



Vanasse Hangen Brustlin, Inc.

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

Memorandum

To: Chuck Regulbuto
Project Manager
Optasite, Inc.
One Research Drive, Suite 200C
Westborough, MA 01581

Date: May 22, 2007

Project No.: 40999.19

From: Dean Gustafson
Professional Soil Scientist

Re: Wetland Impact Analysis
Optasite ID CT-999-0075
640 Hilliard Street
Manchester, CT

Vanasse Hangen Brustlin, Inc. (VHB) previously completed on-site investigations to determine if wetlands and/or watercourses are located on the above-referenced Site.

The Site was inspected on December 5, 2006. The project area exists entirely of gravel driveway/parking areas associated with a former mill building and is immediately adjacent to a gasoline service station at the corner of Tolland Street and Adams Street. Bigelow Brook is located in the rear (southern) portion of the subject property. No significant bordering vegetated wetlands were identified along the north bank of Bigelow Brook as the delineated edge primarily consists of the top of eroded bank associated with a fill slope (refer to May 1, 2007 Wetlands Delineation Report for further details).

Based on Site Access Map prepared by Clough Harbour & Associates LLP, dated 01/08/07, Optasite proposes to construct a telecommunications facility within an existing gravel parking area located more than 100 feet from Bigelow Brook and associated wetlands. As no direct impact to wetlands or watercourses will occur as a result of the proposed development and work will occur within existing developed areas more than 100 feet from wetlands, no likely adverse impact to nearby wetlands or watercourse will result from the proposed work.



Vanasse Hangen Brustlin, Inc.

WETLANDS DELINEATION REPORT

Date: May 1, 2007
Project No.: 40999.19
Prepared For: Chuck Regulbuto
Project Manager
Optasite, Inc.
One Research Drive, Suite 200C
Westborough, MA 01581
Site Location: 640 Hilliard Street
Manchester, CT
Site Map: Sketch Map, 12/05/06 – D. Gustafson
Inspection Date: December 5, 2006
Field Conditions: Weather: ptly. cloudy, low 30's General Soil Moisture: moist
Snow Depth: 0 inches Frost Depth: 0 to 6 inches

Type of Wetlands Identified and Delineated:

Connecticut Inland Wetlands and Watercourses
Tidal Wetlands
U.S. Army Corps of Engineers

Field Numbering Sequence of Wetlands Boundary: WF1-01 to WF1-08
[as depicted on attached wetland sketch map]

The classification systems of the National Cooperative Soil Survey, the U.S. Department of Agriculture, Natural Resources Conservation Service, County Soil Survey Identification Legend, Connecticut Department of Environmental Protection and United States Army Corps of Engineers New England District were used in this investigation.

All established wetlands boundary lines are subject to change until officially adopted by local, state, or federal regulatory agencies.

The wetlands delineation was conducted by:

Dean Gustafson
Professional Soil Scientist

Enclosures

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

Attachments

-
- Wetland Delineation Field Form
 - Soil Map
 - Soil Report
 - Wetland Delineation Sketch Map

Wetland Delineation Field Form

Project Address:	640 HILLIARD STREET, MANCHESTER, CT		
Inspection Date:	12/5/06	Project No.	40999.19
Wetland I.D.	i	Inspector	DEAN GUSTAFSON

Field Conditions:	Weather: pty. cloudy, low 30's	Snow Depth:	φ
	General Soil Moisture: moist	Frost Depth:	0-6"
Type of Wetland Delineation:	Connecticut <input checked="" type="checkbox"/>		
	ACOE <input type="checkbox"/>		
	Tidal <input type="checkbox"/>		
Field Numbering Sequence:	WF 1-01 to 1-08		

WETLAND HYDROLOGY:

Nontidal

Regularly Flooded <input type="checkbox"/>	Irregularly Flooded <input type="checkbox"/>	Permanently Flooded <input type="checkbox"/>
Semipermanently Flooded <input type="checkbox"/>	Seasonally Flooded <input checked="" type="checkbox"/>	Temporarily Flooded <input type="checkbox"/>
Permanently Saturated <input type="checkbox"/>	Seasonally Saturated - seepage <input type="checkbox"/>	Seasonally Saturated - perched <input type="checkbox"/>
Comments:		

Tidal

Subtidal <input type="checkbox"/>	Regularly Flooded <input type="checkbox"/>	Irregularly Flooded <input type="checkbox"/>
Seasonally Flooded <input type="checkbox"/>	Temporarily Flooded <input type="checkbox"/>	
Comments: N/A		

WETLAND TYPE:

System

Estuarine <input type="checkbox"/>	Riverine <input checked="" type="checkbox"/>	Palustrine <input type="checkbox"/>
Lacustrine <input type="checkbox"/>	Marine <input type="checkbox"/>	
Comments: bordering Bigelow Brook		

Class

Emergent Marsh <input type="checkbox"/>	Scrub-shrub <input checked="" type="checkbox"/>	Forested <input type="checkbox"/>
Open Water <input type="checkbox"/>	Disturbed <input checked="" type="checkbox"/>	
Comments: fill site assoc. w/ former industrial / mill use		

WATERCOURSE TYPE:

Upper Perennial <input type="checkbox"/>	Lower Perennial <input checked="" type="checkbox"/>	Intermittent <input type="checkbox"/>
Tidal <input type="checkbox"/>		
Comments: Bigelow Brook		

SPECIAL AQUATIC HABITAT:

Vernal Pool <input type="checkbox"/>	Other <input type="checkbox"/>	
Comments: N/A		

DOMINANT PLANTS:

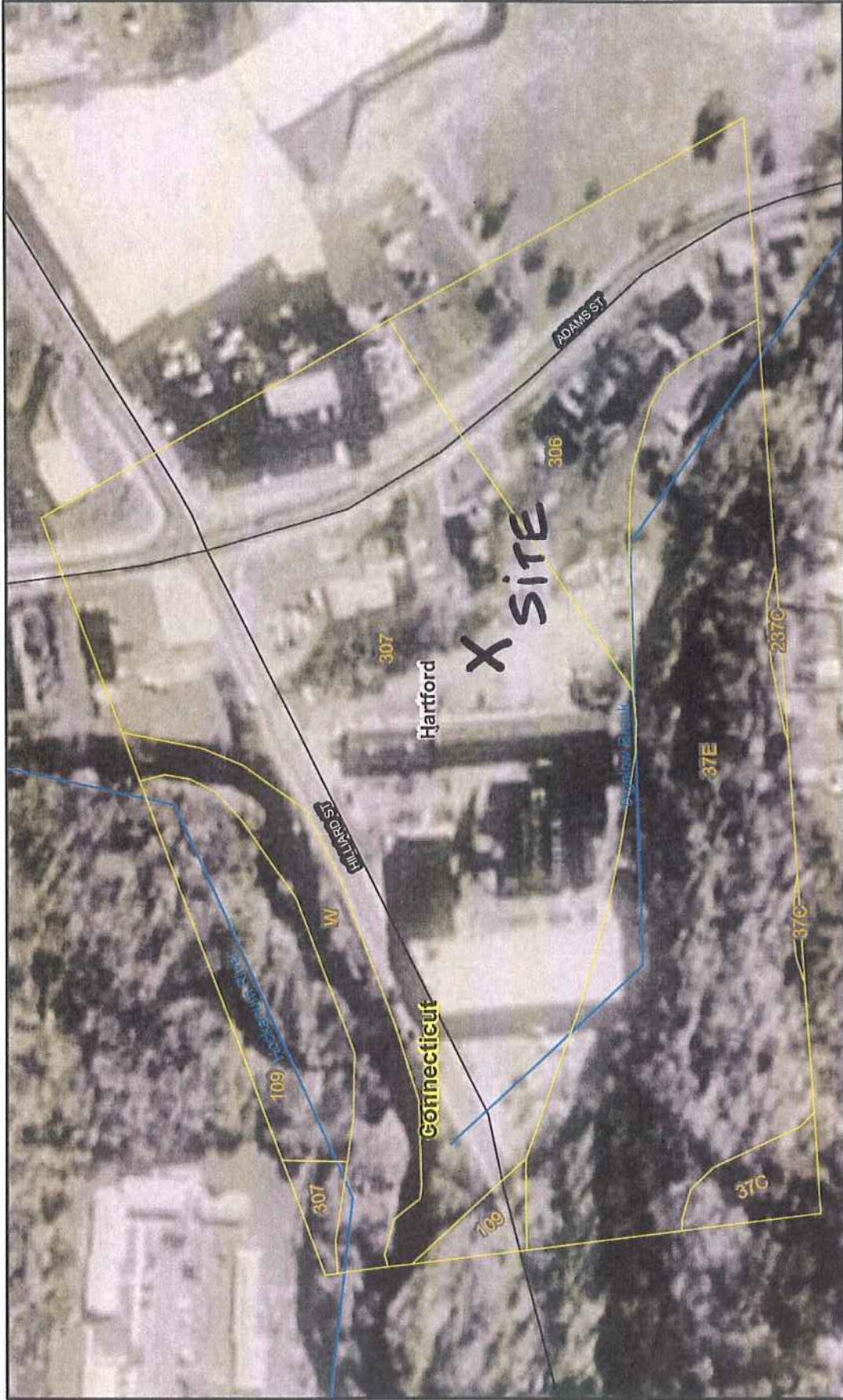
Japanese knotweed	
multiflora rose	
American elm	

COMMENTS:

developed former mill site has disturbed wetland - watercourse corridor and adjoining uplands
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SOIL SURVEY OF STATE OF CONNECTICUT

640 Hilliard Street, Manchester, CT



SOIL SURVEY OF STATE OF CONNECTICUT

640 Hilliard Street, Manchester, CT

MAP LEGEND

-  Soil Map Units
-  Cities
-  Detailed Counties
-  Detailed States
-  Interstate Highways
-  Roads
-  Rails
-  Water
-  Hydrography
-  Oceans
-  Escarpment, bedrock
-  Escarpment, non-bedrock
-  Gully
-  Levee
-  Slope
-  Blowout
-  Borrow Pit
-  Clay Spot
-  Depression, closed
-  Eroded Spot
-  Gravel Pit
-  Gravelly Spot
-  Gully
-  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: 3
 Soil Map Compilation Scale: 1:12000

Map comprised of aerial images photographed on these dates:
 4/23/1990

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
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	0.3	1.7
37E	Manchester gravelly sandy loam, 15 to 45 percent slopes	4.3	25.6
109	Fluvaquents-Udifulvents complex, frequently flooded	1.2	7.2
237C	Manchester-Urban land complex, 3 to 15 percent slopes	0.0	0.2
306	Udorthents-Urban land complex	2.5	14.8
307	Urban land	7.5	44.9
W	Water	0.9	5.5

Map Unit Description (Brief)

State of Connecticut

[Only those map units that have entries for the selected non-technical description categories are included in this report]

Map Unit: 37C - Manchester gravelly sandy loam, 3 to 15 percent slopes

Description Category: SOI

Manchester Gravelly Sandy Loam, 3 To 15 Percent Slopes

This map unit is in the Connecticut Valley Major Land Resource Area. The mean annual precipitation is 38 to 50 inches (965 to 1270 millimeters) and the average annual air temperature is 45 to 52 degrees F. (7 to 11 degrees C.) This map unit is 80 percent Manchester soils. 20 percent minor components.

Manchester soils

This component occurs on valley outwash plain, terrace, kame, and esker landforms. The parent material consists of sandy and gravelly glaciofluvial deposits derived from basalt, sandstone, and shale. The slope ranges from 3 to 15 percent and the runoff class is low. The depth to a restrictive feature is greater than 60 inches. The drainage class is excessively drained. The slowest permeability within 60 inches is about 5.95 in/hr (rapid), with about 2.6 inches (low) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 4e

Typical Profile:

0 to 9 inches; gravelly sandy loam

9 to 18 inches; gravelly loamy sand

18 to 65 inches; stratified extremely gravelly coarse sand to very gravelly loamy sand

Map Unit: 37E - Manchester gravelly sandy loam, 15 to 45 percent slopes

Description Category: SOI

Manchester Gravelly Sandy Loam, 15 To 45 Percent Slopes

This map unit is in the Connecticut Valley Major Land Resource Area. The mean annual precipitation is 38 to 50 inches (965 to 1270 millimeters) and the average annual air temperature is 45 to 52 degrees F. (7 to 11 degrees C.) This map unit is 80 percent Manchester soils. 20 percent minor components.

Manchester soils

This component occurs on valley outwash plain, terrace, kame, and esker landforms. The parent material consists of sandy and gravelly glaciofluvial deposits derived from basalt, sandstone, and shale. The slope ranges from 15 to 45 percent and the runoff class is high. The depth to a restrictive feature is greater than 60 inches. The drainage class is excessively drained. The slowest permeability within 60 inches is about 5.95 in/hr (rapid), with about 2.6 inches (low) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 7e

Typical Profile:

0 to 9 inches; gravelly sandy loam

9 to 18 inches; gravelly loamy sand

18 to 65 inches; stratified extremely gravelly coarse sand to very gravelly loamy sand

Map Unit Description (Brief)

State of Connecticut

Map Unit: 109 - Fluvaquents-Udifluvents complex, frequently flooded

Description Category: SOI

Fluvaquents-Udifluvents Complex, Frequently Flooded

This map unit is in the New England and Eastern New York Upland, Southern Part New England and Eastern New York Upland, Northern Part Connecticut Valley Major Land Resource Area. The mean annual precipitation is 32 to 50 inches (813 to 1270 millimeters) and the average annual air temperature is 39 to 52 degrees F.(4 to 11 degrees C.) This map unit is 50 percent Fluvaquents soils, 35 percent Udifluvents soils. 15 percent minor components.

Fluvaquents soils

This component occurs on depression and flood plain landforms. The parent material consists of alluvium. The slope ranges from 0 to 3 percent and the runoff class is very low. The depth to a restrictive feature is greater than 60 inches. The drainage class is poorly drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 7.2 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.4 LEP (low). The flooding frequency for this component is frequent. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is about 4 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 6w

Typical Profile:

0 to 4 inches; silt loam
4 to 14 inches; fine sand
14 to 21 inches; very fine sand
21 to 38 inches; silt loam
38 to 45 inches; fine sandy loam
45 to 55 inches; sand
55 to 60 inches; fine sandy loam

Udifluvents soils

This component occurs on flood plain landforms. Parent material is alluvium. The slope ranges from 0 to 3 percent and the runoff class is low. The depth to a restrictive feature is greater than 60 inches. The drainage class is well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 4.0 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is frequent. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is about 72 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 6w

Typical Profile:

0 to 2 inches; fine sandy loam
2 to 4 inches; loamy fine sand
4 to 12 inches; fine sandy loam
12 to 18 inches; fine sandy loam
18 to 35 inches; loamy sand
35 to 38 inches; very gravelly loamy sand
38 to 60 inches; very gravelly coarse sand

Map Unit Description (Brief)

State of Connecticut

Map Unit: 237C - Manchester-Urban land complex, 3 to 15 percent slopes

Description Category: SOI

Manchester-Urban Land Complex, 3 To 15 Percent Slopes

This map unit is in the Connecticut Valley Major Land Resource Area. The mean annual precipitation is 38 to 50 inches (965 to 1270 millimeters) and the average annual air temperature is 45 to 52 degrees F. (7 to 11 degrees C.) This map unit is 40 percent Manchester soils, 35 percent Urban Land, 25 percent minor components.

Manchester soils

This component occurs on valley outwash plain, esker, kame, and terrace landforms. The parent material consists of sandy and gravelly glaciofluvial deposits derived from granite, gneiss, and schist. The slope ranges from 3 to 15 percent and the runoff class is low. The depth to a restrictive feature is greater than 60 inches. The drainage class is excessively drained. The slowest permeability within 60 inches is about 5.95 in/hr (rapid), with about 2.6 inches (low) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 4e

Typical Profile:

0 to 9 inches; gravelly sandy loam

9 to 18 inches; gravelly loamy sand

18 to 65 inches; stratified extremely gravelly coarse sand to very gravelly loamy sand

Urban Land

Urban land is land mostly covered by streets, parking lots, buildings, and other structures of urban areas. The slope ranges from 3 to 15 percent and the runoff class is very high. The Nonirrigated Land Capability Class is 8

Map Unit: 306 - Udorthents-Urban land complex

Description Category: SOI

Udorthents-Urban Land Complex

This map unit is in the New England and Eastern New York Upland, Southern Part Connecticut Valley Major Land Resource Area. The mean annual precipitation is 32 to 50 inches (813 to 1270 millimeters) and the average annual air temperature is 45 to 55 degrees F. (7 to 13 degrees C.) This map unit is 50 percent Udorthents soils, 35 percent Urban Land, 15 percent minor components.

Udorthents soils

This component occurs on cut (road, railroad, etc.), railroad bed, road bed, spoil pile, urban land, fill, and spoil pile landforms. The slope ranges from 0 to 25 percent and the runoff class is medium. The depth to a restrictive feature varies, but is commonly greater than 60 inches. The drainage class is typically well drained. The slowest permeability within 60 inches is about 0.00 in/hr (very slow), with about 9.0 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.4 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table is greater than 60 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 3e

Typical Profile:

0 to 5 inches; loam

5 to 21 inches; gravelly loam

21 to 80 inches; very gravelly sandy loam

Urban Land

Urban land is land mostly covered by streets, parking lots, buildings, and other structures of urban areas. The slope ranges from 0 to 35 percent and the runoff class is very high. The Nonirrigated Land Capability Class is 8

Map Unit Description (Brief)

State of Connecticut

Map Unit: 307 - Urban land

Description Category: SOI

Urban Land

This map unit is in the New England and Eastern New York Upland, Southern Part Connecticut Valley Major Land Resource Area. The mean annual precipitation is 38 to 50 inches (965 to 1270 millimeters) and the average annual air temperature is 45 to 52 degrees F. (7 to 11 degrees C.) This map unit is 80 percent Urban Land. 20 percent minor components.

Urban Land

Urban land is land mostly covered by streets, parking lots, buildings, and other structures of urban areas. The slope ranges from 0 to 45 percent and the runoff class is very high. The Nonirrigated Land Capability Class is 8

