AN ADDENDUM

INVENTORY AND DELINEATION OF SOILS, WETLANDS, AND WATERCOURSES

FOR THE CONNECTICUT PORTION

OF THE

CONNECTICUT EXPANSION PROJECT

Prepared for:

Tennessee Gas Pipeline Company, L.L.C.
1001 Louisiana Street
Houston, Texas 77002

Prepared by:

AECOM
10 Orms Street, Suite 405
Providence, RI 02904

April 2015

TABLE OF CONTENTS

LIST OF TABLES

Please Refer to Attachment A

LIST OF FIGURES

Please Refer to Attachment B

ACOE Wetland Delineation Data Forms

Please Refer to Attachment C

1.0 INTRODUCTION

The Proposed Connecticut Expansion Project (the "Project") involves the construction of two sections of new 36-inch outside diameter ("OD") pipeline looping totaling 1.35 miles in Albany County, New York and 3.81 miles in Massachusetts, and one section of new 24-inch OD pipeline looping totaling 8.2 miles in Berkshire and Hampden Counties, Massachusetts and Hartford County, Connecticut ("Connecticut Loop"; Figure 1). The Project occurs primarily within or adjacent to the right-of-way ("ROW") associated with the Tennessee Gas Pipeline Company, L.L.C. ("Tennessee") existing pipeline designated as the 200 and 300 Lines.

AECOM soil and wetland scientists identified wetlands and watercourses during the fall of 2013 along the Connecticut Loop that are subject to state or federal jurisdiction, based on the Connecticut Inland Wetlands and Watercourses Act (Section 22a-36 through 45 of the Connecticut General Statutes) and the Federal Clean Water Act ([CWA]; 33 U.S.C. 1344). Detailed descriptions of employed methodologies are described in AECOM's report "*Inventory and Delineation of Wetlands and Watercourses along the Connecticut Portion of the Connecticut Expansion Project, April 2014*".

Connecticut defines a wetland based on the presence of poorly drained, very poorly drained, alluvial and floodplain soils as defined by the National Cooperative Soils Survey. Therefore, a "*Soil Scientist Report for the Connecticut Portion of the Connecticut Expansion Project, June 2014*" was prepared for Tennessee and submitted to the Connecticut Department of Energy and Environmental Protection. This report described in greater detail soil characteristics and soil-based constraints associated with the construction and operation of the proposed Connecticut Loop and its associated facilities for both wetland and upland portions of the Project. Soil characteristics traversed by the Project were based on U.S. Department of Agriculture ("USDA") Natural Resource Conservation Service ("NRCS") information for Hartford County, Connecticut. This includes information available from the NRCS Web Soil Survey (USDA-NRCS 2014).

This addendum is developed specifically to address a re-route in the Project Centerline that was needed to avoid impacts to a waterbody associated with DeGrayes Brook located in East Granby, Connecticut. At approximately Milepost 7.6, the Project Centerline has been rerouted to the southeast for approximately 0.6 miles through forested wetland, forested upland, and paved parking areas associated with a commercial development.

2.0 SOILS ANALYSIS

In general, soils that exhibit similar horizon composition, thickness, and arrangement make up a Soil Series. The layout of these series on the landscape provides useful information, such as drainage class and geologic origin. Series can be subdivided into map units, or phases, with similar physical and chemical properties that can affect the management of a soil. These properties can include slope, stoniness, acidity, wetness, and depth to bedrock. Series and phases are used together to classify and map specific soil types on a landscape.

In the following sections, each soil series map unit crossed by the re-reouted segment of the Connecticut Loop alignment are described in detail. This information was obtained from the USDA-NRCS's Web Soil Survey information for the Hartford County Soil Survey Area available on-line (USDA-NRCS 2014). In

addition, Tables in Attachment A display characteristics of each soil series map unit, including erosion potential, capability class, drainage class, wind erodibility group and depth to water table. This information is important for directing Best Management Practices ("BMPs") that will minimize impacts associated with erosion of important soils such as prime farmlands and preventing transport of those soils into adjacent wetlands and watercourses. Figures of the proposed pipeline re-route in relation to field delineated wetlands and NRCS Soil Series' are included in Attachment B.

2.1 SOIL SERIES SUMMARY

The Connecticut Loop is located within the New England Uplands Section of the New England physiographic province (Figure 1). The Connecticut Loop lies within the Central Valley of the New England Uplands, a north-south trending area between the Western and Eastern Uplands (Fenneman 1938). It is a broad, flat valley developed on fairly weak, tilted, stratified rocks, which are Triassic in age. The topography in the area is the product of continental glaciers moving through the region. As these glaciers melted, they dropped sediments resulting in a large amount of till remaining throughout the Connecticut Valley. The Connecticut Valley consists of flood plains along the Connecticut and Farmington Rivers, with nearly level to sloping terraces, low glacial upland hills, and narrow ridges of basalt. Elevations in the region range from 10 feet above sea level on the flood plain of the Connecticut River to 500 feet on the highest basalt ridges (USDA 2008).

Pipeline Corridor

Soils along the re-routed Project segment in Hartford County (Figure 2; Table 2-1) formed primarily within glaciofluvial and glaciolacustrine parent materials. Fine-silty and clayey glaciolacustrine deposits associated with the poorly drained Scitico, Shaker and Maybid hydric soils, make up approximately 14.7% of the re-routed segment. The glaciofluvial deposits were laid down by melt water from retreating glaciers and the texture of this material generally ranges from fine to coarse sand to gravel due to the relatively high energy of the melt water from glaciers. About 48% of the re-routed segment is formed in excessively drained Merrimac soils and Windsor soils. Windsor soils tend to be finer textured (e.g., medium to coarse sands) overlain by eolian (wind-blown) sands.

The re-routed segment does not include any soils mapped as alluvial-floodplain by the NRCS. In addition, the NRCS has not mapped any poorly drained to very poorly drained hydric soils within the re-routed segment that were formed in organic material (i.e., Histic Epipedons [8-16 inches thick] or Histosols [16-32 inches thick]) among various stages of decomposition (i.e., sapric, hemic or fibric). Poor drainage is more associated with landscape position, and a predominance of fine-textured soils that can result in restrictive layers and perched water tables.

Table 2-2 tabulates soils-specific information for each of the delineated wetland areas along the re-routed Project segment, identifying each in terms of Project-specific number, location, wetland classification, mapped soil and drainage classification (per the NRCS data), and hydric soil indicators observed during the delineations. Field information generally supported that information previously determined by the NRCS, coninciding with soils mapped as poorly drained and very poorly drained.

Prime farmland and farmland of statewide importance are identified for their high soil quality, adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks, which results in high productivity of food, feed, fiber, forage, and oil seed crops. Due to the depositional nature and parent material of soils located within the pipeline corridor, approximately 63.2% of the lands along the re-routed

Project segment are designated as prime farmland and farmland of statewide importance. Remaining area is commercially developed and mapped by the NRCS as Udorthents.

2.2 SOIL SERIES DESCRIPTIONS

Merrimac sandy loam, 0 to 3 percent slopes (34A)

The Merrimac component makes up 80 percent of the map unit. Slopes are 0 to 3 percent. This component is on kames on valleys, outwash plains on valleys, terraces on valleys. The parent material consists of sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 1. This soil does not meet hydric criteria.

Scitico, Shaker, and Maybid (9)

The Scitico component makes up 40 percent of the map unit. Slopes are 0 to 3 percent. This component is on depressions on lake plains, drainageways on lake plains, terraces. The parent material consists of clayey glaciolacustrine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May, June, October, November, and December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria.

The Shaker component makes up 30 percent of the map unit. Slopes are 0 to 3 percent. This component is on depressions on lake plains, drainageways on lake plains, terraces on lake plains. The parent material consists of coarse-loamy eolian deposits over clayey glaciolacustrine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during January, February, March, April, May, June, October, November, and December. Organic matter content in the surface horizon is about 70 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria.

The Maybid component makes up 15 percent of the map unit. Slopes are 0 to 3 percent. This component is on depressions on lake plains, drainageways on lake plains, terraces on lake plains. The parent material consists of clayey glaciolacustrine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is high. Shrink-swell potential is high. This soil is not flooded. It is occasionally ponded. A seasonal zone of water saturation is at 3 inches during January, February, March, April, May, June, July, August, October, November, and December. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 6w. This soil meets hydric criteria.

Windsor loamy sand, 0 to 3 percent slopes (36A)

The Windsor component makes up 80 percent of the map unit. Slopes are 0 to 3 percent. This component is on kames on valleys, outwash plains on valleys, terraces on valleys. The parent material consists of eolian sands over sandy glaciofluvial deposits derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 70 percent. Nonirrigated land capability classification is 2s. This soil does not meet hydric criteria.

Windsor loamy sand, 3 to 8 percent slopes (36B)

The Windsor component makes up 80 percent of the map unit. Slopes are 3 to 8 percent. This component is on kames on valleys, outwash plains on valleys, terraces on valleys. The parent material consists of eolian sands over sandy glaciofluvial deposits derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 70 percent. Nonirrigated land capability classification is 2s. This soil does not meet hydric criteria.

Udorthents, smothed (308)

The Udorthents component makes up 80 percent of the map unit. Slopes are 0 to 35 percent. This component is on filled, leveled land. The parent material consists of drift. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 39 inches during January, February, March, April, November, and December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

3.0 WETLANDS AND WATERCOURSES

AECOM personnel identified wetlands and watercourses subject to state or federal jurisdiction based upon the Federal Clean Water Act and the Connecticut Inland Wetland and Watercourses Act and its implementing regulations and mapping. See AECOM's report "*Inventory and Delineation of Wetlands and Watercourses along the Connecticut Portion of the Connecticut Expansion Project, April 2014*" for details on regulations and wetland delineation procedures used throughout the Project limits.

The re-routed segement crosses one wetland and one watercourse (Figure 2). The wetland (WCT-53) is part of a large Palustrine Forested wetland system with areas of Palustrine Scrub-Shrub associated with DeGrayes Brook. The wetland is dominated by red maple (*Acer rubrum*) in the canopy and winterberry (*Ilex verticillata*), highbush blueberry (*Vaccinium corymbosum*) and speckled alder (A*lnus rugosa*) in the understory. There are also scattered sedges and other herbaceous plants including fringed sedge (*Carex crinita*), lurid sedge (*Carex lurida*), jewelweed (*Impatiens capensis*), and sphagnum moss (*Sphagnum spp.*). The watercourse (SCT-54) is a channelized and formerly relocated segement of DeGrayes Brook that runs between two parking lots within a commercially developed complex. It is perennial stream that is roughly 10-15 wide with a mixed substrate of sand, gravel, and muck. Vegetation along the stream banks includes

multiflora rose (*Rosa multiflora*), gray birch (*Betula populifolia*) and pin oak (*Quercus palustris*). This surface water would be classified as a Class A waters (CTDEEP 2013).

4.0 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. United States Fish and Wildlife Service Biological Report 79/31, Washington, D.C.

Connecticut Department of Environmental Protection (CT DEP), Inland Wetlands Management. Available URL: http://www.ct.gov/dep/cwp/view.asp?a=2720&q=325684&depNav_GID=1654. Accessed April 2009.

CT Inland Wetland and Watercourses Act. Sections 22a-36 through 22a-45 of the CT General Statutes. http://www.cga.ct.gov/2005/pub/chap440.htm. Accessed April 2009.

Connecticut Department of Energy and Environmental Protection (CTDEEP). 2013. Connecticut Water Quality Standards. http://www.ct.gov/deep/lib/deep/regulations/22a/22a-426-1through9.pdf. Accessed April 2015.

Fenneman, Nevin M. 1938. Physiography of the Eastern United States. McGraw-Hill Book Company, Inc. New York and London. pp 203 and 368.

U.S. Army Corps of Engineers. 2012. Regional supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0, ERDC/EL TR-12-1, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

United States Department of Agriculture, Soil Conservation Service, in cooperation with the Connecticut Agricultural Experiment Station, the Storrs Agricultural Experiment Station, and the Connecticut Department of Environmental Protection, *Soil Survey of the State of Connecticut*. 2008.

USDA-NRCS. 2014. Web Soil Survey [Online WWW]. Available URL: http://websoilsurvey.nrcs.usda.gov/app/. [Accessed March 4, 2014].

Attachment A – Tables

TABLE 2-1
SOIL SERIES MAP UNITS CROSSED BY THE RE-ROUTED SEGMENT OF THE CONNECTICUT EXPANSION PROJECT
CONNECTICUT LOOP

Mapping ID	Soil Series Map Unit	% of Total Line	Erosion Potential[1]	Capability Class[2]	Drainage Characteristics	Wind Erodibility Group[3]	Depth to Water Table (cm)
9	Scitico, Shaker, and Maybid	14.7	Very Severe	4w	Poorly drained-very poorly drained	5	8
308	Udorthents, smothed	36.8	Severe	4e	Moderately well drained	5	100
34A	Merrimac sandy loam, 0 to 3 percent slopes	9.3	Very Severe	1	Somewhat excessively drained	3	>200
36A	Windsor loamy sand, 0 to 3 percent slopes	24.2	Very Severe	2s	Excessively drained	2	>200
36B	Windsor loamy sand, 3 to 8 percent slopes	15.0	Very Severe	2s	Excessively drained	2	>200

1: The erosion potential for each of the soils was determined by reviewing the erosion properties provided by the NRCS's Web Soil Survey. The NRCS has evaluated soils based on slope and soil erosion factor K.
- A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions.
- A rating of "moderate" indicates that some erosion is likely and that erosion control measures may be needed.
- A rating of "severe" indicates that erosion is very likely and that erosion control measures, including revegetation of bare areas are advised.
- A rating of "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion control measures are costly and generally impractical.

2: Capability class refers to the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. Soil Capability Subclasses are designated by adding e, w, or s to the Capability Class designation. The letter "e" shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; the letter "s" denotes that the soil is limited mainly because it is shallow, droughty, or stony' "w" indicates that water in or on the soil interferes with plant growth or cultivation.
- Capability Class 1: Soils have slight limitations that restrict their use.
- Capability Class 2: Soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- Capability Class 3: Soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.
- Capability Class 4: Soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.
- Capability Class 5: Soils are not likely to erode but have other limitations, impractical to remove, that limit their use.
- Capability Class 6: Sols have severe limitations that make them generally unsuitable for cultivation.
- Capability Class 7: Soils have very severe limitations that make them unsuitable for cultivation.
- Capability Class 8: Soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

3: The wind erodibility group classification for each of the soils was determined by reviewing the physical soil properties data provided by the NRCS's Web Soil Survey. The NRCS has grouped soils that have similar properties affecting their susceptibility to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

* Denotes alluvial-floodplain soil

Farmland of Statewide Importance

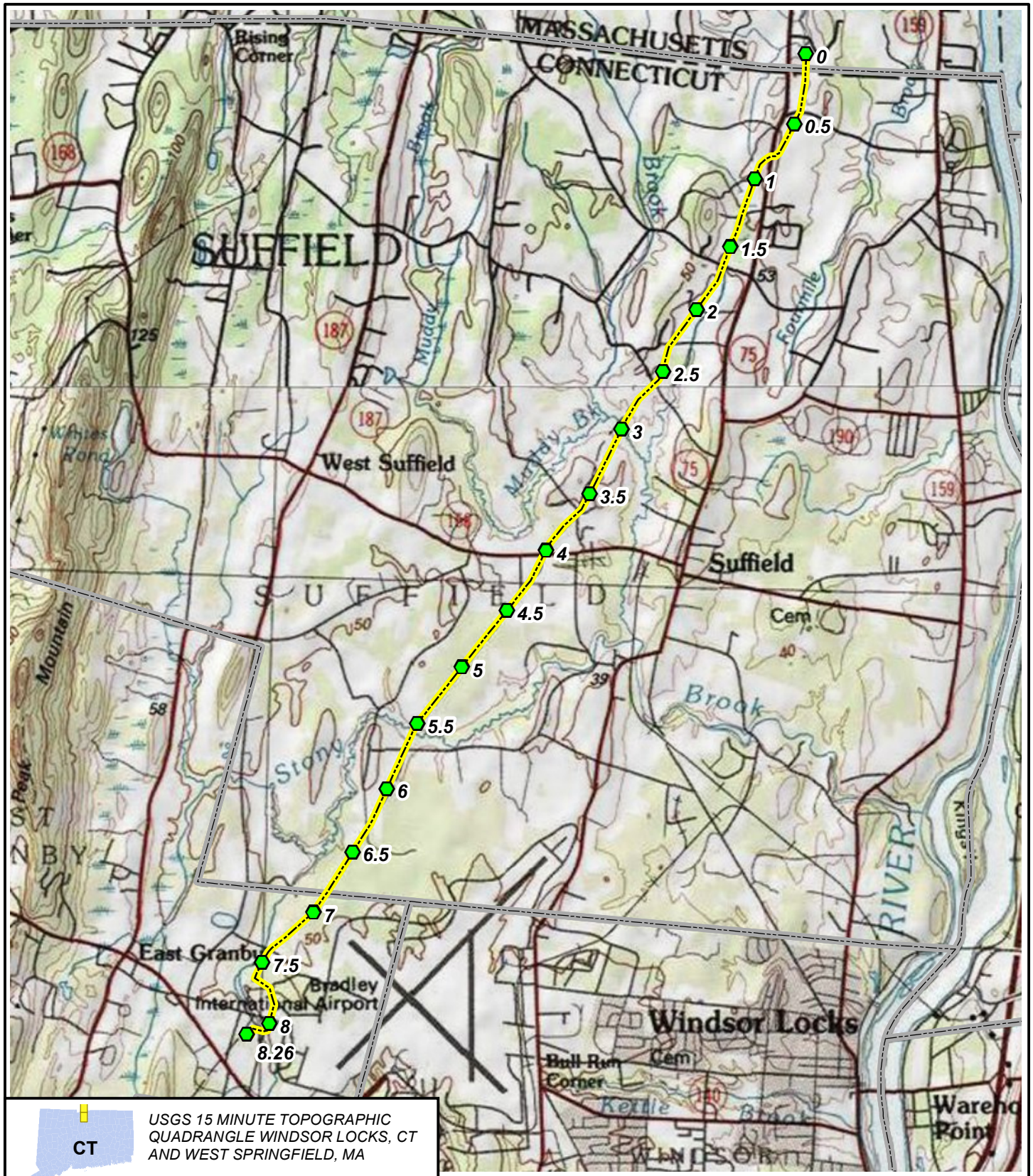
All Areas are Prime Farmland

TABLE 2-2
SOIL SERIES MAP UNITS ASSOCIATED WITH FIELD DELINEATED WETLANDS
CONNECTICUT EXPANSION PROJECT CONNECTICUT LOOP

Approx. Milepost	Wetland Number[1]	Wetland Class[2]	Drainage Class	Soil Units Mapped	Hydric Soil Indicator[3]
7.62 – 7.67	WCT53	PEM PFO	Poorly Drained Very Poorly Drained	Scitico, Shaker, and Maybid soils	F3
7.68 – 7.69	WCT53	PEM PFO	Poorly Drained Very Poorly Drained	Scitico, Shaker, and Maybid soils	F3

1. Wetland series number generated by AECOM to identify wetlands within and adjacent to the Project corridor;
2. Wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO = Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland; POW = Palustrine Open Water.
3. Hydric Soil Indicators from ACOE Regional Supplement (January 2012). A1: Histosol, A2: Histic Epipedon, A3: Black Histic, A5: Stratified Layers, A11: Depleted Below Dark Surface, A12: Thick Dark Surface, F2: Loamy Gleyed Matrix, F3: Depleted Matrix, S5: Sandy Redox, S6: Stripped Matrix.

Attachment B – Figures



CT

USGS 15 MINUTE TOPOGRAPHIC QUADRANGLE WINDSOR LOCKS, CT AND WEST SPRINGFIELD, MA

Legend

- Mileposts
- Proposed Project Centerline
- Town Boundary

0 2,000 4,000 8,000 Feet

N

SITE LOCUS

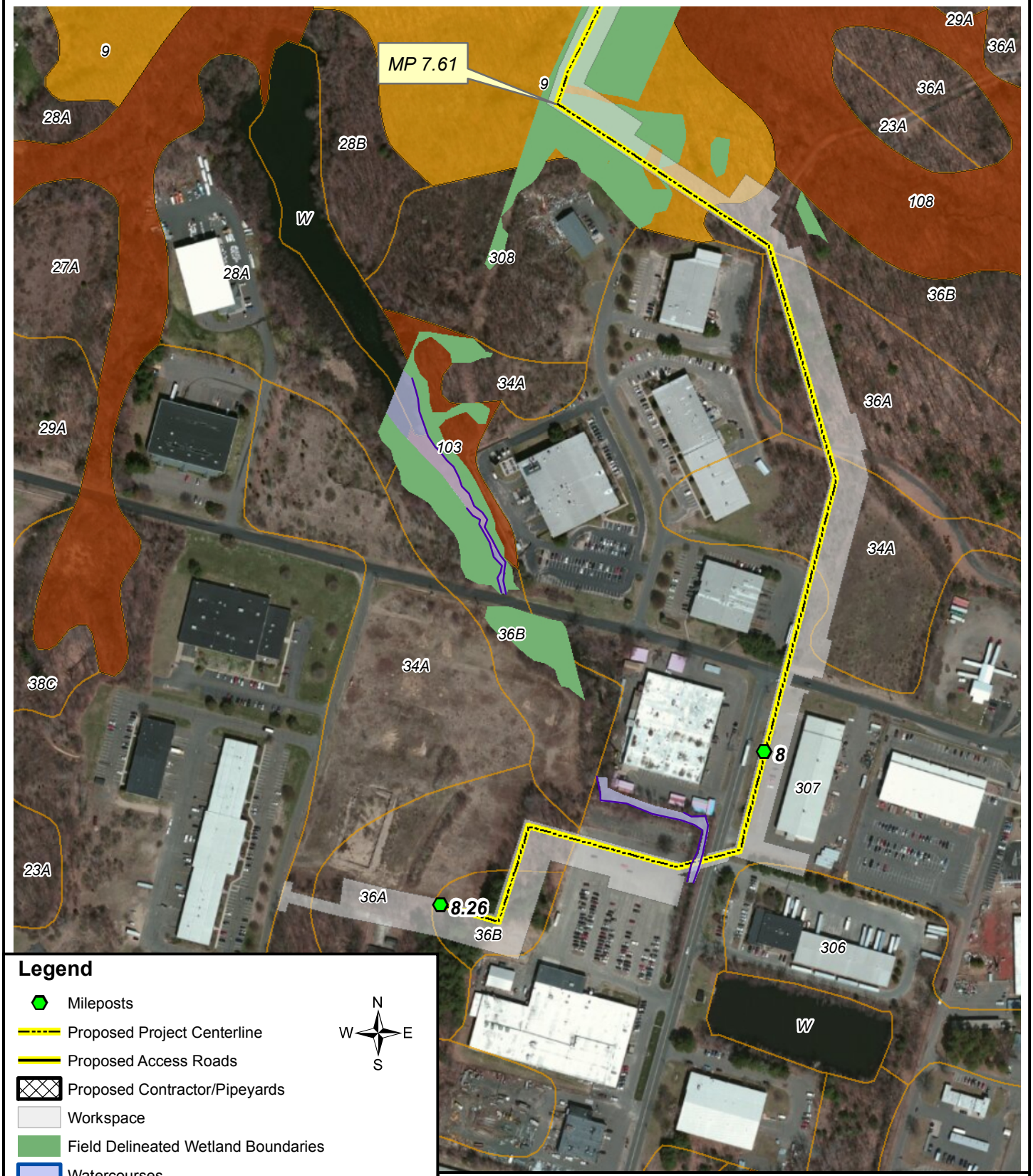
Tennessee Gas Pipeline Company
CT Expansion Project

SCALE	DATE	PROJECT NO.
1:60,000	03/15	60306709

Tennessee Gas Pipeline Company, L.L.C.
a Kinder Morgan company

Figure Number

1



Legend

- Mileposts
- Proposed Project Centerline
- Proposed Access Roads
- Proposed Contractor/Pipeyards
- Workspace
- Field Delineated Wetland Boundaries
- Watercourses
- Alluvial and Floodplain Soils
- Poorly Drained and Very Poorly Drained Soils
- SSURGO Soils Area
- See Table 2-1 for Mapping Codes

N W E S

0 175 350 700 Feet

SSURGO Soils, Wetlands and Watercourses

Tennessee Gas Pipeline Company
CT Expansion Project

SCALE	DATE	PROJECT NO.
1:60,000	03/15	60306709

Tennessee Gas Pipeline Company, L.L.C.
a Kinder Morgan company

Figure Number

2

Attachment C – Army Corp of Engineers Wetland Transect Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: CT Expansion City/County:Suffield, CT Sampling Date:10/31/2013

Applicant/Owner:_____ State:CT Sampling Point:WCT53/54-UP

Investigator(s):SE Section, Township, Range:_____

Landform (hillslope, terrace, etc.):Glaciofluvial Local relief (concave, convex, none):None

Slope (%):0 Lat:41.938700 Long:-72.709800 Datum:WGS84

Soil Map Unit Name:Merrimac Sandy Loam NWI Classification:_____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	If yes, optional Wetland Site ID: _____

Remarks: (explain alternative procedures here or in separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches)
Water Table Present?	Yes ☐	No ☒	Depth (inches)
Saturation Present? (include capillary fringe)	Yes ☐	No ☒	Depth (inches)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants **Sampling Point:** W53/54

Tree Stratum (Plot size:30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Sassafras albidium	20	Y	FACU
2. Fagus grandifolia	10	N	FACU
3 .Prunus serotina	20	Y	FACU
4. Quercus rubra	45	Y	FACU
5. Carpinus carolina	5	N	FAC
6.			
7.			

100 = Total Cover

Sapling/Shrub Stratum (Plot size:15 ft)

1.
2.
3 .
4.
5.
6.
7.
8.

= Total Cover

Herb Stratum (Plot size:5 ft)

1.
2.
3 .
4.
5.
6.
7.
8.
9.
10.
11.
12.

15 = Total Cover

Woody Vine Stratum (Plot size:30 ft)

1.
2.
3 .
4.

= Total Cover

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (C)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.01
- ☐ Morphological Adaptations1 (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBHand greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardlessof size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: (Include photo numbers here or on a separate sheet.)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-8	10YR 3/2	100					FSL	
8-12	10YR 4/3	100					FSL	
12-18	2.5Y 5/4	100					FSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grain. [2]Location: PL=Pore Lining M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (**LRR, R, MLRA 149B**)
- ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): 0

Hydric Soil Present? **Yes** ☐ **No** ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: CT Expansion City/County:Suffield, CT Sampling Date:10/31/2013

Applicant/Owner:_____ State:CT Sampling Point:WCT53/54-Wet

Investigator(s):SE Section, Township, Range:_____

Landform (hillslope, terrace, etc.):Alluvial Local relief (concave, convex, none):Concave

Slope (%):0 Lat:41.938800 Long:-72.709500 Datum:WGS84

Soil Map Unit Name:Rippowam fine sandy loam NWI Classification:PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐	
Wetland Hydrology Present?	Yes ☒	No ☐	If yes, optional Wetland Site ID: _____

Remarks: (explain alternative procedures here or in separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☒ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches)
Water Table Present?	Yes ☒	No ☐	Depth (inches) 10
Saturation Present? (include capillary fringe)	Yes ☒	No ☐	Depth (inches) 4

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants **Sampling Point:** WCT53

Tree Stratum (Plot size:30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	35	Y	FAC
2. Ulmus rubra	5	N	FAC
3 .			
4.			
5.			
6.			
7.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size:15 ft)			
1. Ilex verticillata	10	N	FACW
2. Vaccinium corymbosum	8	N	FACW
3 .Alnus rugosa	25	Y	FACW
4. Cornus amomum	25	Y	FACW
5.			
6.			
7.			
8.			
	68 = Total Cover		
Herb Stratum (Plot size:5 ft)			
1. Carex inflata	15	Y	OBL
2. Carex crinita	8	Y	OBL
3 .			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	23 = Total Cover		
***Woody Vine Stratum* (Plot size:30 ft)**			
1.			
2.			
3 .			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (C)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.01
- ☐ Morphological Adaptations1 (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBHand greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardlessof size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL **Sampling Point:** WCT53

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-12	10YR 4/2	97	10YR 4/6	3	C	PL	Muck	Sapric Organic
12-20	2.5Y 6/2	94	2.5Y 5/6	6	C	M	VFSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grain. [2]Location: PL=Pore Lining M=Matrix

Hydric Soil Indicators:

- ☒ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (**LRR, R, MLRA 149B**)
- ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): 0

Hydric Soil Present? **Yes** ☒ **No** ☐

Remarks: