180
Mashantucket, CT 06338
Phone: 860 396 6800
Fax: 860 396 6850
www.pequotmuseum.org

Transportation
Land Development
Environmental
Services

Vanasse Hangen Brustlin, Inc.

54 Tuttle Place
Middletown, Connecticut 06457
860 632-1500
FAX 860 632-7879

Memorandum

To: Nicole Dentamaro
Environmental/GIS Analyst

Date: March 10, 2008

Project No.: 40999.16

From: Dean Gustafson
Professional Soil Scientist

Re: Proposed Optasite Facility
497A Wickham Road
Glastonbury, Connecticut

Vanasse Hangen Brustlin, Inc. (VHB) has completed a determination of NEPA compliance for listed category item 7, significant change in surface features (e.g., wetland fill, etc.) for the following Site.

Project Site:

State: Connecticut
County: Hartford
Address: Wickham Road, Glastonbury
Latitude/Longitude Coordinates: N41°42'04.0" W72°33'50.5"
Size of Property: ±12.15 acres
Watershed: Hubbard Brook (basin # 4007)

The proposed Optasite communications facility and associated infrastructure (e.g., access drive, utilities, etc.) are located on the west side of a 12.15± acre property. A forested wetland system consisting of an unnamed, shallow perennial watercourse and associated bordering wetlands transects the property from south to north. Wetlands were identified and delineated by Kleinfelder, as detailed in the attached June 25, 2007 delineation report. The watercourse receives inputs from associated bordering hillside seeps as well as runoff from Route 2. Evidence of road runoff and stormwater inputs are apparent in the presence of alluvial (road) sand deposits on terraces above the eroded stream channel. The proposed access road would enter the property in the northeast corner, south of an existing driveway. The access road would generally follow the east and south property boundary lines, within a narrow forested strip adjacent to cleared areas, before entering the forested portion of the lot east of the riparian corridor. The access road would cross the watercourse (a 10± foot wide channel) and associated bordering wetlands for a distance of approximately 52 linear feet, before entering the facility compound located in uplands west of the riparian corridor.

The proposed wetland/watercourse crossing in support of Optasite's development includes placement of fill material to create a stable road base and placement of a 6-foot by 6-foot box culvert for the stream crossing. Improvements to the wetland crossing will result in permanent wetland fill of 2,852± square feet (SF) as reported by Clough Harbour & Associated LLP and shown on Sheet Number D01, Culvert Details (see attached).

Under NEPA compliance with respect to wetland/waterway impacts, in order to determine if a proposed project results in a "significant environmental effect" and as a result an Environmental Assessment (EA) would need to be prepared, a project is evaluated against the Corps' minimal impact threshold criteria to "Waters of the U.S." (e.g., wetlands, waterways, etc.). Generally, if a project is determined to satisfy the requirements of a Category 1 project (minimal impact and eligible without screening by reviewing agencies) under the Department of the Army Programmatic General Permit (PGP) State of Connecticut (effective May 311, 2006, expiration date May 31, 2011) it is not considered to result in a significant environmental effect and a Finding of No Significant Impact (FONSI) could be issued for the NEPA listed category item 7. In order to support this conclusion, a careful review of the PGP criteria for Category 1 is necessary.

For the proposed wetland/watercourse crossing improvements, the following criteria are required in order to be eligible under Category 1 of the PGP (refer to the PGP for further details).

> *Unconfined in-stream work, including construction, installation or removal of cofferdam structures or placement of fill, is limited to the period July 1 through September 30 except in instances where a specific written exception has been issued by the CT DEP.*
>
> *Less than 5,000 SF of Inland Waters, Waterway and/or Wetland Fill and Secondary Impacts. Fill impacts include all temporary and permanent fill and excavation discharges resulting from a single and complete project, see #5 of General Requirements. Secondary impacts include but are not limited include to impacts to inland waters, waterways or wetlands drained, dredged, flooded, cleared or degraded resulting from a single and complete project. (See 40 CFR 230.11 (g) and (h))*
>
> ***Driveway/Roadway Crossings.*** *The following are required for driveway/roadway crossings constructed on brooks, streams, rivers and their tributaries. These provisions do not apply to crossings of drainage ditches or waters with no definable channel.*
>
> - ***Driveway or Roadway crossings using a culvert provided:***
>   - *the tributary watershed to the culvert is ≤ 1.0 sq. mile (640 acres),*
>   - *the culvert gradient (slope) is no steeper than the streambed gradient immediately upstream or downstream of the culvert,*
>   - *for a crossing constructed using a pipe culvert, the inverts are set such that ≥ 25% of the pipe or 12", whichever is less, is set below the streambed elevation,*
>   - *the culvert is backfilled with natural substrate material matching upstream and downstream streambed substrate,*
>   - *the structure does not otherwise impede the passage of fish and other aquatic organisms, and*
>   - *the structure allows for continuous flow of the 50-year frequency storm flows.*

The proposed wetland/watercourse crossing design carefully considered these requirements (a.k.a., natural stream crossing design standards) in order to be compliant with a Category 1 determination. First, the wetland fill required to improve the existing wetland/watercourse crossing total 2,850 SF, less than the 5,000 SF trigger. Also, the tributary watershed to the existing culvert is approximately 48.7 acres, well below the 640 acre limit; refer to attached Hydrologic & Hydraulic Assessment report prepared by Clough Harbour & Associates LLP, dated November 21, 2007. In addition, the 6-foot by 6-foot box culvert will have a gradient no steeper than the existing upstream or downstream gradients and will be set 12 inches below the streambed elevation and backfilled with natural streambed substrate. The culvert proposed will not impede fish or aquatic organism movement and allow for unimpeded flow of the 50-year design storm.

As a result of careful adherence to the Corps' natural stream crossing design standards, the proposed wetland/watercourse impacts associated with Optasite's development are considered eligible under Category 1 of the PGP and therefore a Finding of No Significant Impact for NEPA listed category item 7 is provided.

Attachments

- Wetland & Watercourse Delineation Report, Kleinfelder, June 25, 2007
- Sheet No. D01 – Culvert Details, Clough Harbour & Associates LLP, 06/15/07
- Hydrologic & Hydraulic Assessment, Clough Harbour & Associates LLP, November 21, 2007

KLEINFELDER
EXPECT MORE®

June 25, 2007

Mr. Paul Lusitani
Clough Harbour & Associates, LLP.
2139 Silas Deane Highway
Suite 212
Rocky Hill, CT 06067-2336

RE: Wetland & Watercourse Delineation Report
618 Neipsic Road a.k.a. 497a Wickham Rd
Glastonbury, Connecticut

Dear Mr. Lusitani:

Kleinfelder East, Inc. (Kleinfelder) completed an on-site investigation to determine the presence or absence of wetlands and/or watercourses on the above referenced property (618 Neipsic Road a.k.a. 497a Wickham Rd, Glastonbury, CT), as requested and authorized. This investigation involved a wetland/watercourse delineation that was completed by a qualified staff soil scientist and conducted in accordance with the principles and practices noted in the United States Department of Agriculture (USDA) Soil Survey Manual (1993). The soil classification system of the National Cooperative Soil Survey was used in this investigation to identify the soil map units present on the project site.

INVESTIGATION

The project site was investigated on June 5, 2007, with a temperature in the mid-70s under partly sunny conditions. Soil types are identified by observing soil morphology (soil texture, color, structure, etc.). To observe the morphology of the soils, numerous test pits and/or hand borings (generally to a depth of at least two feet) are completed. Wetland and watercourse boundaries were identified with flags and hung from vegetation. These flags are labeled "Wetland Delineation", numbered consecutively, and generally spaced a maximum of approximately 50 feet apart. It is important to note that flagged wetland and watercourse boundaries are subject to change until verified by local, state, or federal regulatory agencies.

REGULATORY INFORMATION

Wetlands and watercourses are regulated by both state and federal law each with different definitions and regulatory requirements. Accordingly, the State may regulate waters that fall outside of federal jurisdiction; however, where federal jurisdiction exists concurrent State jurisdiction is almost always present.

State Regulation

Wetland determinations are based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land. *Watercourses* are defined as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof." *Intermittent watercourse* determinations are made based on the presence of a defined permanent channel and bank, and two of the following characteristics: (1) evidence of scour or deposits of recent alluvium or detritus, (2) the presence of standing or flowing water for a duration longer than a

particular storm incident, and (3) the presence of hydrophytic vegetation. (See Inland Wetlands and Watercourses Act §22a-38 CGS.)

Federal Regulation

The United States Army Corps of Engineers (ACOE) regulate "Waters of the Untied States" under Section 404 of the Clean Water Act, which includes adjacent/tributary wetlands and watercourses. The New England Region of the ACOE has issued guidance documents discussing how wetlands and/or watercourses can be as much as 500 or more feet from regulated Waters of the U.S. and still be regulated if the Corps finds scientific indicators (e.g. ecological/biological/hydrological) that provide connections to the jurisdictions wetland. This guidance distance has been developed by the Corps New England Region based on research suggesting home range and migratory distances of 54 palustrine/riparian (wetland and watercourse) reptiles, amphibians and mammals. Discontinuities between jurisdictional Waters of the U.S. and neighboring wetlands can cause isolation of those wetlands or watercourse, which in turn can eliminate federal jurisdiction. The Corps use a three (3) parameter approach to wetland delineation that includes soils, hydrology and vegetation. It is necessary to successfully observe all three in order for the area to be considered a federal wetland in addition to it being "adjacent" to Waters of the U.S. Disturbed and atypical conditions allow for some modification of this requirement and invoke professional judgment.

Generally, in accordance with the Connecticut Programmatic General Permit (PGP), the Corps requires a permit application for activities of one (1) acre or greater affecting federal jurisdictional wetland areas or if special wetlands occur (these are defined in the PGP document).

WETLAND AND WATERCOURSE SITE DESCRIPTION

Wetland classifications used to identify the type of wetland(s) occurring on the project site are based on guidance from the U.S. Fish and Wildlife Service (USFWS) (Cowardin et.al. 1979). These are further qualified with the Hydrogeomorphic Method of wetland classification (Brinson, 1993). Photographs of the wetland/watercourse and upland habitats are attached.

The on-site wetland that was delineated consisted of a lacustrine unconsolidated bottom and emergent wetland system (USFWS class: LUB1C and LEM2E) which is seasonally flooded. Surrounding this system was a palustrine forested - emergent wetland system (USFWS class: PFO1 and PEM1) that was associated with the stream. These wetlands were delineated using sequentially numbered flags 1-17 (open end), 50 (open end) – 118 (open end), and 150 (open end) – 175. This wetland area is situated along an unnamed stream which receives overland flow form both the surrounding uplands and runoff from State Route 2, which borders the wetland to south. Water flows in a generally southern direction and ends in a small pond at the northern end of the property associated with Hubbard Brook. The wetland system on-site consists of the immediate edges of the stream, as well as, other seasonally saturated areas surrounding the stream where water ponds during high flow events. In general, the majority of the stream has 1 to 2 inches of water, with the outside edges of turning the channel containing as much as 6 inches. The water which falls on the surrounding uplands during a rain event tends to flow directly into the stream, as well as, flatter areas with the uplands surrounding the stream. Vegetation in these areas is thick and consists mostly of facultative and wetter species.

TABLE 1: Predominate Vegetation within and adjacent to the wetlands (Common (*Scientific)* names)

TREES & SAPLINGS
Green ash (*Fraxinus pennsylvanica*)
Pin oak *(Quercus palustris)*
Red maple *(Acer rubrum*)
Red oak *(Quercus rubra)*
Sweet birch *(Betula lenta)*
White pine (*Pinus strobus)*
Atlantic White Cedar (Chamaecyparis thyoides)
Yellow birch *(Betula alleghaniensis*)
SHRUBS
Rosebay Rhododendron (*Rhododendron maximum)*
HERBS/VINES
Slender blue iris *(Iris prismatica)*
Cinnamon fern *(Osmunda cinnamomea)*
Sensitive fern (*Onoclea sensibilis*)
Skunk cabbage (*Symplocarpus foetidus*)
Virginia creeper *(Parthenocissus quinquefolia)*
*Denotes State non-native invasive species

SOIL MAP TYPES

A brief description of each soil map unit identified on the project site is presented below including information from the Untied States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil descriptions. Further information on these and other soils, please refer to the internet site at http://soils.usda.gov/technical/classification/osd/index.html). The soil survey map and soil identification pages for the project site are attached.

Upland Soils

Manchester (MgB) gravelly sandy loam, 3 to 45 percent slopes
The Manchester series consists of very deep, excessively drained soils formed in sandy and gravelly glacial outwash and stratified drift. They are nearly level to steep soils on outwash plains, terraces, kames, deltas and eskers. Slope ranges from 0 to 45 percent, approximately 3% on site. The soils formed in sandy and gravelly glaciofluvial materials and stratified drift derived mainly from a red sedimentary rocks and basalt. Diagnostic horizons in this pedon include an Ochric epipedon from 0 to 9 inches, a sandy-skeletal particle-size control section from 10 to 40 inches and no diagnostic subsoil.

Hartford sandy loam, 0 to 3 percent slopes
The Hartford series consists of very deep, somewhat excessively drained soils formed in sandy glacial outwash. They are nearly level to strongly sloping soils on plains and terraces. Slope ranges from 0 to 8 percent. Saturated hydraulic conductivity is high in the surface layer and subsoil and high or very high in the substratum. Diagnostic horizons in this pedon include an ochric epipedon from 0 to 8 inches (Ap horizon), and a cambic horizon in the zone from 8 to 26 inches (Bw1 and Bw2 horizons).

Wetland Soils

Saco (108) silt loam
Saco soils are nearly level soils on flood plains, along rivers and streams. They are in depressed areas. Slope ranges from 0 to 2 percent. The soils formed in recent silty alluvium derived mostly from granite, gneiss, schist, shale and sandstone. In places water is ponded on the surface from late fall through early

spring. Permeability is moderate in the silty layers and rapid or very rapid in the underlying sandy materials. These soils flood in the spring and after periods of heavy rainfall.

REFERENCES

1. Brinson, M.M. 1993. *A Hydrogeomorphic Classification for Wetlands*. Tech. Rpt.WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

2. Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. Classification of Wetland and Deepwater Habitats of the Untied States. US Government Printing Office. Washington D.C. GPO 024-010-00524-6.103 pp.

CLOSING

Thank for the opportunity to work with you on this project. Please contact me at (860) 683-4200 if you have any questions or require additional assistance.

Very truly yours,
Kleinfelder East, Inc.

Date:
2007.07.02
20:24:43 -04'00'

Paul Wheeler
Project Wetland Scientist

Date: 2007.07.02
20:24:12 -04'00'

Jeffrey R. Shamas, CE, SS, PWS
Natural Resources Program Manager

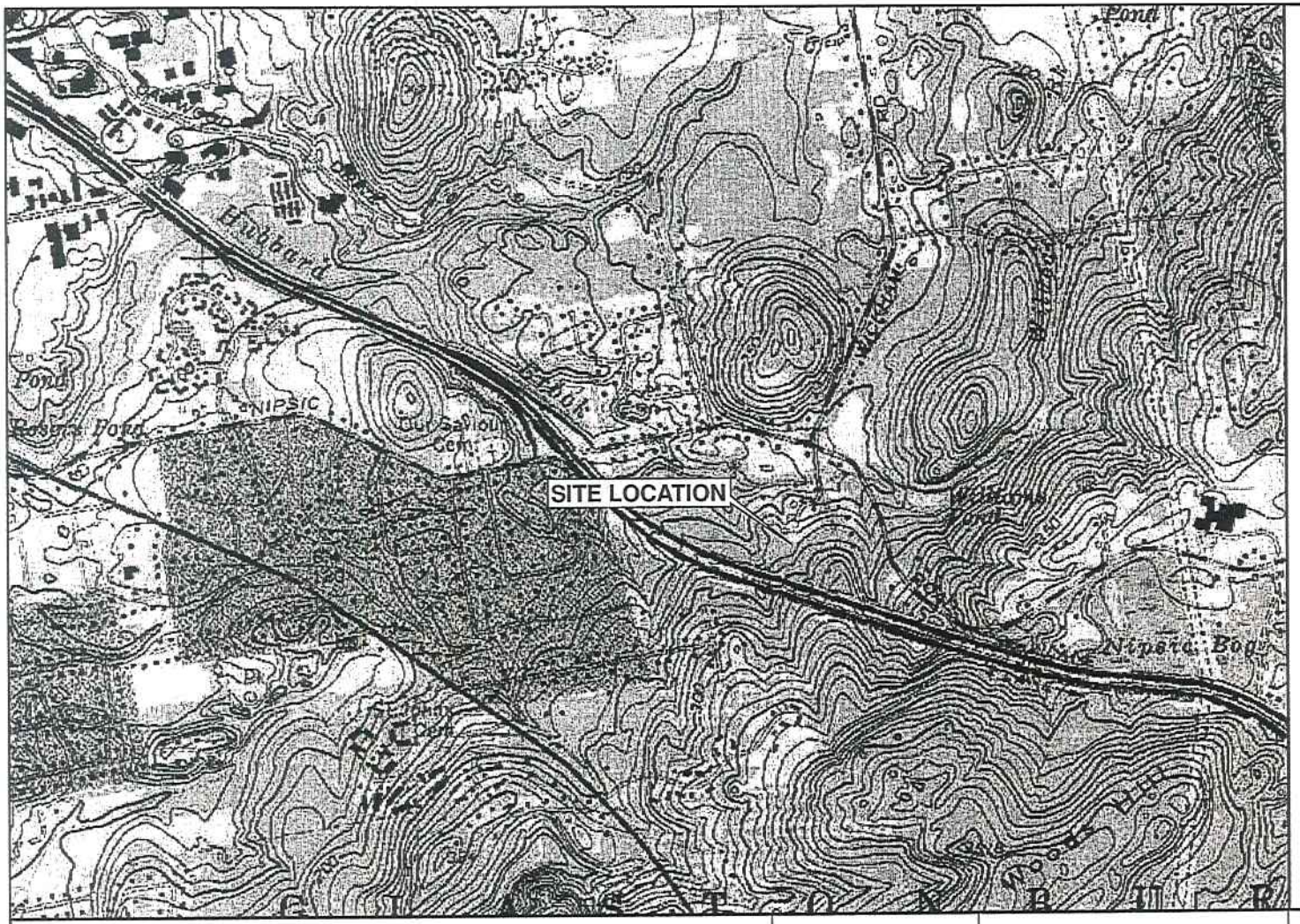
Attachments

Photographs

Cover types within Wetland Area

Stream and a portion of the associated wetland within the project Site

Site Location Map



300 150 0 300

SCALE IN METERS

1,000 500 0 1,000

SCALE IN FEET

N

SITE LOCATION

DRAWN BY:	PW
REVISED BY:	PW
CHECKED BY:	JS
DATE: 6/8/07	APPROVED BY: JS

KLEINFELDER
7 AIRPORT PARK BLVD
LATHAM, NEW YORK 12110
PH. (518) 786-8750 FAX. (518) 786-8755
www.kleinfelder.com

SOURCE: CONNECTICUT DEP GIS DATA DEPOT

SITE LOCATION MAP

CLOUGH HARBOUR & ASSOCIATES, LLP.
618 NEIPSIC ROAD a.k.a 497a WICKHAM ROAD
HARTFORD COUNTY
GLASTONBURY, CONNECTICUT

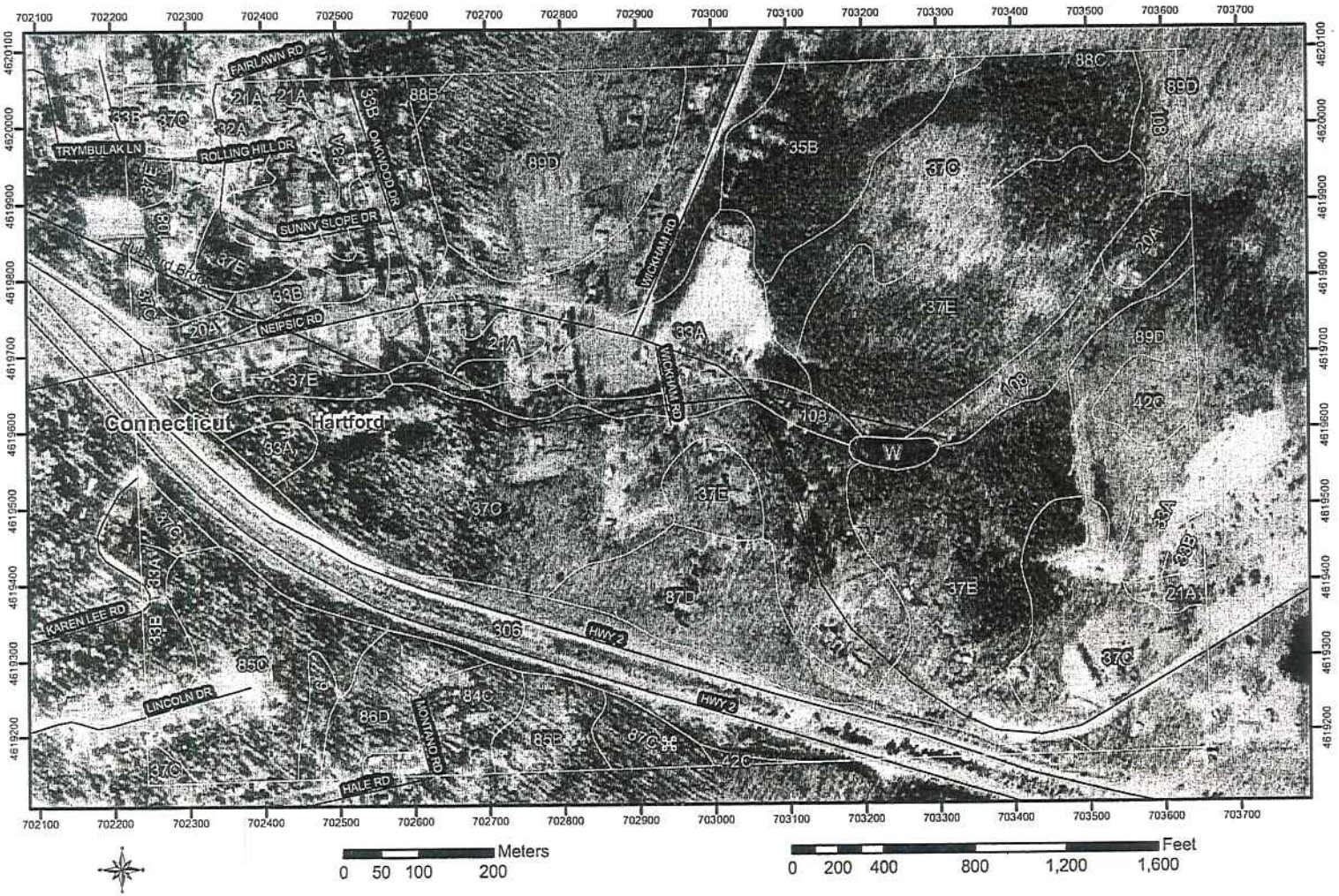
FIGURE 1

G:\EPP Projects\Neipsic rd\Site_Location.mxd

Soil Survey Map and
Associated Information

SOIL SURVEY OF STATE OF CONNECTICUT

Neipsic Rd Soils



Neipsic Rd Soils

MAP LEGEND

- Soil Map Units
- Cities
- Detailed Counties
- Detailed States
- Interstate Highways
- Roads
- Rails
- Water
- Hydrography
- Oceans
- Escarpment, bedrock
- Escarpment, non-bedrock
- Gulley
- Levee
- Slope
- Blowout
- Borrow Pit
- Clay Spot
- Depression, closed
- Eroded Spot
- Gravel Pit
- Gravelly Spot
- Gulley
- Lava Flow
- Landfill
- Marsh or Swamp
- Miscellaneous Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Slide or Slip
- Sinkhole
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Perennial Water
- Wet Spot

MAP INFORMATION

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov

Coordinate System: UTM Zone 18

Soil Survey Area: State of Connecticut
Spatial Version of Data: 4
Soil Map Compilation Scale: 1:12000

Map comprised of aerial images photographed on these dates:
4/23/1990; 3/24/1997

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

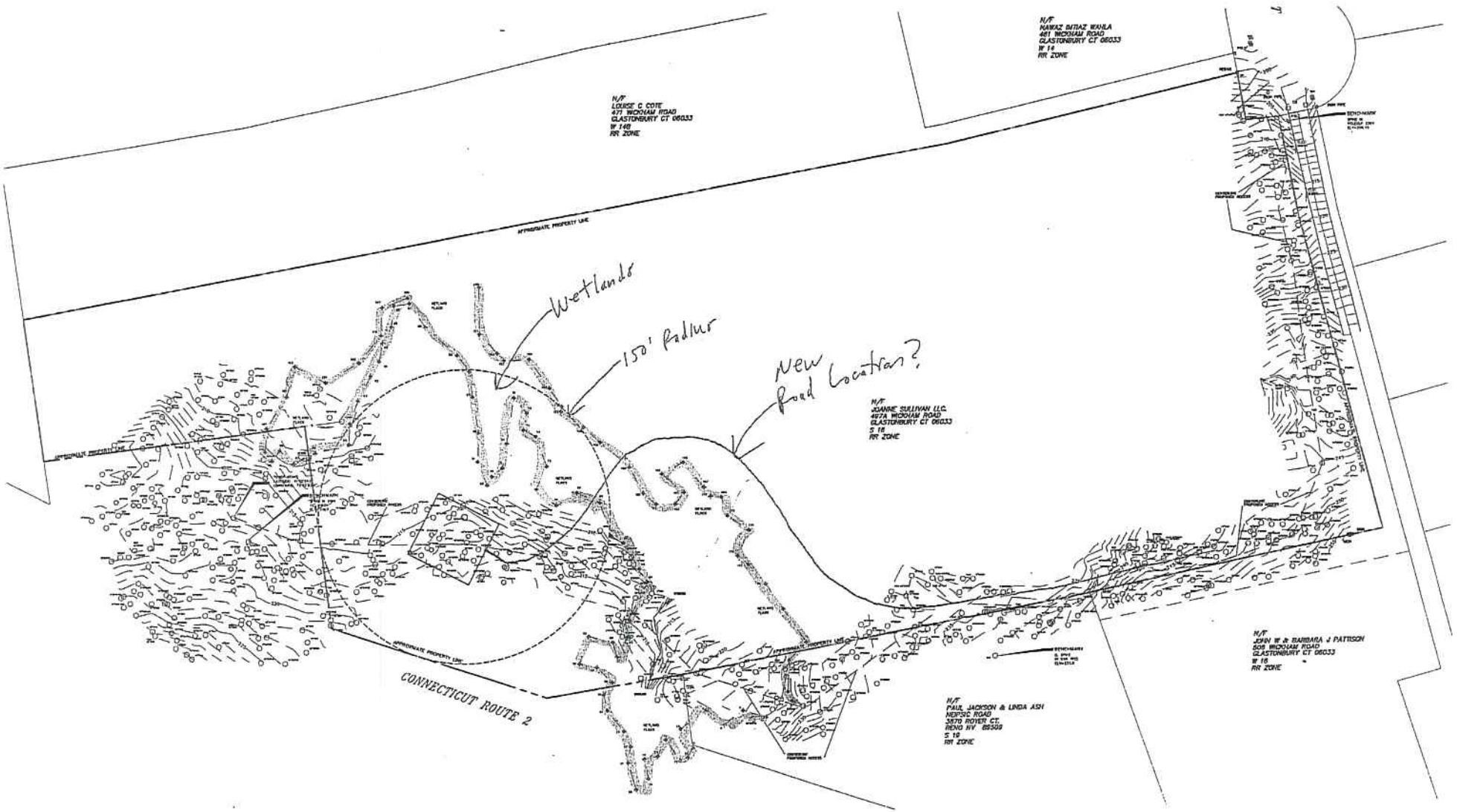
Map Unit Legend Summary

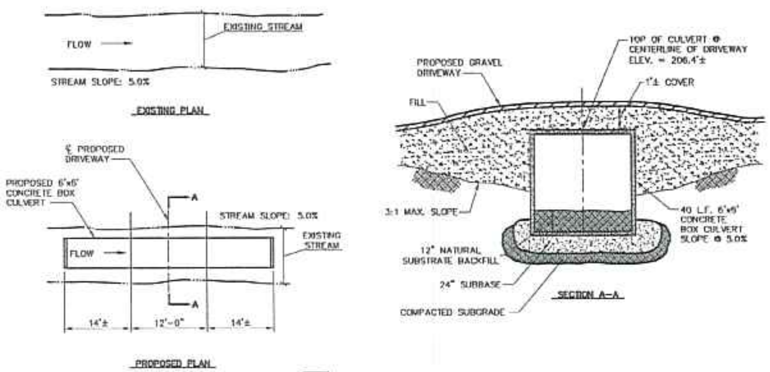
State of Connecticut

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
6	Wilbraham and Menlo soils, extremely stony	1.3	0.4
20A	Ellington silt loam, 0 to 5 percent slopes	3.5	1.1
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	3.7	1.1
32A	Haven and Enfield soils, 0 to 3 percent slopes	1.8	0.5
33A	Hartford sandy loam, 0 to 3 percent slopes	17.6	5.4
33B	Hartford sandy loam, 3 to 8 percent slopes	11.9	3.7
35B	Penwood loamy sand, 3 to 8 percent slopes	12.2	3.8
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	105.4	32.4
37E	Manchester gravelly sandy loam, 15 to 45 percent slopes	52.7	16.2
42C	Ludlow silt loam, 2 to 15 percent slopes, extremely stony	3.2	1.0
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	4.7	1.4
85B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony	3.8	1.2
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	13.7	4.2
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	5.2	1.6
87C	Wethersfield loam, 8 to 15 percent slopes	2.4	0.7
87D	Wethersfield loam, 15 to 25 percent slopes	10.7	3.3
88B	Wethersfield loam, 3 to 8 percent slopes, very stony	0.5	0.2
88C	Wethersfield loam, 8 to 15 percent slopes, very stony	0.1	0.0
89D	Wethersfield loam, 15 to 35 percent slopes, extremely stony	25.6	7.9
108	Saco silt loam	16.4	5.0

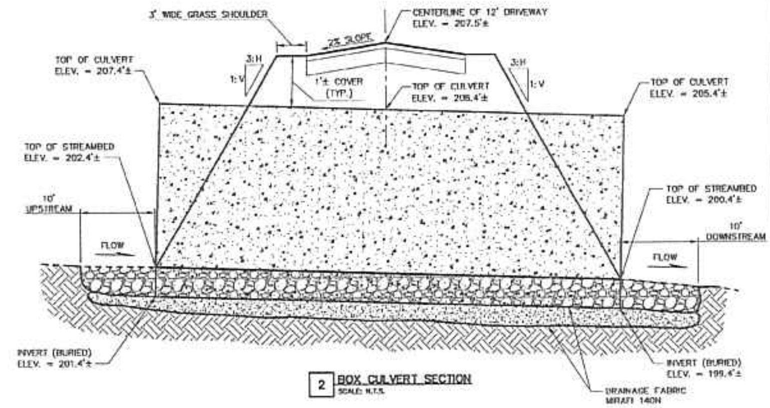
State of Connecticut

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
306	Udorthents-Urban land complex	28.3	8.7
W	Water	1.0	0.3

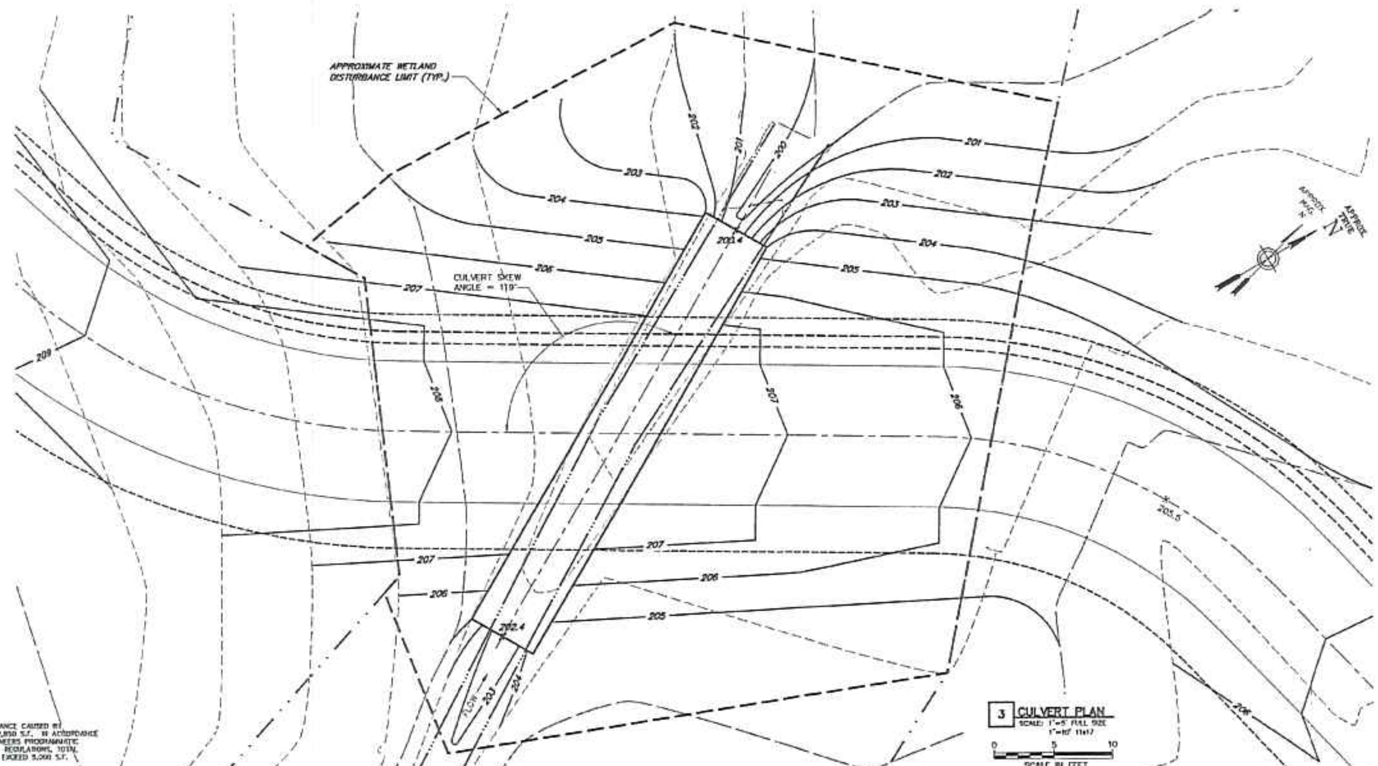

N/F
LOUISE C. COTE
471 WICKHAM ROAD
GLASTONBURY CT 06033
W 14
RR ZONE
N/F
NAWAZ IMTIAZ WAHLA
461 WICKHAM ROAD
GLASTONBURY CT 06033
W 14
RR ZONE
Wetlands
150' Radius
New Road Location?
N/F
JOANNE SULLIVAN LLC.
467A WICKHAM ROAD
GLASTONBURY CT 06033
S 18
RR ZONE
CONNECTICUT ROUTE 2
N/F
PAUL JACKSON & LINDA ASH
NEPSIC ROAD
3870 ROVER CT.
RENO NV 89509
S 19
RR ZONE
N/F
JOHN W. & BARBARA J PATTISON
505 WICKHAM ROAD
GLASTONBURY CT 06033
W 15
RR ZONE



1 BOX CULVERT DETAIL
SCALE: N.T.S.



2 BOX CULVERT SECTION
SCALE: N.T.S.



3 CULVERT PLAN
SCALE: 1"=5' FULL SIZE 1"=10' 11x17
0 5 10
SCALE IN FEET

NOTE:
APPROXIMATE WETLAND DISTURBANCE CAUSED BY CONSTRUCTION OF CULVERT IS 2,850 S.F. IN ACCORDANCE WITH THE ARMY CORPS OF ENGINEERS PROGRAMMATIC GENERAL PERMIT - CATEGORY 1 REGULATIONS, TOTAL WETLAND DISTURBANCE CANNOT EXCEED 5,000 S.F.

Optasite
OPTASITE TOWERS LLC
1 RESEARCH DRIVE, SUITE 200C
WESTBOROUGH, MA 01581

Drawing Copyright © 2007 Clough Harbour & Associates LLP

CHA
CLOUGH HARBOUR & ASSOCIATES LLP

CHA PROJECT NO.
15363 - 1010 - 1601

NO.	SUBMITTAL	
0	08/13/07	ISSUED FOR REVIEW
	BY: HAW	CHK: PAL	APP'D: JPS

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE ID:
CT-999-0101
SITE NAME:
MONTANO
SITE ADDRESS:
497A WICKHAM ROAD
GLASTONBURY, CT
06033
HARTFORD COUNTY

SHEET TITLE
CULVERT DETAILS

SHEET NUMBER
D01

CLOUGH HARBOUR & ASSOCIATES LLP

November 21, 2007

Mr. Keith Coppins
Optasite Towers LLC
1 Research Drive, Suite 200C
Westborough, MA 01581

RE: Hydrologic & Hydraulic Assessment @ Montano Cell Site - 497A Wickham Road, Town of Glastonbury, Hartford County, Connecticut; CHA Project 15363-1010

Mr. Coppins:

Clough Harbour & Associates LLP (CHA) has completed the hydrologic and hydraulic evaluations for the above mentioned roadway crossing. The purpose of this letter report is to: (1) quantify the design flow rates for the contributing watershed; (2) evaluate the existing hydraulic conditions; and (3) specify the hydraulic opening (culvert size) of the proposed structure that is necessary to meet the Category 1 design standards of the U.S. Army Corps of Engineers Programmatic General Permit for Connecticut.

HYDROLOGIC EVALUATION

The culvert crossing under the roadway at 497A Wickham Road conveys an unnamed and unclassified tributary of Hubbard Brook (Class B/A waterway). The drainage area upstream of the crossing is approximately 48.7 acres (0.076 mi^2) (See Watershed Map). Aerial photos of the watershed show that it is primarily composed of forested and residential area, and is intersected by State Route 2. The USGS Glastonbury Quadrangle Map indicates that the predominant landform is moderately to steeply sloped hills, with elevations ranging from 500± ft along the northeastern watershed boundary to 200± ft at the upstream face of the proposed culvert location.

In order to evaluate the potential impacts associated with the development of the site, existing and proposed condition hydrographs were generated using a type III rainfall distribution. Rainfall amounts were referenced from Appendix B of the Connecticut Department of Transportation Drainage Manual dated October 2000. The 24-hour rainfall amounts for the 2-, 5-, 10-, 50-, and 100-year design storms in Hartford County are 3.2-, 4.1-,

4.7-, 6.2-, and 6.9-inches, respectively.

Runoff curve numbers and times of concentration were computed using standard NRCS TR-55 methodology. Additionally, peak stormwater flows and hydrographs for the existing and post development conditions were computed using the Haestad Method's Pondpack Hydrology Program (Version 10.0).

The results of the hydrologic analysis are presented in Table 1 below and detailed calculations are included in the technical appendix.

Table 1 - Summary of Design Flows

Design Point Location	Drainage Area	Watershed Area (acres)	Peak Discharges (ft^3/sec)				
			2-year	5-year	10-year	50-year	100-year
Montano Cell Site at 497A Wickham Road	DA-1A	4.92	1.0	2.5	3.8	7.5	9.4
	DA-1B	3.50	4.1	5.9	7.1	10.2	11.6
	DA-1C	40.28	16.3	31.6	43.0	74.7	90.6
	Totals:	*48.7*	*21.4*	*39.7*	*53.3*	*91.2*	*110.0*

HYDRAULIC EVALUATION

Basis of Design

In accordance with the engineering guidelines established by the Category 1 Requirements of the U.S. Army Corps of Engineers, driveway/roadway crossings constructed on brooks, streams, rivers and their tributaries must be designed to allow for continuous flow of the 50-year frequency storm flows. For a crossing constructed using a single box culvert, the inverts must be set a minimum of 12 inches below the streambed elevation and the culvert slope must also be no steeper than the streambed gradient immediately upstream or downstream of the culvert. The hydraulic performance of a culvert is commonly expressed as a ratio of depth of water measured from the invert of the culvert to the diameter or rise of the culvert (HW/D). As such, ConnDOT requirements specify that a HW/D ratio less than or equal to 1.5 must be used as a design standard for the culvert design.

Design Methodology

The roadway crossing for the Montano Cell Site at 497A Wickham Road was analyzed using Haestad Methods CulvertMaster Computer Software (Version 3.1). This program was used to compute the headwater elevation at the culvert, evaluating both inlet and outlet control equations. The required geometry and channel slope necessary for the hydraulic evaluation was based on a combination of record information and data obtained from a recent site visit. In addition, the results of the hydraulic analysis were based on the assumption of unobstructed flow through the culvert section.

HYDRAULIC RESULTS

Proposed Condition

Several shape and size options were investigated in order to maximize the hydraulic opening of the proposed culvert while minimizing the impact and cost. The most favorable solution is to use a 6' x 6' concrete box culvert. The results of the hydraulic analysis for the box culvert chosen are summarized in Table 2 below and indicate that the proposed culvert will convey the 50-year design storm with a HW/D ratio of 0.83.

Table 2 – Summary of the Proposed Condition Hydraulic Analysis @ Montano Cell Site

Hydraulic Design Parameters	Storm Event Recurrence Interval	
	50-year	100-year
HW/D ratio	0.83	0.85
Freeboard (ft)	1.0	0.9
Outlet Velocity (ft/sec)	12.5	12.6

RECOMMENDATIONS

Based on the hydraulic analysis, the proposed concrete box culvert has excess conveyance capacity during the 50-year design storm event. The proposed culvert will provide 36 ft^2 of cross-sectional opening (6ft^2 of which

will be submerged below the streambed) and will convey the 50-year design storm with a HW/D ratio of 0.83. Additionally, discharge velocities in the downstream channel will remain essentially unchanged from the existing to the proposed condition. In summary, the results of the analysis indicate that the proposed culvert design meets the Category 1 hydraulic design guidelines established by the U.S. Army Corps of Engineers, as well as requirement set forth by the Connecticut Department of Transportation.

We trust that this letter report meets your needs. However, should you have any questions or concerns, please feel free to contact our office.

Sincerely,

CLOUGH HARBOUR & ASSOCIATES LLP

Peter L. Lilholt, Jr., P.E.
Associate

CHA

Job File: W:\Optasite\Connecticut\15363\Sites\1010 Montano B-Glastonbury\Misc\Pondpack\OPT
Rain Dir: W:\Optasite\Connecticut\15363\Sites\1010 Montano B-Glastonbury\Misc\Pondpack\

==========
JOB TITLE
==========

Project Date: 11/12/2007
Project Engineer: KZD
Project Title: Existing Conditions
Project Comments:
Optasite Project
Glastonbury, CT

Table of Contents

********** MASTER SUMMARY **********

Watershed..... Master Network Summary 1.01

********** TC CALCULATIONS **********

DA-1A..... Tc Calcs 2.01

DA-1B..... Tc Calcs 2.03

DA-1C..... Tc Calcs 2.08

********** CN CALCULATIONS **********

DA-1A..... Runoff CN-Area 3.01

DA-1B..... Runoff CN-Area 3.02

DA-1C..... Runoff CN-Area 3.03

MASTER DESIGN STORM SUMMARY

Network Storm Collection: Glastonbury

Return Event	Total Depth in	Rainfall Type	RNF ID
2	3.2000	Synthetic Curve	TypeIII 24hr
5	4.1000	Synthetic Curve	TypeIII 24hr
10	4.7000	Synthetic Curve	TypeIII 24hr
50	6.2000	Synthetic Curve	TypeIII 24hr
100	6.9000	Synthetic Curve	TypeIII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
CULVERT_IN	JCT	2	2.307		12.3500	16.30		
CULVERT_IN	JCT	5	4.052		12.3500	31.59		
CULVERT_IN	JCT	10	5.363		12.3500	42.96		
CULVERT_IN	JCT	50	9.005		12.3000	74.70		
CULVERT_IN	JCT	100	10.836		12.3000	90.60		
CULVERT_OUT	JCT	2	3.009		12.4500	21.38		
CULVERT_OUT	JCT	5	5.152		12.4500	39.65		
CULVERT_OUT	JCT	10	6.754		12.4000	53.30		
CULVERT_OUT	JCT	50	11.186		12.4000	91.20		
CULVERT_OUT	JCT	100	13.409		12.4000	110.01		
DA-1A	AREA	2	.167		12.3500	1.00		
DA-1A	AREA	5	.333		12.3000	2.53		
DA-1A	AREA	10	.463		12.3000	3.78		
DA-1A	AREA	50	.842		12.2500	7.46		
DA-1A	AREA	100	1.038		12.2500	9.37		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
DA-1B	AREA	2	.534		12.3500	4.14		
DA-1B	AREA	5	.768		12.3500	5.93		
DA-1B	AREA	10	.929		12.3500	7.14		
DA-1B	AREA	50	1.340		12.3500	10.18		
DA-1B	AREA	100	1.535		12.3500	11.59		
DA-1C	AREA	2	2.307		12.3500	16.30		
DA-1C	AREA	5	4.052		12.3500	31.59		
DA-1C	AREA	10	5.363		12.3500	42.96		
DA-1C	AREA	50	9.005		12.3000	74.70		
DA-1C	AREA	100	10.836		12.3000	90.60		
*DESIGN POINT	JCT	2	3.009		12.5000	21.38		
*DESIGN POINT	JCT	5	5.152		12.5000	39.65		
*DESIGN POINT	JCT	10	6.754		12.4500	53.30		
*DESIGN POINT	JCT	50	11.186		12.4500	91.20		
*DESIGN POINT	JCT	100	13.409		12.4500	110.01		
MID_CULVERT	JCT	2	2.841		12.4000	20.42		
MID_CULVERT	JCT	5	4.820		12.4000	37.46		
MID_CULVERT	JCT	10	6.291		12.4000	50.02		
MID_CULVERT	JCT	50	10.344		12.3500	84.88		
MID_CULVERT	JCT	100	12.371		12.3500	102.19		

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::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.4000	
Hydraulic Length	150.00	ft
2yr, 24hr P	3.2000	in
Slope	.067000	ft/ft

Avg.Velocity .14 ft/sec

Segment #1 Time: .3052 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	180.00	ft
Slope	.028000	ft/ft

Unpaved

Avg.Velocity 2.70 ft/sec

Segment #2 Time: .0185 hrs

==========
Total Tc: .3237 hrs
==========

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---
Tc Equations used...

==== SCS TR-55 Sheet Flow ==========

Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow ==========

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved surface:
V = 20.3282 * (Sf**0.5)

Tc = (Lf / V) / (3600sec/hr)

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

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::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.4000	
Hydraulic Length	150.00	ft
2yr, 24hr P	3.2000	in
Slope	.030000	ft/ft
Avg.Velocity	.10	ft/sec

Segment #1 Time: .4209 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	710.00	ft
Slope	.080000	ft/ft
Unpaved		
Avg.Velocity	4.56	ft/sec

Segment #2 Time: .0432 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	.9500	sq.ft
Wetted Perimeter	4.50	ft
Hydraulic Radius	.21	ft
Slope	.070000	ft/ft
Mannings n	.0150	
Hydraulic Length	50.00	ft
Avg.Velocity	9.32	ft/sec

Segment #3 Time: .0015 hrs

Segment #4: Tc: TR-55 Channel

Flow Area	2.8000	sq.ft
Wetted Perimeter	11.70	ft
Hydraulic Radius	.24	ft
Slope	.033000	ft/ft
Mannings n	.0600	
Hydraulic Length	100.00	ft
Avg.Velocity	1.74	ft/sec

Segment #4 Time: .0160 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	2.7000	sq.ft
Wetted Perimeter	6.30	ft
Hydraulic Radius	.43	ft
Slope	.033000	ft/ft
Mannings n	.0600	
Hydraulic Length	100.00	ft
Avg.Velocity	2.56	ft/sec

Segment #5 Time: .0108 hrs

Segment #6: Tc: TR-55 Channel

Flow Area	2.1000	sq.ft
Wetted Perimeter	5.10	ft
Hydraulic Radius	.41	ft
Slope	.033000	ft/ft
Mannings n	.0600	
Hydraulic Length	100.00	ft
Avg.Velocity	2.50	ft/sec

Segment #6 Time: .0111 hrs

Segment #7: Tc: TR-55 Channel

Flow Area	1.7000	sq.ft
Wetted Perimeter	4.20	ft
Hydraulic Radius	.40	ft
Slope	.033000	ft/ft
Mannings n	.0600	
Hydraulic Length	50.00	ft
Avg.Velocity	2.47	ft/sec

Segment #7 Time: .0056 hrs

Segment #8: Tc: TR-55 Channel

Flow Area	15.9000	sq.ft
Wetted Perimeter	1.50	ft
Hydraulic Radius	10.60	ft
Slope	.005000	ft/ft
Mannings n	.0240	
Hydraulic Length	95.00	ft
Avg.Velocity	21.18	ft/sec

Segment #8 Time: .0012 hrs

==========
Total Tc: .5104 hrs
==========

Tc Equations used...

==== SCS TR-55 Sheet Flow ==========

Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow ==========

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved surface:
V = 20.3282 * (Sf**0.5)

Tc = (Lf / V) / (3600sec/hr)

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

==== SCS Channel Flow ==

R = Aq / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

Tc = (Lf / V) / (3600sec/hr)

Where: R = Hydraulic radius
Aq = Flow area, sq.ft.
Wp = Wetted perimeter, ft
V = Velocity, ft/sec
Sf = Slope, ft/ft
n = Mannings n
Tc = Time of concentration, hrs
Lf = Flow length, ft

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.4000
Hydraulic Length	150.00 ft
2yr, 24hr P	3.2000 in
Slope	.100000 ft/ft
Avg.Velocity	.16 ft/sec

Segment #1 Time: .2600 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	130.00 ft
Slope	.080000 ft/ft
Unpaved	
Avg.Velocity	4.56 ft/sec

Segment #2 Time: .0079 hrs

Segment #3: Tc: TR-55 Shallow

Hydraulic Length	270.00 ft
Slope	.190000 ft/ft
Unpaved	
Avg.Velocity	7.03 ft/sec

Segment #3 Time: .0107 hrs

Segment #4: Tc: TR-55 Shallow

Hydraulic Length	463.00	ft
Slope	.060000	ft/ft
Unpaved		
Avg.Velocity	3.95	ft/sec

Segment #4 Time: .0325 hrs

Segment #5: Tc: TR-55 Channel

Flow Area	15.9000	sq.ft
Wetted Perimeter	1.50	ft
Hydraulic Radius	10.60	ft
Slope	.005000	ft/ft
Mannings n	.0240	
Hydraulic Length	200.00	ft
Avg.Velocity	21.18	ft/sec

Segment #5 Time: .0026 hrs

Segment #6: Tc: TR-55 Channel

Flow Area	.9500	sq.ft
Wetted Perimeter	4.50	ft
Hydraulic Radius	.21	ft
Slope	.070000	ft/ft
Mannings n	.0150	
Hydraulic Length	50.00	ft
Avg.Velocity	9.32	ft/sec

Segment #6 Time: .0015 hrs

Segment #7: Tc: TR-55 Channel

Flow Area	2.8000	sq.ft
Wetted Perimeter	11.70	ft
Hydraulic Radius	.24	ft
Slope	.033000	ft/ft
Mannings n	.0600	
Hydraulic Length	100.00	ft
Avg.Velocity	1.74	ft/sec

Segment #7 Time: .0160 hrs

Segment #8: Tc: TR-55 Channel

Flow Area	2.7000	sq.ft
Wetted Perimeter	6.30	ft
Hydraulic Radius	.43	ft
Slope	.033000	ft/ft
Mannings n	.0600	
Hydraulic Length	100.00	ft
Avg.Velocity	2.56	ft/sec

Segment #8 Time: .0108 hrs

Segment #9: Tc: TR-55 Channel

Flow Area	2.1000	sq.ft
Wetted Perimeter	5.10	ft
Hydraulic Radius	.41	ft
Slope	.033000	ft/ft
Mannings n	.0600	
Hydraulic Length	100.00	ft
Avg.Velocity	2.50	ft/sec

Segment #9 Time: .0111 hrs

Segment #10: Tc: TR-55 Channel

Flow Area	1.7000	sq.ft
Wetted Perimeter	4.20	ft
Hydraulic Radius	.40	ft
Slope	.033000	ft/ft
Mannings n	.0600	
Hydraulic Length	50.00	ft

Avg.Velocity 2.47 ft/sec

Segment #10 Time: .0056 hrs

Segment #11: Tc: TR-55 Shallow

Hydraulic Length	1253.00	ft
Slope	.100000	ft/ft

Unpaved

Avg.Velocity 5.10 ft/sec

Segment #11 Time: .0682 hrs

Total Tc: .4271 hrs

Tc Equations used...

==== SCS TR-55 Sheet Flow ==========

```
Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))
```

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow ==========

Unpaved surface:

```
V = 16.1345 * (Sf**0.5)
```

Paved surface:

```
V = 20.3282 * (Sf**0.5)
```

```
Tc = (Lf / V) / (3600sec/hr)
```

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

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==== SCS Channel Flow ==

R = Aq / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

Tc = (Lf / V) / (3600sec/hr)

Where: R = Hydraulic radius
Aq = Flow area, sq.ft.
Wp = Wetted perimeter, ft
V = Velocity, ft/sec
Sf = Slope, ft/ft
n = Mannings n
Tc = Time of concentration, hrs
Lf = Flow length, ft

Type.... Runoff CN-Area
Name.... DA-1A

File.... W:\Optasite\Connecticut\15363\Sites\1010 Montano B-Glastonbury\Misc\Pondpack\Opta

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Impervious	98	1.427			98.00
HSG D - Woods	77	.839			77.00
HSG B - Woods	55	.358			55.00
HSG A - Woods	30	2.296			30.00
COMPOSITE AREA & WEIGHTED CN --->		4.920			59.56 (60)

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RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Impervious	98	1.236			98.00
HSG D - Open Space	80	2.260			80.00
COMPOSITE AREA & WEIGHTED CN --->		3.495			86.36 (86)

File.... W:\Optasite\Connecticut\15363\Sites\1010 Montano B-Glastonbury\Misc\Pondpack\Opta

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Impervious	98	.515			98.00
HSG D -Residential -2Ac.	82	5.930			82.00
HSG C - Tree Farm	72	6.155			72.00
HSG D - Woods	77	3.095			77.00
HSG C - Woods	70	8.824			70.00
HSG B - Residential 2ac.	65	.177			65.00
HSG B - Tree Farm	58	.039			58.00
HSG B - Woods	55	15.549			55.00
COMPOSITE AREA & WEIGHTED CN --->		40.285			67.14 (67)

Index of Starting Page Numbers for ID Names

----- D -----
DA-1A... 2.01, 3.01
DA-1B... 2.03, 3.02
DA-1C... 2.08, 3.03

----- W -----
Watershed... 1.01

Culvert Calculator Report
Worksheet-50 Year

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	206.40	ft	Headwater Depth/Height	0.80	
Computed Headwater Eleva	206.40	ft	Discharge	108.20	cfs
Inlet Control HW Elev.	206.02	ft	Tailwater Elevation	202.64	ft
Outlet Control HW Elev.	206.40	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	202.40	ft	Downstream Invert	201.40	ft
Length	40.00	ft	Constructed Slope	0.025000	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.44	ft
Slope Type	Steep		Normal Depth	1.14	ft
Flow Regime	Supercritical		Critical Depth	2.16	ft
Velocity Downstream	12.53	ft/s	Critical Slope	0.003927	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	6.00	ft
Section Size	6 x 5 ft		Rise	5.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	206.40	ft	Upstream Velocity Head	1.08	ft
Ke	0.70		Entrance Loss	0.76	ft

Inlet Control Properties					
Inlet Control HW Elev.	206.02	ft	Flow Control	Unsubmerged	
Inlet Type	0° wingwall flares		Area Full	30.0	ft²
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	3	
C	0.04230		Equation Form	1	
Y	0.82000				

Culvert Calculator Report
Worksheet-100 Year

Solve For: Discharge

Culvert Summary			
Allowable HW Elevation	206.50 ft	Headwater Depth/Height	0.82
Computed Headwater Eleva	206.50 ft	Discharge	112.29 cfs
Inlet Control HW Elev.	206.11 ft	Tailwater Elevation	202.85 ft
Outlet Control HW Elev.	206.50 ft	Control Type	Entrance Control

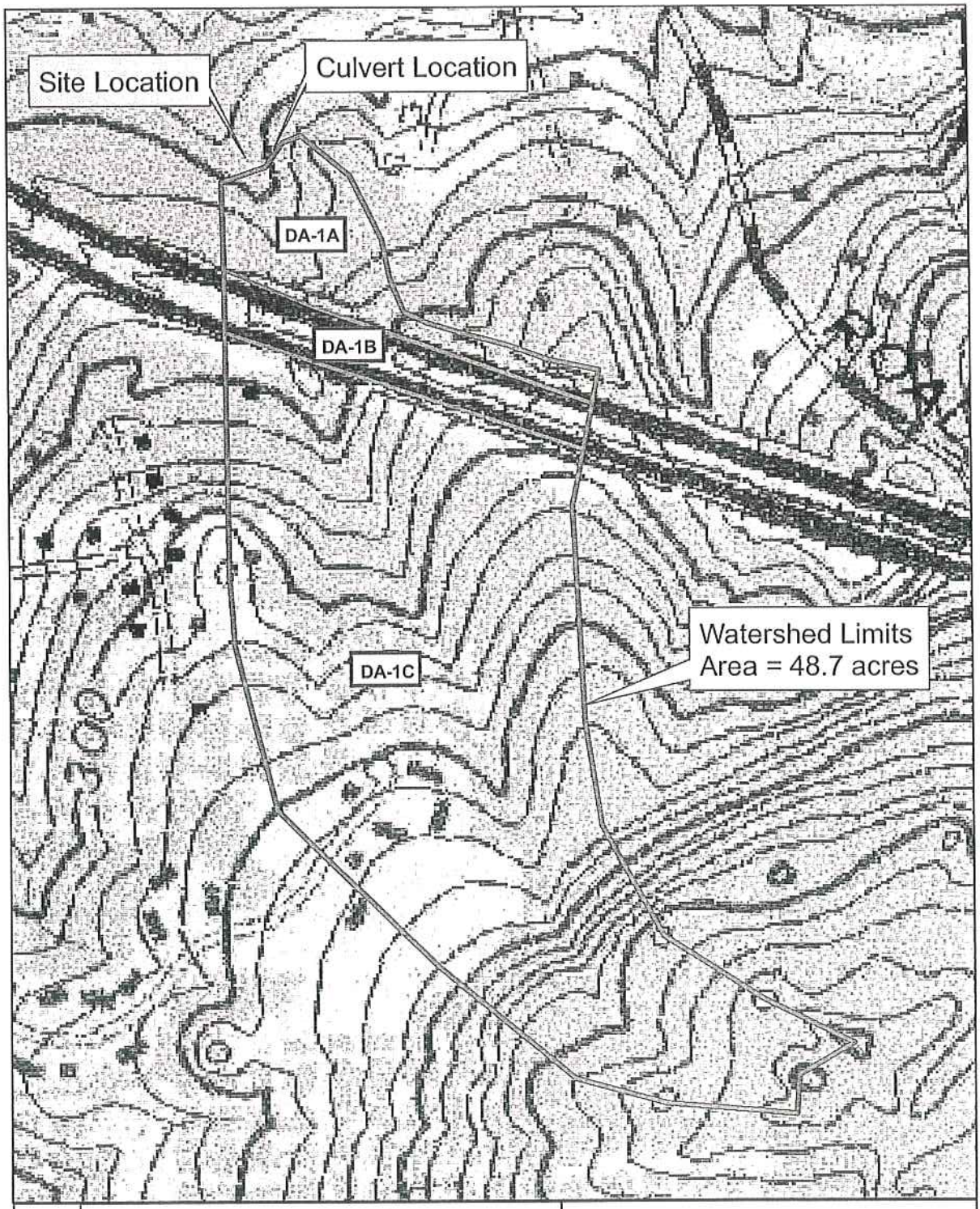
Grades			
Upstream Invert	202.40 ft	Downstream Invert	201.40 ft
Length	40.00 ft	Constructed Slope	0.025000 ft/ft

Hydraulic Profile			
Profile	S2	Depth, Downstream	1.48 ft
Slope Type	Steep	Normal Depth	1.16 ft
Flow Regime	Supercritical	Critical Depth	2.22 ft
Velocity Downstream	12.63 ft/s	Critical Slope	0.003949 ft/ft

Section			
Section Shape	Box	Mannings Coefficient	0.013
Section Material	Concrete	Span	6.00 ft
Section Size	6 x 5 ft	Rise	5.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	206.50 ft	Upstream Velocity Head	1.11 ft
Ke	0.70	Entrance Loss	0.78 ft

Inlet Control Properties			
Inlet Control HW Elev.	206.11 ft	Flow Control	Unsubmerged
Inlet Type	0° wingwall flares	Area Full	30.0 ft²
K	0.06100	HDS 5 Chart	8
M	0.75000	HDS 5 Scale	3
C	0.04230	Equation Form	1
Y	0.82000		



N	CHA CLOUGH HARBOUR & ASSOCIATES LLP		WATERSHED MAP
	Scale 1" = 400'	CHA File No: 15363-1010	OPTASITE- GLASTONBURY HARTFORD COUNTY, CONNECTICUT

SURVEY NOTES:

1. THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS INC. ON SEPTEMBER 26, 1996. THE BOUNDARY LINES SHOWN ON THIS PLAN WERE COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY, AND IS SUBJECT TO SUCH CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE.

TYPE OF SURVEY: COMPILATION PLAN

BOUNDARY DETERMINATION CATEGORY: NONE

CLASS OF ACCURACY: HORIZONTAL CLASS A-2
VERTICAL CLASS V-2
TOPOGRAPHIC CLASS T-2

2. PROPERTY LINE SHOWN HEREON ARE FROM RECORD DEEDS PLOTS AND TAX MAPS AS OVERLAID ON ANY MONUMENTATION OR OTHER EVIDENCE THAT MAY HAVE BEEN LOCATED DURING THE TOPOGRAPHIC SURVEY. A PROPERTY SURVEY WAS NOT PERFORMED BY CLOUGH HARBOUR & ASSOCIATES LLP AND AS A RESULT THE PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT PRESENT A PROPERTY/BOUNDARY OPINION.

3. BASE MAPPING PREPARED BY CLOUGH HARBOUR & ASSOCIATES LLP FROM A JUNE 2007 AND JULY 2007 FIELD SURVEY.

4. NORTH ORIENTATION IS TRUE NORTH BASED ON GPS OBSERVATIONS TAKEN AT THE TIME OF THE FIELD SURVEY.

5. UNDERGROUND UTILITIES, STRUCTURES AND FACILITIES, IF ANY, HAVE BEEN SHOWN FROM SURFACE LOCATIONS AND MEASUREMENTS OBTAINED FROM A FIELD SURVEY. THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHER UTILITIES WHICH THE EXISTENCE OF ARE NOT KNOWN. SIZE, TYPE AND LOCATION OF ALL UTILITIES AND STRUCTURES MUST BE VERIFIED BY PROPER AUTHORITIES PRIOR TO ANY AND ALL CONSTRUCTION.

6. SUBJECT TO ANY STATEMENT OF FACTS THAT AN UP-TO-DATE ABSTRACT OF TITLE WOULD DISCLOSE.

7. SUBJECT TO ALL RIGHTS, EASEMENTS, COVENANTS OR RESTRICTIONS OF RECORD.

8. LATITUDE/LONGITUDE/ELEVATIONS WERE OBTAINED UTILIZING PACSETTE CDR AMP BASE STATION, NEWINGTON CT. NAMED "CTNC". LATITUDE/LONGITUDE ARE REFERENCED TO NAD83 CONNECTICUT ZONE. COORDINATES SHOWN, IF ANY, ARE EXPRESSED IN U.S. SURVEY FEET. ELEVATIONS ARE REFERENCED TO NAVD88. TOP OF STRUCTURE HEIGHT AS SHOWN, IF ANY, DETERMINED BY VERTICAL ANGLE OR BY ACTUAL LOCATION.
INFORMATION SHOWN BASED ON FAA 2C CERTIFICATION ACCURACY LEVEL DEFINED AS;
HORIZONTAL: ±50 FEET / 15 METERS
VERTICAL: ±20 FEET / 6 METERS

9. SITE FALLS WITHIN ZONE "C" DEFINED AS AREAS OF MINIMAL FLOODING AS SHOWN ON FLOOD INSURANCE RATE MAP, TOWN OF GLASTONBURY, CONNECTICUT, HARTFORD COUNTY, PANEL 5 OF 20, COMMUNITY PANEL NUMBER 090124 0005B, EFFECTIVE DATE: JUNE 15, 1978.

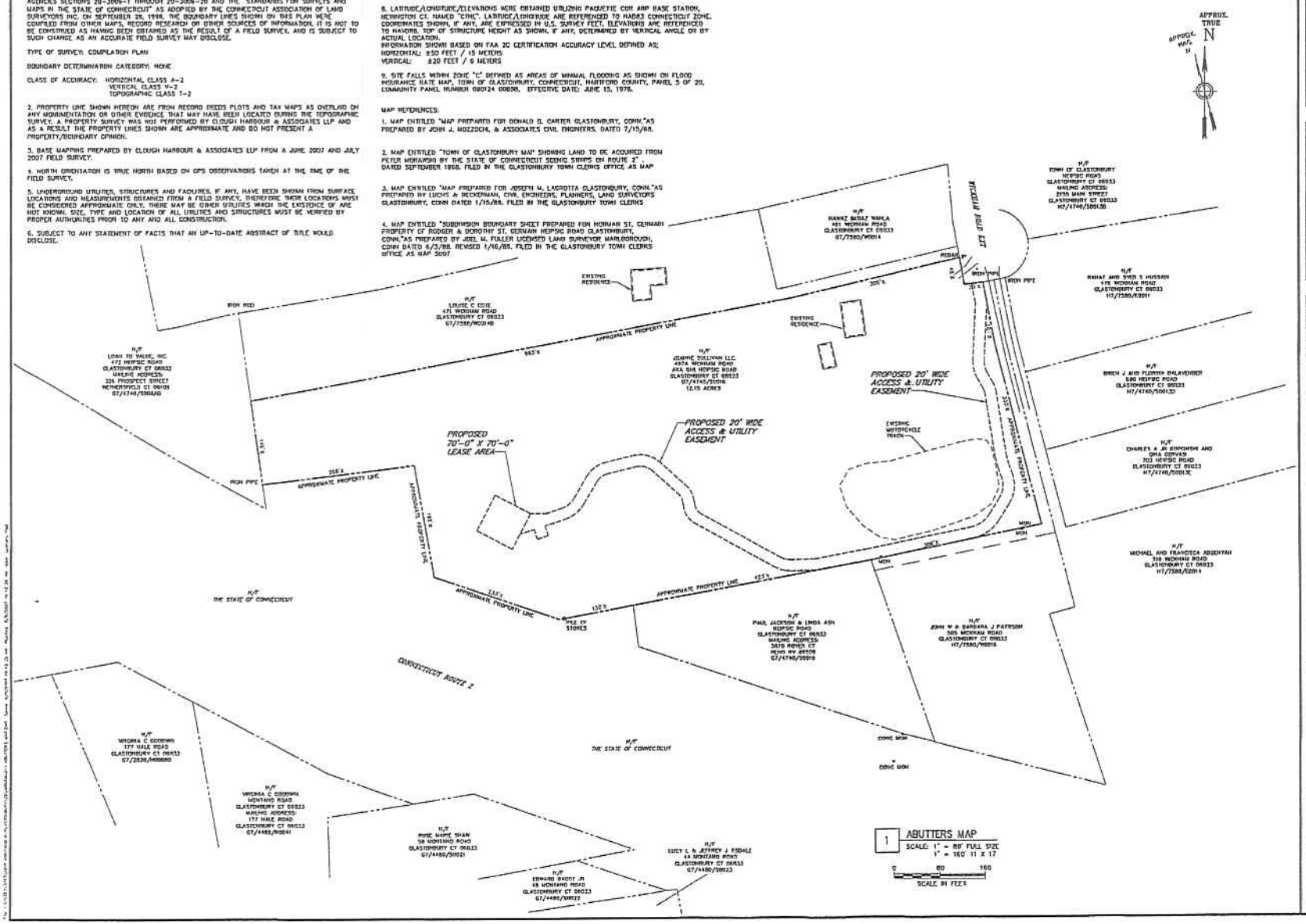
MAP REFERENCES:

1. MAP ENTITLED "MAP PREPARED FOR DONALD B. CARTER GLASTONBURY, CONN." AS PREPARED BY JOHN J. MOZZOCH, & ASSOCIATES CIVIL ENGINEERS. DATED 7/15/68.

2. MAP ENTITLED "TOWN OF GLASTONBURY MAP SHOWING LAND TO BE ACQUIRED FROM PETER MORAWSKI BY THE STATE OF CONNECTICUT SCENIC STRIPS ON ROUTE 2" . DATED SEPTEMBER 1958. FILED IN THE GLASTONBURY TOWN CLERKS OFFICE AS MAP

3. MAP ENTITLED "MAP PREPARED FOR JOSEPH M. LAGROTTA GLASTONBURY, CONN." AS PREPARED BY LUCHS & HECKERMAN, CIVIL ENGINEERS, PLANNERS, LAND SURVEYORS GLASTONBURY, CONN DATED 1/15/88. FILED IN THE GLASTONBURY TOWN CLERKS

4. MAP ENTITLED "SUBDIVISION BOUNDARY SHEET PREPARED FOR MORIAN ST. GERMAIN PROPERTY OF ROGGER & DOROTHY ST. GERMAIN HEPSIC ROAD GLASTONBURY, CONN." AS PREPARED BY JOEL M. FULLER LICENSED LAND SURVEYOR MARLBOROUGH, CONN DATED 6/3/88. REVISED 1/16/89. FILED IN THE GLASTONBURY TOWN CLERKS OFFICE AS MAP 3007



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Main: (860) 257-4100 - www.cloughharbour.com

CHA PROJECT NO
15363 - 1010 - 1601

NO.	SUBMITTAL		
0	05/09/07	ISSUED FOR REVIEW	
BY:	PM	CHK: PM	APP'D: JPS

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE ID:
CT-999-0101
SITE NAME:
MONTANO
SITE ADDRESS:
497A WICKHAM ROAD
GLASTONBURY, CT
06033
HARTFORD COUNTY

SHEET TITLE
ABUTTERS MAP

SHEET NUMBER
A01

SURVEY NOTES:

1. THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS INC. ON SEPTEMBER 26, 1996. THE BOUNDARY LINES SHOWN ON THIS PLAN WERE COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY, AND IS SUBJECT TO SUCH CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE.

TYPE OF SURVEY: COMPILATION PLAN

BOUNDARY DETERMINATION CATEGORY: NONE

CLASS OF ACCURACY: HORIZONTAL CLASS A-2
VERTICAL CLASS V-2
TOPOGRAPHIC CLASS T-2

2. PROPERTY LINE SHOWN HEREON ARE FROM RECORD DEEDS PLOTS AND TAX MAPS AS OVERLAID ON ANY MONUMENTATION OR OTHER EVIDENCE THAT MAY HAVE BEEN LOCATED DURING THE TOPOGRAPHIC SURVEY. A PROPERTY SURVEY WAS NOT PERFORMED BY CLOUGH HARBOUR & ASSOCIATES LLP AND AS A RESULT THE PROPERTY LINES SHOWN ARE APPROXIMATE AND DO NOT PRESENT A PROPERTY/BOUNDARY OPINION.

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6. SUBJECT TO ANY STATEMENT OF FACTS THAT AN UP-TO-DATE ABSTRACT OF TITLE WOULD DISCLOSE.

7. SUBJECT TO ALL RIGHTS, EASEMENTS, COVENANTS OR RESTRICTIONS OF RECORD.

8. LATITUDE/LONGITUDE/ELEVATIONS WERE OBTAINED UTILIZING PAQUETTE COR ARP BASE STATION, NEWINGTON CT. NAMED "CTNE". LATITUDE/LONGITUDE ARE REFERENCED TO NAD83 CONNECTICUT ZONE. COORDINATES SHOWN, IF ANY, ARE EXPRESSED IN U.S. SURVEY FEET. ELEVATIONS ARE REFERENCED TO NAVD88. TOP OF STRUCTURE HEIGHT AS SHOWN, IF ANY, DETERMINED BY VERTICAL ANGLE OR BY ACTUAL LOCATION.
INFORMATION SHOWN BASED ON FAA 2C CERTIFICATION ACCURACY LEVEL DEFINED AS;
HORIZONTAL: ±50 FEET / 15 METERS
VERTICAL: ±20 FEET / 6 METERS

9. SITE FALLS WITHIN ZONE "C" DEFINED AS AREAS OF MINIMAL FLOODING AS SHOWN ON FLOOD INSURANCE RATE MAP, TOWN OF GLASTONBURY, CONNECTICUT, HARTFORD COUNTY, PANEL 5 OF 20, COMMUNITY PANEL NUMBER 090124 0005B, EFFECTIVE DATE: JUNE 15, 1978.

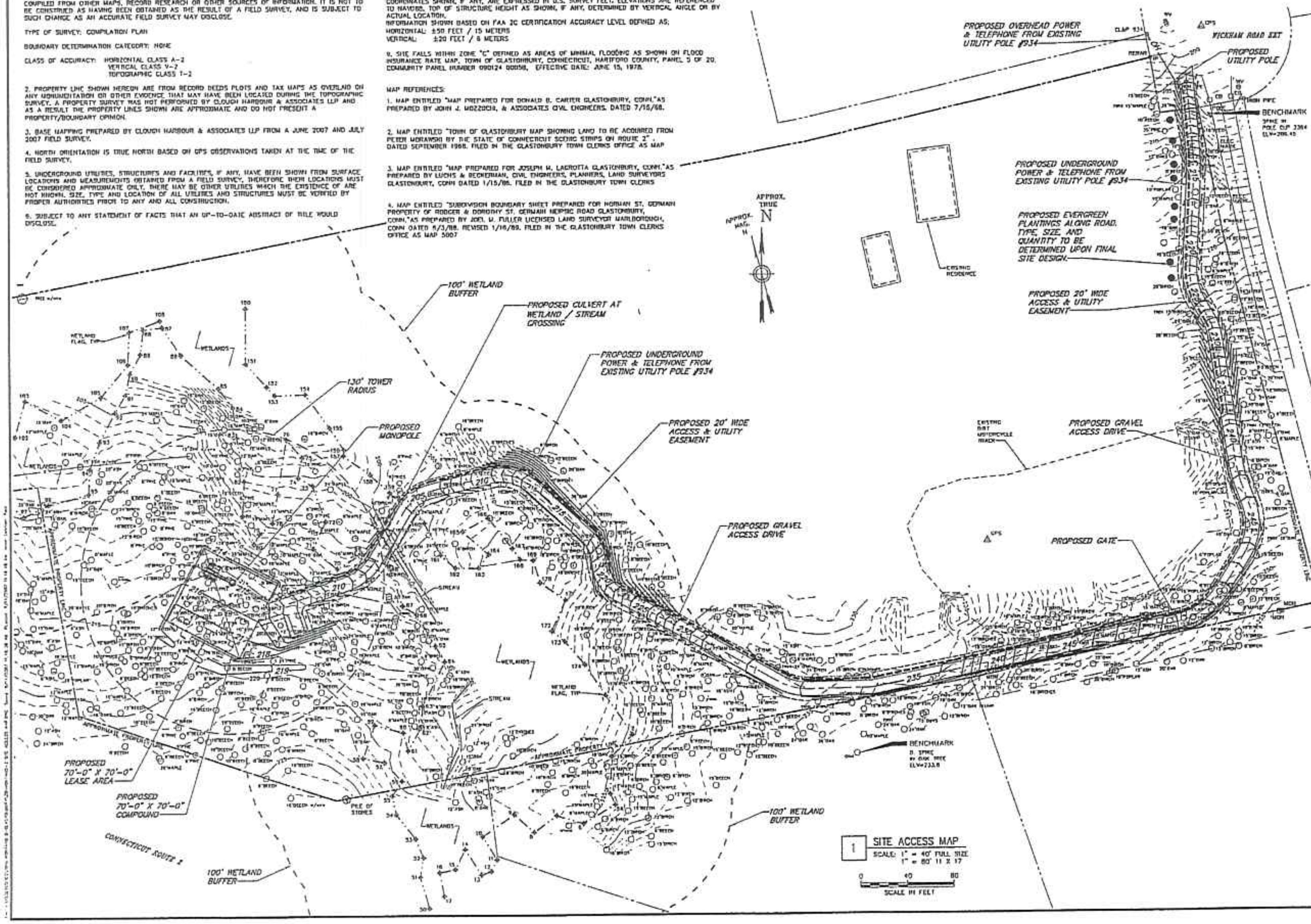
MAP REFERENCES:

1. MAP ENTITLED "MAP PREPARED FOR DONALD B. CARTER GLASTONBURY, CONN."AS PREPARED BY JOHN J. MOZZOCHI, & ASSOCIATES CIVIL ENGINEERS. DATED 7/15/68.

2. MAP ENTITLED "TOWN OF GLASTONBURY MAP SHOWING LAND TO BE ACQUIRED FROM PETER MORAWSKI BY THE STATE OF CONNECTICUT SCENIC STRIPS ON ROUTE 2". DATED SEPTEMBER 1966. FILED IN THE GLASTONBURY TOWN CLERKS OFFICE AS MAP

3. MAP ENTITLED "MAP PREPARED FOR JOSEPH M. LAGROTTA GLASTONBURY, CONN."AS PREPARED BY LUCHS & BECKERMAN, CIVIL ENGINEERS, PLANNERS, LAND SURVEYORS GLASTONBURY, CONN DATED 1/15/86. FILED IN THE GLASTONBURY TOWN CLERKS

4. MAP ENTITLED "SUBDIVISION BOUNDARY SHEET PREPARED FOR NORMAN ST. GERMAIN PROPERTY OF RODGER & DOROTHY ST. GERMAIN HEBRON ROAD GLASTONBURY, CONN."AS PREPARED BY JOEL W. FULLER LICENSED LAND SURVEYOR MARLBOROUGH, CONN DATED 8/3/88. REVISED 1/16/89. FILED IN THE GLASTONBURY TOWN CLERKS OFFICE AS MAP 5007



Optasite

OPTASITE TOWERS LLC
1 RESEARCH DRIVE, SUITE 200C
WESTBOROUGH, MA 01581

CHA

CLOUGH HARBOUR & ASSOCIATES LLP

CHA PROJECT NO:
15363 - 1010 - 1601

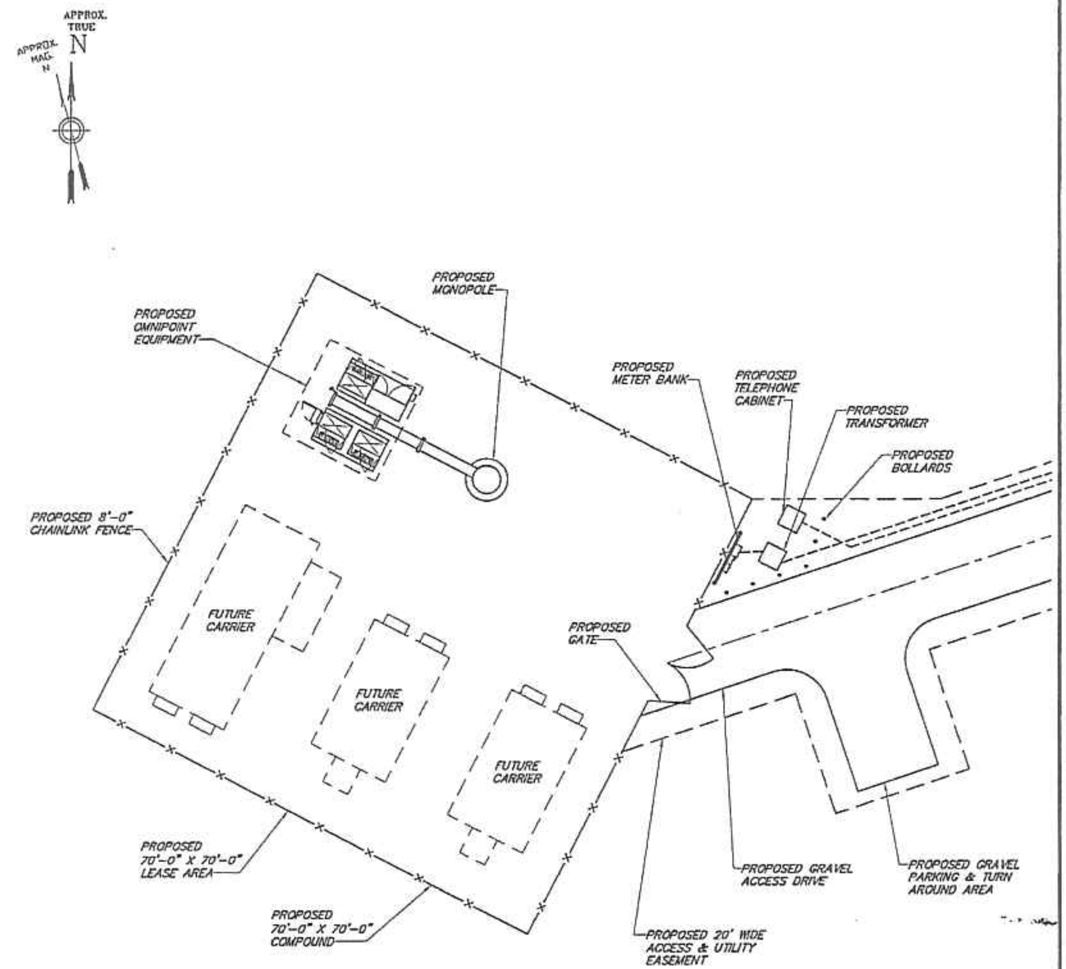
NO.	SUBMITTAL	
0	08/09/07 BY: PAL	ISSUED FOR REVIEW CHK: PAL APP'D: JPS
1	09/14/07 BY: PAL	CHANGED TOWER HEIGHT CHK: PAL APP'D: JPS

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE ID:
CT-999-0101
SITE NAME:
MONTANO
SITE ADDRESS:
497A WICKHAM ROAD
GLASTONBURY, CT
06033
HARTFORD COUNTY

SHEET TITLE
SITE ACCESS MAP

SHEET NUMBER
A02



1 COMPOUND PLAN
SCALE: 1" = 20'
0 10 20
SCALE IN FEET

BASEMAP NOTES:
1. BASEMAP INFORMATION OBTAINED FROM A SURVEY PERFORMED BY CLOUGH HARBOUR & ASSOCIATES LLP IN JUNE & JULY 2007.

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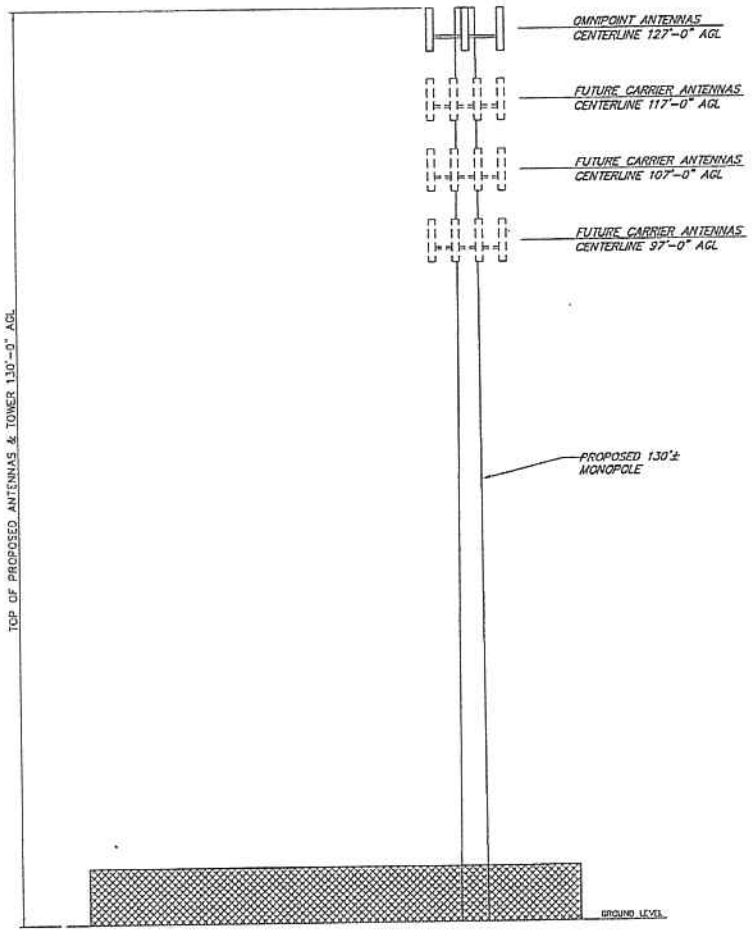
HARTFORD COUNTY

SHEET TITLE:
COMPOUND PLAN

DATE:
08/09/07

REVISION:
0



1 TOWER ELEVATION
SCALE: 1" = 20'

0 10 20
SCALE IN FEET

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SHEET TITLE:
TOWER ELEVATION

DATE:
09/14/07

REVISION:
1