

53 SPRING STREET WETLAND DELINEATION

SOIL SCIENTIST REPORT

Prepared for:
Johnson Development Associates, Inc.

Client Ref: 141.21387.00001

April 2023

**53 Spring Street
Southington, Connecticut
Wetland Delineation
Soil Scientist Report**

Prepared for:
Mr. John Tascione
Johnson Development Associates, Inc.
551 West Lancaster Avenue, Suite 202
Haverford, Pennsylvania 19041

This document has been prepared by SLR International Corporation (SLR). The material and data in this report were prepared under the supervision and direction of the undersigned.



Matthew J. Sanford, MS, PWS, RSS
US Manager of Ecology



Marlee Antill, MS
Environmental Scientist

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ACRONYMS

AMSL	above mean sea level
CGS	Connecticut General Statutes
FEMA	Federal Emergency Management Agency
FT	Feet
NDDDB	Natural Diversity Data Base
NRCS	Natural Resources Conservation Service
SLR	SLR International Corporation
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

1. INTRODUCTION

On March 7, 2023, Matthew Sanford, Registered Soil Scientist and Professional Wetland Scientist, and Marlee Antill, Environmental Scientist and Wetland Professional in Training, both of SLR International Corporation (SLR), visited the subject site at 53 Spring Street in Southington, Connecticut. Onsite wetlands were previously delineated by David Lord in June 2022. The purpose of this investigation was to locate and delineate any additional wetlands within the vicinity of proposed utility improvements along the Smoron Drive road shoulder, evaluate existing wetland conditions on the site, and provide a full site impact assessment and mitigation plan. As part of our tasks, SLR performed a functions and values assessment of onsite wetlands and waterbodies and an assessment of potential impacts to onsite wetlands and watercourses from the proposed project activities. In summary, regulated resources on site consist of approximately 0.93 acres of isolated state emergent and scrub shrub wetlands within a former farm field/pasture and approximately 20 acres of federal palustrine forested, palustrine scrub shrub, and palustrine emergent/wet meadow wetlands.

Site Description

The approximately 60-acre site is located in a moderately-settled industrial, residential, and open space area of north-central Southington, Connecticut (**Appendix A, Figure 1**). The site is accessed to the west via Smoron Drive, which forms the eastern boundary of the site. Spring Street forms the northern site boundary, and to the south, the site abuts the Interstate-84 corridor. Undeveloped forested land extends west of the western parcel boundary before reaching a small residential neighborhood.

Topography on site consists of gradual hills sloping mainly to the northeast and several valleys and depressions. Elevations on site range from approximately 160 feet above mean sea level (amsl) and 225 feet amsl. The southwestern and northeastern portions of the site are largely comprised of wetlands and exist as undeveloped hardwood forest, scrub shrub, and open emergent meadows with former farm ponds, while much of the central and southeastern portions of the site consist of uplands, including former agricultural fields/pastures, an old barn and outbuildings, and two isolated wetland areas. A dirt access road bisects the central portion of the site, extending west from Smoron Drive. A southeast-running overhead Eversource transmission corridor bisects the western portion of the site.

Watershed Location

The site straddles two local watersheds: the western portion of the site sits within a 0.9-square-mile local basin that drains to the east. The eastern portion of the site is located within the upper (northern) portion of the Quinnipiac watershed, which drains 35.5 square miles from southern Farmington to Long Island Sound in New Haven. The Quinnipiac River flows southeast approximately 350 feet east of the eastern parcel boundary at Smoron Drive.

Federal Emergency Management Agency (FEMA) Mapping

According to the most recent FEMA flood map the site is not located within any special flood hazard zones.

2. METHODOLOGY

During SLR's investigations of the vegetated western road shoulder of Smoron Drive, we encountered a wet seep and drainage ditch near the intersection of Smoron Drive and Spring Street. We reviewed the area for the presence of wetland soils and found that the seep in fact contained a pocket of poorly drained aquents. SLR delineated this wetland pocket in accordance with the regulations of the Town of Southington, Connecticut, the State of Connecticut Inland Wetlands and Watercourses Act, Connecticut General Statutes (CGS) 22a-36 through 45, and federal wetland regulations.

Wetland determinations were completed based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land (e.g., a pond). Intermittent watercourse determinations were made based on the presence of a defined permanent channel and bank and the occurrence of two or more of the following characteristics: A) evidence of scour or deposits of recent alluvium or detritus, B) the presence of standing or flowing water for a duration longer than a particular storm incident, and C) the presence of hydrophytic vegetation. Wetland boundaries that were delineated were demarcated (flagged) with pink and blue surveyor's tape hung from sturdy vegetation and generally spaced a maximum of every 30 to 50 feet. Complete boundaries are located along the lines that connect these sequentially numbered flags (**Appendix A, Figure 2.1**). The wetland boundaries are subject to change until adopted by local, state, or federal regulatory agencies.

During the site visit, weather conditions were sunny and dry, with air temperature approximately 40 degrees Fahrenheit. Site conditions were suitable for wetland delineation work.

3. RESULTS

3.1 SOILS

Geospatial data were accessed via the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) web soil survey mapping. The soil survey mapping is appended (**Appendix A, Figure 3**). The survey identifies the following soil mapping units with associated NRCS map number in the project area, including four poorly drained or very poorly drained hydric soils and one alluvial state wetland soil:

- Wilbraham silt loam (5) - Poorly drained
- Wilbraham and Menlo soils (6) - Poorly drained
- Windsor loamy sand (36B) - Excessively drained
- Ludlow silt loam (42C) – Moderately well drained
- Watchaug fine sandy loam (55A) - Moderately well drained
- Watchaug fine sandy loam, very stony (56B) - Moderately well drained
- Cheshire fine sandy loam (63) – Well drained
- Cheshire fine sandy loam, very stony (64C) – Well drained
- Cheshire fine sandy loam, extremely stony (65D) – Well drained
- Pootatuck fine sandy loam (102) – Moderately well drained alluvium
- Bash silt loam (104) – Somewhat poorly drained
- Saco silt loam (108) – Very poorly drained

Soils were examined along the Smoron Drive road shoulder using a Dutch auger. Field investigations generally confirmed the previously delineated wetlands which correlate with NRCS mapping of poorly drained to very poorly drained soils underlying two large forested, scrub shrub, and emergent wet meadow wetland complexes located within the northern portion of the site, and two isolated scrub shrub and emergent wet meadow wetland areas located in the southeastern portion of the site. One additional federal wetland area (road shoulder seep) was delineated along the northeastern site boundary which was not identified during the previous 2022 wetland delineation. This small (approximately 0.09 acre) wetland pocket is likely the result of recent excavation for roadway widening and drainage improvements along Smoron Drive. This wetland seep supports the growth of hydrophytic vegetation (further described below). Please note that SLR did not delineate the wetland boundaries on site. These wetland boundaries were previously delineated by David Lord and approved by the Southington Inland Wetland and Watercourses Commission (original soil scientist report provided in Appendix F).

3.2 WETLANDS AND WATERCOURSES

A total of 21 acres of town-approved wetlands exists on site, as delineated in 2022 by David Lord (Appendix F). Additionally, SLR identified and delineated one small wetland drainage corridor located adjacent to and to the west of Smoron Drive, which was not previously mapped or delineated during the

2022 wetland delineation. SLR did not verify the previously delineated wetland boundaries during site visits but rather noted and assessed the existing conditions of these wetlands in terms of their functions and values served within the local landscape and watershed.

The wetlands on the site are comprised of two large federal wetland systems (Wetland Complexes C and D), which comprise areas of palustrine emergent scrub shrub and forested wetlands, as well as two isolated state wetland systems (Wetlands A and B), which consist of emergent wet meadow and scrub shrub wetlands within a former agricultural field/pasture. Additionally, a federal wetland area (Federal Wetland E) was delineated in the field by SLR and exists as a roadside wetland drainage corridor west of Smoron Drive (**Appendix A, Figures 2 and 4**). Each wetland system is described further below.

3.2.1 FEDERAL WETLANDS

3.2.1.1 Federal Wetland Complex C

Wetland Complex C occupies approximately 10 acres within the northeastern portion of the site, extending north to Spring Street and with a finger extending east to Smoron Drive. The northernmost portion of the wetland complex is comprised of a palustrine forested wetland. This approximately 4-acre area contains an open tree canopy dominated by eastern red cedar (*Juniperus virginiana*) and subtle moss-covered hummocks separated by intermittent patches of groundwater up to several inches deep on the day of the site investigation, evidence of an active groundwater table. To the south, the forested wetland transitions to a narrow band of scrub shrub wetland comprised largely of non-native invasive species, including Japanese honeysuckle (*Lonicera japonica*), Japanese barberry (*Berberis thunbergii*), multiflora rose (*Rosa multiflora*), and Oriental bittersweet (*Thelastrus orbiculatus*), with some native shrubs, including silky dogwood (*Swida amomum*) and northern spice bush (*Lindera benzoin*).

The southernmost portion of the wetland complex consists of a palustrine emergent/wet meadow wetland within an old field. Evidence of former agriculture on site include two approximately 0.1-acre farm ponds along the southern boundary of the wetland area. These ponds currently function as emergent marshes supported by groundwater breakout, with approximately 6 inches of water depth on the day of the site investigation. Vegetation in and around the ponds is dominated by broad-leaved cattail (*Typha latifolia*) with soft-stem bulrush (*Schoenoplectus tabernaemontani*), woolgrass (*Scirpus cyperinus*), tussock sedge (*Carex stricta*), soft rush (*Juncus effusus*), lurid sedge (*Carex lurida*), blue vervain (*Verbena hastata*), sensitive fern (*Onoclea sensibilis*), spotted Joe-Pye weed (*Eutrochium maculatum*), and goldenrod (*Solidago* sp.) growing around the pond edges and across the open wet meadow environment. Scattered woody vegetation punctuates the open emergent-dominated landscape, including sparse red maple (*Acer rubrum*) and sweetgum (*Liquidambar styraciflua*) trees and shrubs, including silky dogwood, multiflora rose, black elderberry (*Sambucus nigra*), and willows (*Salix* sp.).

Wetland C is bound to the west by 3 acres of sloped upland field bordered to the west by forested edge along the western property boundary. The open field features a mix of grasses, sparse native shrubs and forbs, and invasive species, including multiflora rose, common mugwort (*Artemisia vulgaris*), autumn olive

(*Eleagnus orbiculatus*), and Japanese barberry, has been proposed as the site of a 1-acre invasive species management and wetland mitigation/creation area (shown on Appendix A, Figure 4) and described further in Appendix D.

3.2.1.2 Federal Wetland Complex D

Wetland Complex D is highly sloped and comprises the northwestern portion of the site. The wetland occupies approximately 9.9 acres on site and likely continues off site to the north and west. Similar to Wetland C, this complex contains a mosaic of wetland habitats, including a small finger of old field/palustrine emergent wet meadow in the northeastern portion of the wetland, of a similar composition to that within Wetland C. Moving west, this open wetland habitat transitions to a palustrine scrub shrub wetland area and finally to a closed canopy, forested wetland to the west of the onsite transmission corridor. The forested wetland features a canopy of red maple and oaks and is densely overgrown with non-native invasive species, including multiflora rose, Japanese barberry, and Oriental bittersweet, limiting access during the site investigation.

3.2.1.3 Smoron Drive Roadside Wetland Seep and Drainage Swale (Federal Wetland E)

An approximately 0.09-acre roadside seep and drainage swale was delineated by SLR during the site investigation. SLR believes the seep and drainage swale may have been largely created during recent road drainage improvements associated with Smoron Drive. Poorly drained soils and a seasonal high-water table were observed at this location. In addition to hydric soils and an active seasonal high groundwater table, SLR observed hydrophytic vegetation within the wetland area, including soft rush, willow herb (*Epilobium coloratum*), silky dogwood, devils beggarticks (*Bidens fructosa*), broad-leaved cattail, square-pod water-primrose (*Ludwigia alternifolia*), and purple loosestrife (*Lythrum salicaria*). This wetland drainage corridor has federal nexus to wetlands to the north, as it is piped under Spring Street and discharges into the Quinnipiac River northeast of the site.

3.2.2 STATE WETLANDS

SLR investigated two isolated wetland areas in the southern portion of the subject site, previously flagged in 2022 by David Lord, and referenced as CT-Wetland-A and CT-Wetland B. These two wetlands possess varying levels of the required hydrology, soils, and vegetation to qualify as wetlands; however, they lack a hydrologic connection (i.e., nexus) to any federally regulated waterway or wetland (i.e., waters of the United States). Therefore, these wetlands fall under the jurisdiction of Connecticut (i.e., local commission), but not the United States Army Corps of Engineers (USACE). In addition, Mr. Lord has requested a jurisdictional determination from USACE. The two wetlands are described in further detail below.

3.2.2.1 Connecticut State Isolated Wetland A

This approximately 0.21-acre palustrine scrub shrub area is located south of the dirt access road along the former barn and farm outbuildings. A narrow finger-like feature, it is comprised of a sparse canopy of American elm (*Ulmus americana*) and red maple, with a dense shrub layer containing silky dogwood, black elderberry, multiflora rose, and Oriental bittersweet. Shallow surface water during the site investigation appeared between moss-covered boulders. The wetland appears to be supported by a combination of a high groundwater table and runoff from adjacent sloped areas atop very stony soils with poor drainage. Evidence of disturbance including fill and excavated boulder piles and assorted farm debris are also located within this wetland.













3.2.2.2 Connecticut State Isolated Wetland B

An approximately 0.72-acre wetland area exists within an open former pasture field to the south of the scrub shrub area, near the southern parcel boundary where it meets I-84. This wetland appears to be primarily supported by an active groundwater table above a stony hardpan reached approximately 1 foot below the soil surface during SLR field investigations. Several small depressions with less than an inch of standing water were observed in the center of the wetland, which is largely vegetated with herbaceous forbs including blue vervain, soft rush, willow herb, and New York ironweed (*Vernonia noveboracensis*). Sparse shrubs of silky dogwood, elderberry, and willows punctuate the open landscape.

3.2.3 FUNCTIONS AND VALUES

Wetlands perform certain functions and possess values based on wetland type, hydrologic connectivity, habitat, and a variety of other measurable parameters. Using the USACE *Highway Methodology Workbook Supplement*, SLR completed wetland Function-Value Evaluation Forms for each of the federal and state wetland systems within the project area and described above (Appendix C). The principal functions and values of each wetland system are listed below in Table 1.

Table 1 Principal Wetland Functions and Values Assessment
53 Spring Street*

Principal* Functions and Values		CT A and B	Fed-C	Fed-D	Fed-E
	Groundwater Recharge/Discharge	Yes	Yes	Yes	Yes
	Flood Flow Alteration (Storage and Desynchronization)	No	No	No	No
	Fish and Shellfish Habitat	No	No	No	No
	Sediment/Toxicant Retention	No	Yes	No	No
	Nutrient Removal/Retention/ Transformation	Yes	Yes	No	No
	Production Export (Nutrient)	No	Yes	Yes	No
	Sediment/Shoreline/Watercourse Bank Stabilization	No	No	No	No
	Wetland-Dependent Wildlife Habitat	No	Yes	No	No
	Recreation (Consumptive and Non-Consumptive)	No	No	No	No
	Educational Scientific Value	No	No	No	No
	Uniqueness/Heritage	No	No	No	No
	Visual Quality/Aesthetics	No	No	No	No
ES	Endangered Species	Yes†	Yes	Yes	Yes

*Please refer to Appendix C, Functions-Value Forms, for detailed explanations of each wetland function and value per wetland as well as a list of suitable (though not principal) functions and values per wetland on site

†Particular area not included in December 2022 NDDDB species/habitat polygon, but potential habitat for eastern box turtle exists across the full site

3.2.4 WETLAND IMPACT ASSESSMENT

An assessment of potential impacts on wetlands and watercourses associated with the proposed project activities is in Appendix D, and a proposed mitigation plan to compensate for direct wetland impacts can be found in Appendix E.

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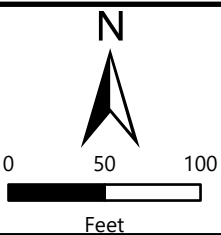
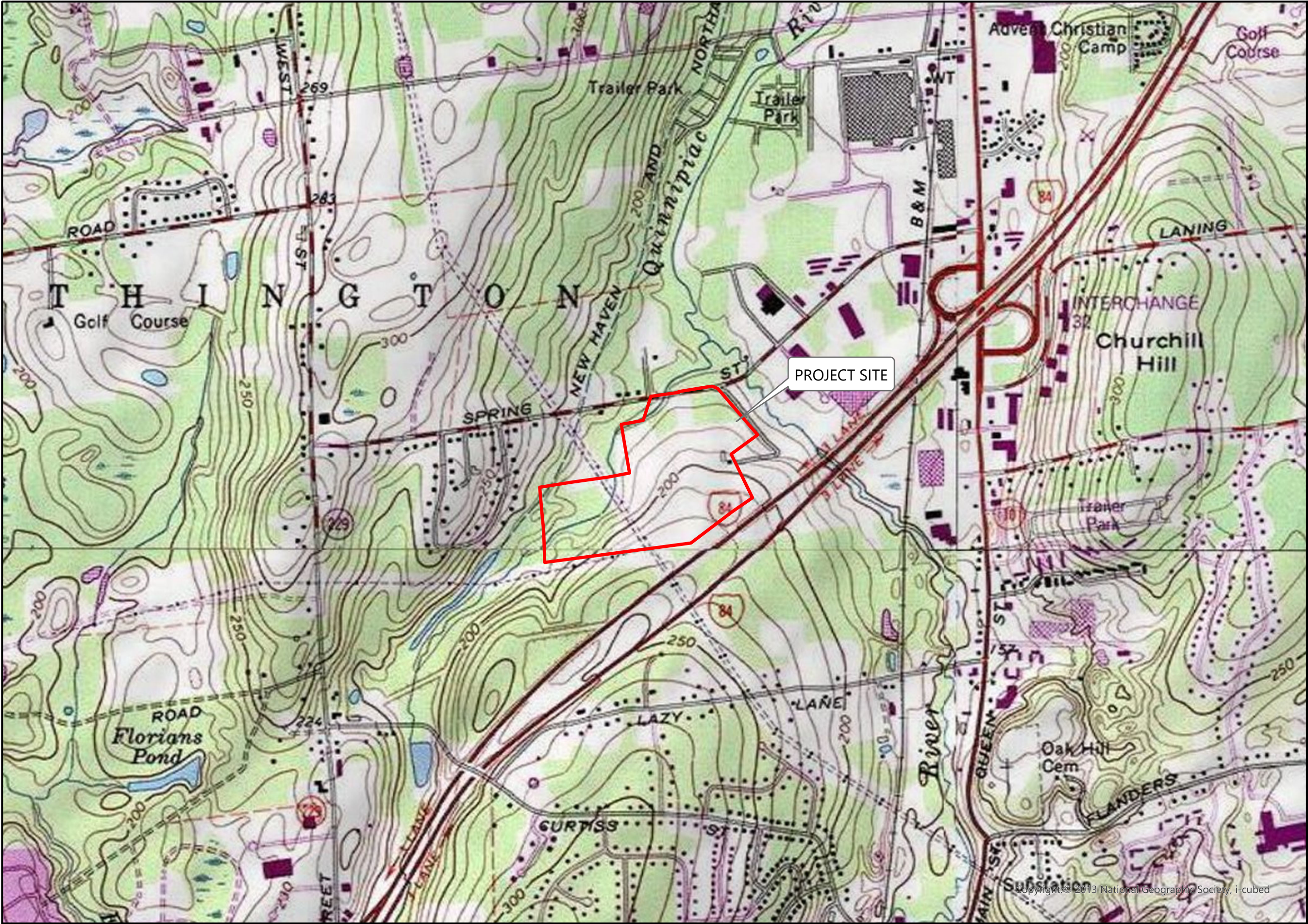
APPENDIX A

SITE MAPS

SOIL SCIENTIST REPORT

Johnson Development Associates, Inc.
551 West Lancaster Avenue, Suite 202
Haverford, Pennsylvania

April 2023



SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773

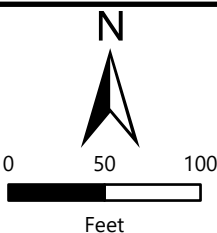
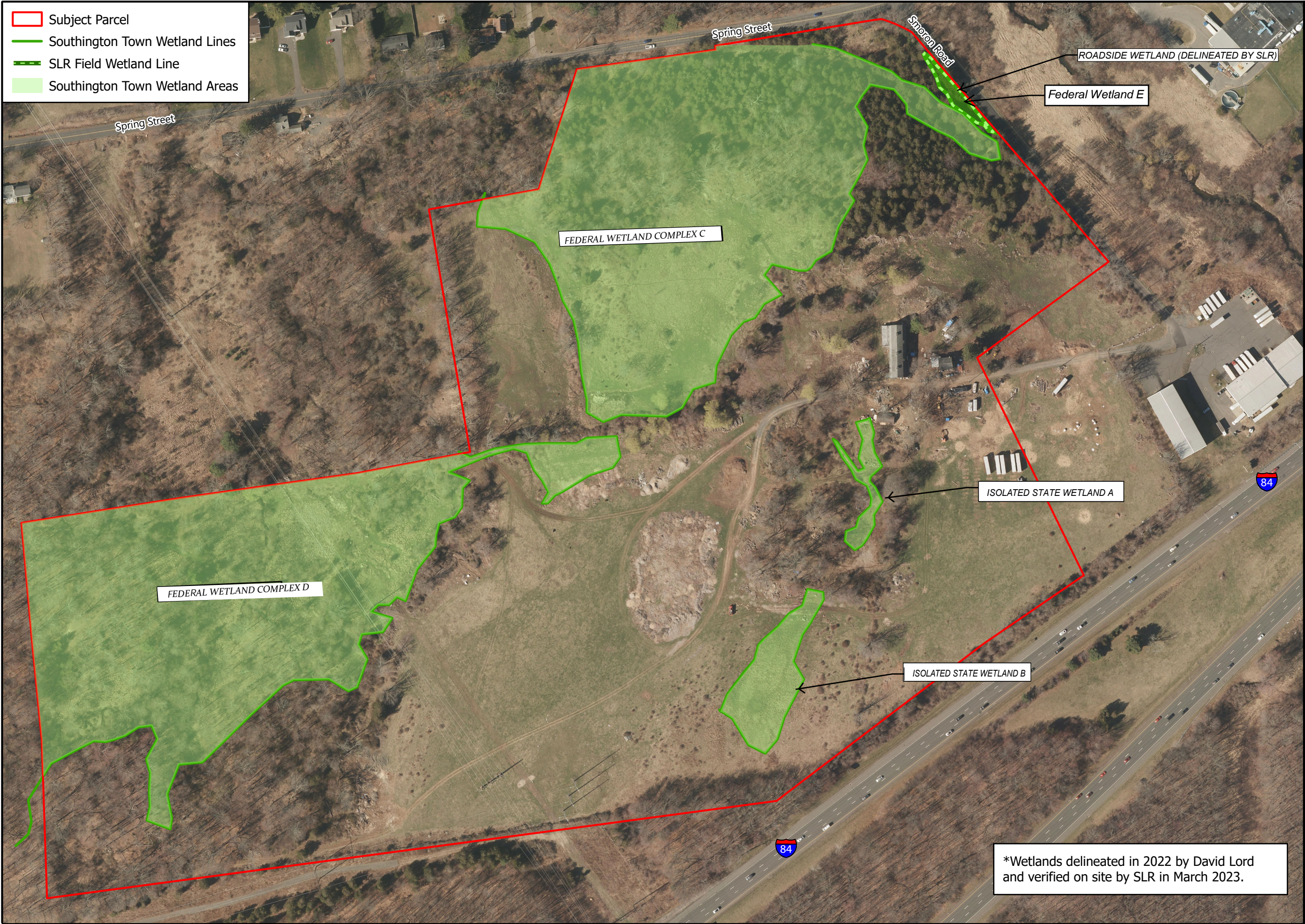
PROJECT LOCATION
PROPOSED DEVELOPMENT
JOHNSON DEVELOPMENT ASSOCIATES, LLC
53 SPRING STREET
SOUTHINGTON, CONNECTICUT

SCALE 1"=1,000'

DATE 4/13/2023

PROJECT NO. 141.21387.00001

FIG. 1



99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773

ON-SITE WETLANDS

PROPOSED DEVELOPMENT
JOHNSON DEVELOPMENT ASSOCIATES, INC.
53 SPRING STREET
SOUTHINGTON, CONNECTICUT

SCALE 1"=200'

DATE 4/13/2023

PROJECT NO. 141.21387.00001

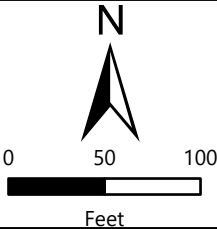
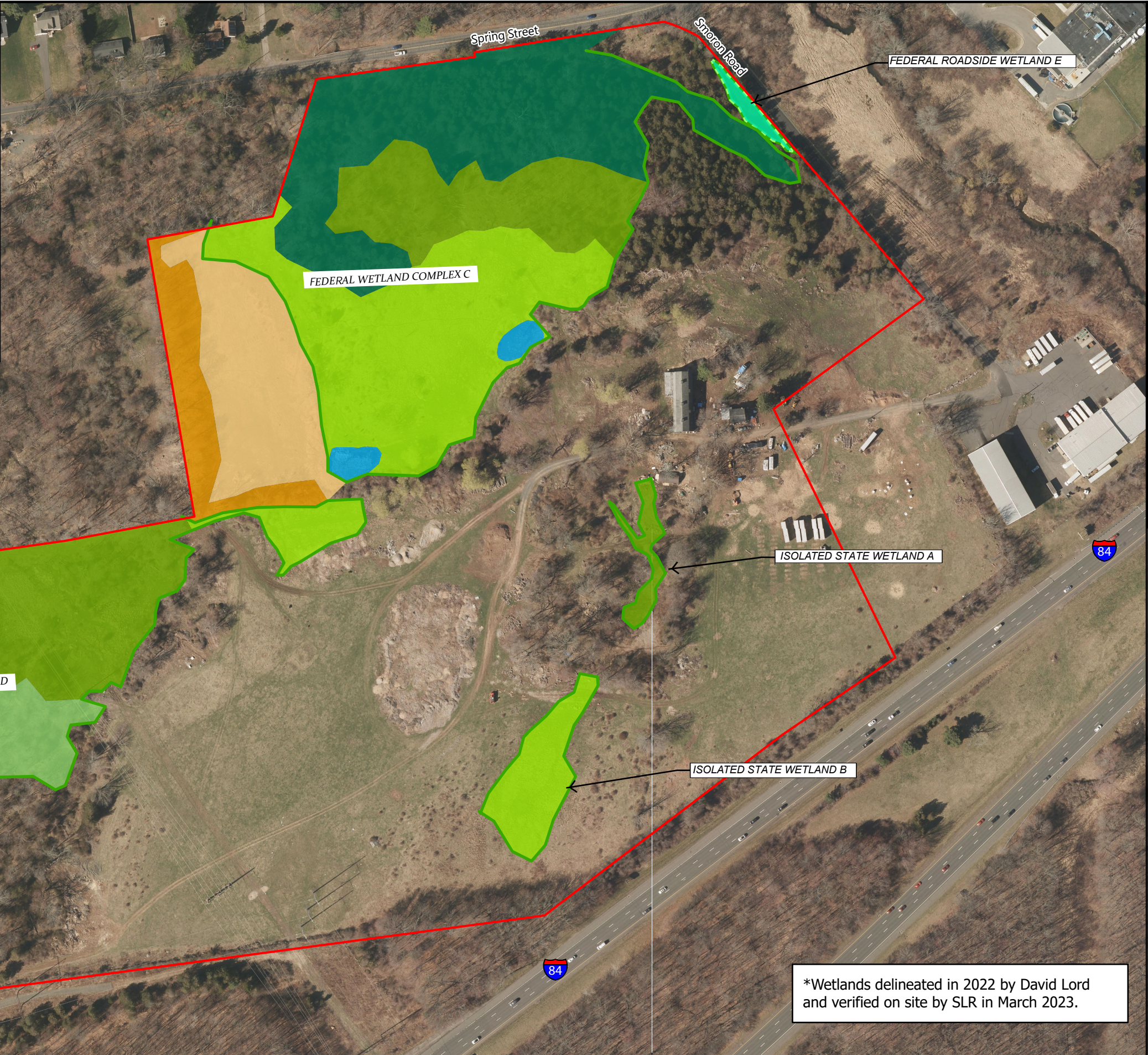
FIG. 2.1

*Wetlands delineated in 2022 by David Lord
and verified on site by SLR in March 2023.

- Subject Parcel
- Southington Town Wetland Lines
- SLR Field Wetland Line

Habitat Areas

- Type
- Forested edge
 - Forested deciduous wetland
 - Former farm pond/emergent cattail marsh
 - Old field
 - Old field/wet meadow wetland
 - Red cedar forested wetland
 - Roadside emergent wetland fringe
 - Scrub shrub wetland



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CHESHIRE, CT 06410
203.271.1773

ON-SITE WETLANDS

PROPOSED DEVELOPMENT
JOHNSON DEVELOPMENT ASSOCIATES, INC.
53 SPRING STREET
SOUTHINGTON, CONNECTICUT

SCALE 1"=200'

DATE 4/11/2023

PROJECT NO. 141.21387.00001

FIG. 2.2

*Wetlands delineated in 2022 by David Lord and verified on site by SLR in March 2023.

Soil Map—State of Connecticut
(53 Spring Street)



Map Scale: 1:4,880 if printed on A landscape (11" x 8.5") sheet.

0 50 100 200 300 Meters

0 200 400 800 1200 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

3/6/2023
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut

Survey Area Data: Version 22, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

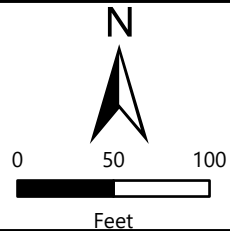
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5	Wilbraham silt loam, 0 to 3 percent slopes	2.7	4.2%
6	Wilbraham and Menlo soils, 0 to 8 percent slopes, extremely stony	11.2	17.7%
36B	Windsor loamy sand, 3 to 8 percent slopes	1.3	2.1%
42C	Ludlow silt loam, 2 to 15 percent slopes, extremely stony	6.4	10.0%
55A	Watchaug fine sandy loam, 0 to 3 percent slopes	0.1	0.2%
56B	Watchaug fine sandy loam, 2 to 8 percent slopes, very stony	3.5	5.6%
63B	Cheshire fine sandy loam, 3 to 8 percent slopes	23.2	36.5%
63C	Cheshire fine sandy loam, 8 to 15 percent slopes	3.9	6.2%
64C	Cheshire fine sandy loam, 8 to 15 percent slopes, very stony	0.0	0.1%
65D	Cheshire fine sandy loam, 15 to 35 percent slopes, extremely stony	5.0	7.9%
102	Pootatuck fine sandy loam	2.1	3.3%
104	Bash silt loam	0.4	0.6%
108	Saco silt loam	3.5	5.6%
Totals for Area of Interest		63.5	100.0%

Legend

- Subject Parcel
- Proposed Features
- Southington Town Wetland Lines
- 2023 SLR Wetland Line
- Southington Town Wetland Areas
- 50' Upland Review Area



SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773



PROPOSED CONDITIONS
PROPOSED DEVELOPMENT
JOHNSON DEVELOPMENT ASSOCIATES, INC.
53 SPRING STREET
SOUTHINGTON, CONNECTICUT

SCALE 1"=200'

DATE 4/13/2023

PROJECT NO. 141.21387.00001

FIG. 4

APPENDIX B

SITE PHOTOS

SOIL SCIENTIST REPORT

Johnson Development Associates, Inc.
551 West Lancaster Avenue, Suite 202
Haverford, Pennsylvania 19041

April 2023



PHOTOGRAPHIC LOG

Client Name:
Johnson Development Associates, Inc.

Site Location:
53 Spring Street, Southington, CT

Project No.
141.21387.00045

Photo No.
1

Date:
3/7/2023

Direction Photo Taken:
North

Description:
Emergent/wet meadow fringe wetland located west of Smoron Road and delineated in March 2023 by SLR wetland scientists. Photo looking towards Spring Street in the background.



Photo No.
2

Date:
3/7/2023

Direction Photo Taken:
North

Description:
Surface swale/drainage ditch feature west of Smoron Road and south (outside) of delineated wetland area.





PHOTOGRAPHIC LOG

Client Name:

Johnson Development Associates, Inc.

Site Location:

53 Spring Street, Southington, CT

Project No.

141.21387.00045

Photo No.

3

Date:

3/7/2023

Direction Photo Taken:

North

Description:

Stormwater outfall and riprap plunge pool located west of Smoron Road and between upland surface swale to the south and SLR delineated fringe wetland area to the north.

**Photo No.**

4

Date:

3/7/2023

Direction Photo Taken:

North

Description:

Northernmost stormwater outfall and riprap plunge pool located west of Smoron Road and south of Spring Street.





PHOTOGRAPHIC LOG

Client Name: Johnson Development Associates, Inc.		Site Location: 53 Spring Street, Southington, CT	Project No. 141.21387.00045
Photo No. 5	Date: 3/7/2023		
Direction Photo Taken: West			
Description: Palustrine forested/scrub shrub wetland area east of Smoron Road dominated by eastern red cedar in the (open) canopy.			

Photo No. 6	Date: 3/7/2023	
Direction Photo Taken: South		
Description: Northern of two former farm ponds within central open meadow wetland area, transitioning to cattail marsh, facing wooded berm in the background.		

Client Name: Johnson Development Associates, Inc.		Site Location: 53 Spring Street, Southington, CT	Project No. 141.21387.00045
Photo No. 7	Date: 3/7/2023		
Direction Photo Taken: Southwest			
Description: Southern former farm pond dominated by cattails. Several feet of water depth in center of pond may support amphibian breeding.			

Photo No. 8	Date: 3/7/2023	
Direction Photo Taken: North		
Description: Wet meadow marsh area north of former farm ponds with low-growing herbaceous vegetation and several species of shrubs.		

Client Name:
Johnson Development Associates, Inc.

Site Location:
53 Spring Street, Southington, CT

Project No.
141.21387.00045

Photo No.
9

Date:
3/7/2023

Direction Photo Taken:
North

Description:
Northern portion of open, isolated wet meadow wetland located near southern property boundary with I-84.



Photo No.
10

Date:
3/7/2023

Direction Photo Taken:
Southwest

Description:
Approximately 900 SF pond with 2 to 6 inches of standing water in southern portion of southern wet meadow wetland. Wooded corridor north of I-84 and transmission corridor poles can be seen in background.



Client Name:
Johnson Development Associates, Inc.

Site Location:
53 Spring Street, Southington, CT

Project No.
141.21387.00045

Photo No.
11

Date:
3/7/2023

Direction Photo Taken:
North

Description:
Southern portion of isolated scrub shrub wetland with sparse tree canopy. Northern of two wetland areas to be directly impacted by proposed project.



Photo No.
12

Date:
3/7/2023

Direction Photo Taken:
North

Description:
Northern portion of isolated scrub shrub wetland with areas of standing water and one of several boulder clusters. Old barn and some large trees can be seen in background.




Client Name: Johnson Development Associates, Inc.		Site Location: 53 Spring Street, Southington, CT	Project No. 141.21387.00045
Photo No. 15	Date: 3/7/2023		
Direction Photo Taken: North			
Description: Proposed wetland mitigation area: former farm field west of central wetland area consisting of upland herbaceous and invasive shrub vegetation.			

Photo No. 16	Date: 3/7/2023	
Direction Photo Taken: East		
Description: Proposed wetland mitigation area: former farm field west of central wetland area consisting of upland herbaceous and invasive shrub vegetation.		

APPENDIX C

WETLAND FUNCTION-VALUE EVALUATION FORMS

SOIL SCIENTIST REPORT

Johnson Development Associates, Inc.
551 West Lancaster Avenue, Suite 202
Haverford, Pennsylvania 19041

April 2023

Wetland Function-Value Evaluation Form

Total area of wetland _____ Human made? _____ Is wetland part of a wildlife corridor? _____ or a "habitat island"? _____

Adjacent land use _____ Distance to nearest roadway or other development _____

Dominant wetland systems present _____ Contiguous undeveloped buffer zone present _____

Is the wetland a separate hydraulic system? _____ If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? _____ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. _____

Latitude _____ Longitude _____

Prepared by: _____ Date _____












Wetland Impact:

Type _____ Area _____

Evaluation based on:

Office _____ Field _____

Corps manual wetland delineation completed? Y _____ N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge				
 Floodflow Alteration				
 Fish and Shellfish Habitat				
 Sediment/Toxicant Retention				
 Nutrient Removal				
 Production Export				
 Sediment/Shoreline Stabilization				
 Wildlife Habitat				
 Recreation				
 Educational/Scientific Value				
 Uniqueness/Heritage				
 Visual Quality/Aesthetics				
ES Endangered Species Habitat				
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland _____ Human made? _____ Is wetland part of a wildlife corridor? _____ or a "habitat island"? _____

Adjacent land use _____ Distance to nearest roadway or other development _____

Dominant wetland systems present _____ Contiguous undeveloped buffer zone present _____

Is the wetland a separate hydraulic system? _____ If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? _____ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. _____

Latitude _____ Longitude _____

Prepared by: _____ Date _____













Wetland Impact:

Type _____ Area _____

Evaluation based on:

Office _____ Field _____

Corps manual wetland delineation completed? Y _____ N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge				
 Floodflow Alteration				
 Fish and Shellfish Habitat				
 Sediment/Toxicant Retention				
 Nutrient Removal				
 Production Export				
 Sediment/Shoreline Stabilization				
 Wildlife Habitat				
 Recreation				
 Educational/Scientific Value				
 Uniqueness/Heritage				
 Visual Quality/Aesthetics				
ES Endangered Species Habitat				
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland _____ Human made? _____ Is wetland part of a wildlife corridor? _____ or a "habitat island"? _____

Adjacent land use _____ Distance to nearest roadway or other development _____

Dominant wetland systems present _____ Contiguous undeveloped buffer zone present _____

Is the wetland a separate hydraulic system? _____ If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? _____ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. _____

Latitude _____ Longitude _____

Prepared by: _____ Date _____













Wetland Impact:

Type _____ Area _____

Evaluation based on:

Office _____ Field _____

Corps manual wetland delineation completed? Y _____ N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge				
 Floodflow Alteration				
 Fish and Shellfish Habitat				
 Sediment/Toxicant Retention				
 Nutrient Removal				
 Production Export				
 Sediment/Shoreline Stabilization				
 Wildlife Habitat				
 Recreation				
 Educational/Scientific Value				
 Uniqueness/Heritage				
 Visual Quality/Aesthetics				
ES Endangered Species Habitat				
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland _____ Human made? _____ Is wetland part of a wildlife corridor? _____ or a "habitat island"? _____

Adjacent land use _____ Distance to nearest roadway or other development _____

Dominant wetland systems present _____ Contiguous undeveloped buffer zone present _____

Is the wetland a separate hydraulic system? _____ If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? _____ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. _____

Latitude _____ Longitude _____

Prepared by: _____ Date _____













Wetland Impact:

Type _____ Area _____

Evaluation based on:

Office _____ Field _____

Corps manual wetland delineation completed? Y _____ N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge				
 Floodflow Alteration				
 Fish and Shellfish Habitat				
 Sediment/Toxicant Retention				
 Nutrient Removal				
 Production Export				
 Sediment/Shoreline Stabilization				
 Wildlife Habitat				
 Recreation				
 Educational/Scientific Value				
 Uniqueness/Heritage				
 Visual Quality/Aesthetics				
ES Endangered Species Habitat				
Other				

Notes:

* Refer to backup list of numbered considerations.

APPENDIX D

WETLAND IMPACT ASSESSMENT

SOIL SCIENTIST REPORT

Johnson Development Associates, Inc.
551 West Lancaster Avenue, Suite 202
Haverford, Pennsylvania 19041

April 2023

Appendix D. Wetland Impact Assessment – 53 Spring Street

The following wetland impact assessment has been prepared by a SLR International Corporation (SLR) Professional Wetland Scientist and is based on design plans for a project located at 53 Spring Street in Southington, Connecticut titled *Proposed Warehousing Establishment* and dated April 24, 2023, prepared by Bohler Engineering. The subject parcel occupies approximately 60 acres and is primarily comprised of former agricultural fields and farm ponds, hardwood forest, scrub shrub, emergent meadow, and an old barn and outbuildings associated with past farming activities. The project proposes to demolish the structures on site and construct a large warehouse building occupying approximately 283,050 square feet (SF), with a primary access road to the east from Smoron Drive. Additional components include stormwater drainage systems consisting of stormwater basins, bioswales, and parking surrounding the building to accommodate 76 trailers and 202 employee spaces. The project will result in an increase of 14.4 acres of impervious area on site, for a total of 14.5 acres of impervious area on site.

Onsite wetlands were found to comprise approximately 21 acres, based on a previous delineation by David Lord (2022) and SLR's delineation (2023), which field identified one additional wetland resource area on site. In total, the proposed project will result in 40,495 SF (0.93 acres) of direct, permanent loss of isolated state wetlands (isolated state Wetlands A and B, described in SLR's wetland delineation report), which are located in the southern portion of the project site. Additionally, 98,632 SF (2.26 acres) of 50-foot upland Review Area (URA) surrounding the isolated state wetland features will be permanently lost due to the project. It should be noted that all wetlands slated for direct, permanent impact are state-regulated, isolated features with no hydrologic connection to federally regulated waterways or wetlands. Additionally, 16,131 SF (0.37 acres) of permanent URA disturbance will occur north of the proposed building (within a portion of the URA to state and federal wetlands C and D located in the northern portion of the subject parcel) to accommodate grading surrounding the proposed stormwater basins.

Temporary impacts to wetlands and URA will also be incurred by the project. Approximately 3,500 SF (0.08 acres) of temporary impact to federal wetlands will occur within Federal Wetland E, a small roadside seep/drainage swale wetland delineated by SLR, in order to install new utilities to service the building located along Smoron Drive. A total of 20,485 SF (0.47 acres) of temporary URA impacts will also occur as a result of the Smoron Drive utilities install, grading to create a wetland mitigation area, and to grade around portions of the proposed stormwater basins. Finally, approximately 73 SF of temporary wetland impact will occur as a result of a temporary construction access road to reach the proposed wetland mitigation site during construction. All disturbed areas will be stabilized postconstruction and reseeded with a locally sourced, native New England wildlife conservation seed mix, or New England Wetmix, as appropriate and shown on the project site plans.

In order to compensate for the above activities, a mitigation plan has been prepared by SLR. The proposed mitigation involves the creation of an approximately 1.0-acre wetland within an existing upland field on site, adjacent to an existing emergent wet meadow wetland. Details of the mitigation plan are provided in Appendix F.

A summary of each proposed regulated activity and anticipated impacts to onsite wetlands follows below.

Proposed Warehouse Building

The proposed warehouse building will measure approximately 915 feet by 310 feet for a total area of 183,050 SF. A paved access drive will extend north of the proposed building approximately 800 feet to the west from Smoron Drive. The development will be located in the southeastern portion of the subject parcel, just north of the Interstate-84 corridor and within an area that currently exists as open fields, scrub shrub, and former farm buildings. While the construction of the building, access road, surrounding bays and parking for trailers and employees, and all associated grading will be accessible via upland areas, the two isolated state wetlands on site will be filled, resulting in 40,495 SF (0.93 acres) of direct wetland impact. Construction of the two stormwater detention basins and associated grading and clearing will permanently impact 16,131 SF (0.37 acres) of URA to the onsite federal wetlands to the north and result in 2,190 SF (0.05 acres) of temporary impacts to this URA.

The isolated state wetlands to be filled, Wetland A and Wetland B, are described in detail within the above soil report's existing conditions section. In summary, these two wetlands possess varying levels of the required hydrology, soils, and vegetation to qualify as wetlands; however, they lack hydrologic (i.e., nexus) connection to any federally regulated waterway or wetland. Therefore, these wetlands fall under the jurisdiction of Connecticut (i.e., local commission), but not the United States Army Corps of Engineers (USACE). Although a lack of hydrologic connectivity does not necessarily reduce the value of a wetland, the existing isolated state wetlands on site are constrained by size, topographic position, disturbance (i.e., mowing), and prevalence of invasive vegetation, which considerably limits their functions and values. Using the USACE *Highway Methodology Workbook Supplement*, SLR found that the functions and values provided by these two wetlands are limited to groundwater discharge and some nutrient removal¹.

An additional 2,500 SF (0.08 acres) of impact will temporarily occur within Federal Wetland E, located along Smoron Drive, during construction work to access and update utilities along the roadside. All disturbed wetland soils will be temporarily stockpiled in a secure location to be replaced to match the existing grades following construction. Subsoil will be excavated to the grade required to perform all necessary utilities work, followed by regrading and replacement of wetland topsoil in place. All disturbed surfaces within the wetland area will be reseeded with a native, locally sourced New England wildlife conservation seed mix.

The lighting plan (shown on pages C-711 and C-712 of the project site plans) demonstrates that no measurable light pollution will be cast from proposed site lighting within the federal wetland areas located north of the proposed development or the 50-foot URA to these wetlands, while only a minimal amount of light pollution (less than 1 lumen) is anticipated to be cast within 100 feet of the wetland areas.

¹ While there is potential habitat across the uplands and wetlands on site for the eastern box turtle (*Terrapene carolina carolina*), it should be noted that the southern portion of the property, including the proposed development footprint, occurs outside of a mapped Connecticut Department of Energy & Environmental Protection (CT DEEP) Natural Diversity Data Base (NDDDB) listed species/habitat polygon as of the date of this report.

Stormwater Basins and Drainage Improvements

To mitigate for the proposed increase of impervious area on site, the project proposes a comprehensive stormwater management system. Pollutants are to be filtered through a treatment chain of water quality features such as deep sump catch basins, water quality swales, and micropool stormwater detention basins before discharging to the wetland areas. Two stormwater detention ponds, shown on Grading and Drainage Plans B (C-403) and C (C-404) of the project site plans, will be constructed to the north of the proposed building for a total basin area of 34,185 SF. The basins (described further below) have been designed in accordance with the Connecticut Department of Energy and Environmental Protection (CTDEEP) *2004 Connecticut Stormwater Quality Manual* and will accommodate the entire runoff volume for 90 percent of average annual storm events, or the first 1 inch of rainfall. The basins will be seeded with appropriate native seed mixes and herbaceous plugs from New England Wetland Plants, Inc. The vegetated basins will provide thermal protection of water temperatures, increased filtration of nutrients and/or sediments, and some wildlife habitat. The stormwater management system has been designed to reduce the peak rate of flow of stormwater discharging from the site up to the 100-year storm event compared to existing conditions by utilizing comprehensive practices to capture and slow stormwater runoff before it is released to upland areas adjacent to onsite wetlands.

The eastern proposed stormwater basin (Basin PP-1.1) will be located northeast of the proposed building and north of the access road. This basin will occupy 21,790 SF and will manage runoff from a series of catch basins with 2-foot sumps located along the access road and the eastern portion of the paved parking and bays surrounding the building. Roof runoff from the eastern portion of the building will also be directed to this basin. The basin consists of a micro pool extended detention pond designed to provide the water quality volume in a permanent pool at the northern portion of the basin. The remaining open area of the detention basin will be seeded with a native wet seed mix for detention basins and herbaceous plugs and is anticipated to be saturated, but not permanently flooded. Stormwater will enter the basin to the south via a flared end section with rip rap outlet protection and enter a permanently ponded sediment forebay area surrounded by a filter berm. Anticipated flows from 2-year and 10-year storm events will be directed out of the sediment forebay area and to the micro pool via a 6-foot riprap pilot channel meandering north through the central portion of the basin. The micro pool will be excavated 4 to 5 feet below the ground surface to intercept groundwater and will hold a maximum depth of around 1.5 feet of standing water. Once water levels reach above the aquatic bench/maximum surface elevation of the micro pool, excess flow will be directed from an outlet control structure to a 24-inch high-density polyethylene (HDPE), which will extend 78 feet and discharge through a flared end pipe to a riprap plunge pool adjacent to Federal Wetland C. An emergency spillway with riprap dissipater will convey overflow during the largest storm events east towards Federal Wetland C along Smoron Drive.

The second stormwater basin (Basin PP 3.1), located northwest of the proposed building, will occupy 12,395 SF. Similarly, this basin will contain a sediment forebay and filter berm and a 6-foot riprap pilot channel leading to a permanently flooded micro pool that will discharge north through an outlet control structure to a riprap plunge pool. Both the formalized outlet structure and an emergency spillway will discharge north near the southern boundary of Federal Wetland D. The watershed to this basin includes runoff from impervious pavement west of the building, as well as a bioswale located north of the building and west of Basin PP 1.1.

Due to the position of these two basins on the periphery of proposed development limits, a native planting plan was developed to create a vegetative structure beneficial for sediment retention, wildlife habitat, and slope stabilization. Proposed plantings will be sourced from a local, native plant distributor. Species and quantities are provided on page C-703 and C-704 of the project site plans.

A bioswale is proposed along the access road between the two stormwater basins. This bioswale will collect and manage stormwater runoff from the paved access road and direct the water towards the larger of the two former farm ponds. This bioswale will be seeded with a native seed mix from New England Wetland Plants, Inc.

Hydrologic Regime

When evaluating impacts to wetlands, it is important to assess the proposed development for alterations to the existing wetlands and watercourse hydrologic regimes. It is customary to maintain existing watershed areas to a site's existing wetlands; however, the discharges to these wetlands may often be concentrated at one particular location, which may not maintain hydrology to all of the sensitive wetland areas on site. For this project, the team proposes a series of stormwater basins, bioswales, and foundation drain outlets to maintain the existing onsite wetland hydrologic regime. The wetlands to the north consist of palustrine forested, scrub shrub, and emergent wetlands. These wetlands are fed hydrologically by seasonal groundwater breakout, a seasonal high-water table, precipitation, and overland runoff of stormwater from adjacent uplands. While the two stormwater basins have been positioned to discharge stormwater back into these wetlands, the project has also been designed to maintain the watersheds to the two former farm ponds, which are located between the two stormwater basins. In order to maintain hydrology to these former farm ponds, a bioswale is proposed along the access road. Additionally, a foundation drain is required along the perimeter of the building, and the outlet of this drain will be directed into the bioswale to provide additional clean water to help maintain the former farm ponds' hydrologic regime.

Sediment and Erosion Control

A robust sediment and erosion control plan has been developed to protect wetlands and water quality onsite and offsite, during and after construction. All measures conform to the *Connecticut Guidelines for Soil Erosion and Sediment Control (2002)*, the existing requirements in place by the Town of Southington, and standard Best Management Practices for the region. Prior to the commencement of construction, a combined method of compost filter sock and silt fence is proposed along the perimeter of the disturbance areas and around the perimeter of temporary soil stockpile areas. Diversion swales and staked haybales will intercept sediment from smaller disturbance areas. The two stormwater basins will serve as temporary sediment traps during construction and have been adequately sized to detain anticipated sediment loads. Following the grading of all steeper slopes, erosion control blankets will be utilized to provide immediate stabilization. Construction entrance pads on the access road will reduce the tracking of sediment offsite onto paved surfaces. Temporary vegetative cover will be established on all disturbed soils by spreading topsoil followed by a grass seed mix. All sediment and erosion control measures will remain in place, inspected, and maintained as needed until the site is stabilized.

Impact Mitigation

To compensate for the proposed filling of two state-regulated wetlands totaling 0.93 acres, SLR has designed an approximately 1.0-acre wetland mitigation area for a 1:1 creation to impact ratio. The wetland mitigation plans were prepared based on field investigations and baseline conditions established during design development and regulatory permitting. The proposed mitigation area will be located within the northern portion of the 53 Spring Street parcel, north of the proposed development and west of Wetland Complex C. The area is within a former agriculture field that is predominantly vegetated with upland herbaceous and nonnative woody species. A comprehensive native species planting plan has been developed to replicate the vegetative composition of both the adjacent federal wetland and those wetlands that will be filled as part of this development. The complete mitigation plan is described in further detail in Appendix E, and all grading, planting tables, and details are depicted on sheet C-707 of the project site plans.

Conclusions

Overall, the proposed warehouse development project will disturb 23.5 acres of the approximately 60-acre site. Of that disturbance, 0.93 acres will consist of permanent, direct wetland impact, while 2.6 acres of permanent impact will occur within the URA (where 2.3 acres of the permanent URA disturbance will occur to the URA to the isolated state wetlands slated to be lost). Temporary disturbance will be limited to 3,500 SF of wetland disturbance related to utilities upgrades along Smoron Drive and 0.44 acres of temporary URA disturbance related to the roadside utilities and some grading to construct the proposed stormwater management system. The filling of state wetlands on site is considered minimal given their limited function and value within the localized and regional watershed. Most importantly, the project has been designed to avoid permanent impacts to federally regulated wetlands on the site and minimize impacts to federal wetlands overall, which provides the greater functions and values within the localized and regional watershed. Although the isolated state wetlands will be filled, the proposed extensive drainage improvements, sediment and erosion control measures, and the wetland mitigation plan aim to minimize and compensate for adverse impacts to the greatest extent practicable.

APPENDIX E

PROPOSED WETLAND MITIGATION PLAN

SOIL SCIENTIST REPORT

Johnson Development Associates, Inc.
551 West Lancaster Avenue, Suite 202
Haverford, Pennsylvania 19041

April 2023

Appendix E. Wetland Mitigation Plan – 53 Spring Street

The following wetland mitigation plan has been prepared by a SLR International Corporation (SLR) Professional Wetland Scientist and is based on design plans for a project located at 53 Spring Street in Southington, Connecticut titled *Proposed Warehousing Development* and dated April 24, 2023, prepared by Bohler Engineering. In order to compensate for the proposed filling of two state-regulated wetlands totaling 0.93 acres, SLR has designed an approximately 1.0-acre wetland mitigation area for a 1:1 creation to impact ratio. The wetland mitigation plans were prepared based on field investigations and baseline conditions established during design development and regulatory permitting. Please note that in accordance with the design plans, all wetland mitigation work must be supervised by a professional wetland scientist. The selected wetland consultant should adhere to the notes as shown on sheet C-707 of the project plans.

The existing wetlands slated for permanent, direct impact (CT-A and B) are isolated state wetland features within a former farmland pasture that are hydrologically supported by a hardpan layer approximately 1 foot below the ground surface. These wetlands provide one primary function and value – groundwater discharge, with nutrient retention as a secondary function. The goal of mitigation is to compensate for the loss of the wetland landscape extents and functions and values by conversion of an upland former farm field into a scrub-shrub/emergent wet meadow wetland.

The proposed mitigation area will be located within the northern portion of the 53 Spring Street parcel, north of the proposed development and west of Wetland Complex C, abutting the northwestern parcel boundary. The area is within an open, former agriculture field comprised of a southerly sloping upland vegetated mainly with grasses and forbs, including dense patches of common mugwort (*Artemisia vulgaris*) and scattered patches of invasive shrubs, including multiflora rose (*Rosa multiflora*), autumn olive (*Eleagnus umbellata*), and Japanese barberry (*Berberis thunbergii*). Through multiple soil probings, SLR measured the A-horizon within the selected mitigation area to contain between 10 to 12 inches of rich topsoil.

The location of the proposed wetland mitigation was chosen due to its relative distance from the proposed development, proximity to large, onsite federal wetlands, and the opportunity to replace an upland, monoculture field with a diverse wetland, significantly increasing the ecological value of this portion of the site. The adjacent wetland, described in the soil report as the western portion of Federal Wetland C, is classified as an old field/wet meadow wetland that was also formerly used for agricultural purposes and contains two farm ponds/emergent cattail marsh areas in the southernmost portion of the wetland complex. The vegetation is comprised of herbaceous hydrophytes and low-statured wetland shrubs, while the topography of this area slopes to the south, similar to the mitigation area to the west. As such, the mitigation area was designed to reflect and mimic the existing wetland vegetative community structure and habitat.

As described in the mitigation notes on C-707 of the project site plans, the proposed wetland mitigation area will maintain the prevailing south-sloping topography while lowering the grade within the created wetland by approximately 1 foot below the current ground surface elevation. This will be achieved by overexcavating the ground surface by approximately 18 inches, removing the top 4 inches of existing topsoil (expected to contain the majority of invasive plant propagules) and then replacing the bottom 6 inches of excavated topsoil back within the excavated footprint, using machinery to create some

microtopography such as hummocks and hollows. Grading work will be performed following the cutting of larger woody invasive shrubs such as multiflora rose and autumn olive. Smaller shrubs (including multiflora rose) and invasive forbs will be cleared and removed with the top 4 inches of topsoil, which should be bagged and disposed of off site.

Additional invasive species management protocols are outlined on C-707 of the project site plans. This plan includes specific management strategies based on the type of invasive plant anticipated to be encountered on the site following the completion of mitigation area construction and planting. For woody shrubs such as autumn olive and multiflora rose, either mechanical (cut and removal) or chemical/herbicidal treatments may be appropriate, depending on the number of individuals to be treated. For herbaceous species such as common mugwort, which are likely to resprout from animal or wind-carried propagules as well as from any remaining seeds in the underground seedbank postconstruction, chemical treatment with a foliar herbicide may be necessary during subsequent maintenance years of the site if the recolonization footprint is large, while smaller patches may be managed by hand pulling prior to seed set. All invasive species management decisions should be made under the supervision of a professional wetland scientist.

A comprehensive native species planting plan has been developed to replicate the vegetative composition of both the adjacent federal wetland and those wetlands that will be filled as part of this development (Sheet C-707). A diverse variety of native shrubs and herbaceous plants were selected based on the existing vegetation on site and the proposed hydrologic regime of the wetland. Additionally, these plantings will provide wetland dependent and non wetland dependent wildlife habitat, pollinator pathways, increased biodiversity, groundwater recharge, enhanced nutrient and sediment retention, and visual/aesthetic quality. In addition to native plantings, New England Wetmix seed will be applied across the mitigation area. Features such as large, multi-branched woody debris and boulders will be scattered throughout the wetland creation area to further enhance wildlife habitat and structural complexity. Finally, 3-foot-tall anti-herbivore cages constructed out of 1-inch-gauge chicken wire or hardware cloth and secured with 4 to 5-foot-tall wooden stakes will be installed to protect the plantings from deer browse for the first 3 years after construction. It is recommended that the anti-herbivore cages and fencing stakes be removed after a maximum of 3 years.

To reach the mitigation area during construction, a 15-foot-wide temporary timber matting accessway will extend approximately 120 feet north from the western stormwater basin. A small (73-SF) area of temporary wetland impact to Wetland C will occur from this crossing; however, the location for the access route was chosen as the narrowest available wetland crossing possible, and the timber matting will sit above the wetland and permit maintained hydrologic flow. Following mitigation area construction, the timber matting will be removed, and all disturbed surfaces will be restabilized with a native seed mix.

In order to promote long-term success of wetland plantings and manage invasive species colonization, SLR recommends the site owner/permittee retain a qualified professional wetland scientist to conduct post-construction wetland mitigation monitoring/reporting. It is recommended that monitoring be completed annually for the first three growing seasons following installation to determine successful implementation of the wetland plantings and invasive species management. It is also recommended that the wetland scientist establish photographic monitoring stations and transect plots at select areas to facilitate comparisons of vegetative compositions year after year. The success standard for woody vegetation should be a minimum of 60 percent after 2 years. Any invasive vegetation observed during

the monitoring period should be managed in a timely manner using the most appropriate hand, mechanical, or chemical means for the target species, area, and location as determined by the supervising professional wetland scientist.

In conclusion, the project plans provide the level of information (i.e., grading limits, proposed elevations, plantings, and notes) to allow the contractor and supervising wetland scientist to achieve a successful wetland mitigation project. However, the overall success of the wetland mitigation areas is predicated on construction oversight by the professional wetland scientist and completion of the required post-construction monitoring. With any construction related project, some field modifications may be necessary during construction to achieve the project goals, and any such modification should be guided by the supervising wetland scientist. Lastly, SLR accepts no responsibility for the overall success of the wetland mitigation area if the mitigation work is not properly supervised and monitored by a professional wetland scientist. However, it is our professional opinion that the effective implementation of this proposed wetland mitigation plan and upland review area restoration will provide the appropriate level of compensation commensurate with the functions and values lost by the filling of wetlands for this proposed development.

APPENDIX F

DAVID LORD WETLAND DELINEATION REPORT (JULY 25, 2022)

SOIL SCIENTIST REPORT

Johnson Development Associates, Inc.
551 West Lancaster Avenue, Suite 202
Haverford, Pennsylvania 19041

April 2023

Soil Resource Consultants

P.O. Box 752

Meriden, CT 06450

July 25, 2022

SRC Job No. 22-

Dear Mr.

**Re: Wetland Functions and Values Assessment - Technology Industrial Park
- Spring Street - Southington, CT**

At your request, I have completed several onsite investigations of this site. The purpose of my investigations were to evaluate the existing character and functioning of the wetland and watercourse resources associated with this proposed industrial development. As part of my evaluation I utilized a preliminary site plan drawing prepared by Bohler Engineering dated June 9, 2022. I also have researched the CT DEP Natural Diversity Database for any listing of plant or animal specie sightings on or nearby to this development. The latest mapping from that agency source indicates that the subject property has no listing. I have attached a copy of the relevant section of the map with printing date.

The subject property consists of over 25 acres of land with frontages along both Spring Street and Smoron Drive in Southington, CT. The site is presently vacant with several buildings and numerous earthen roads associated with its former agricultural history. The site is shown on page 2. The site has a mixture of woods, open grass fields, and former hayfields which are transitioning to shrubby vegetative cover. Invasive plant species such as Multiflora Rose, *Rosa multiflora*, Phragmites, *Phragmites australis*; and Asiatic Bittersweet, *Celastrus orbiculatus*, are present through out the property.

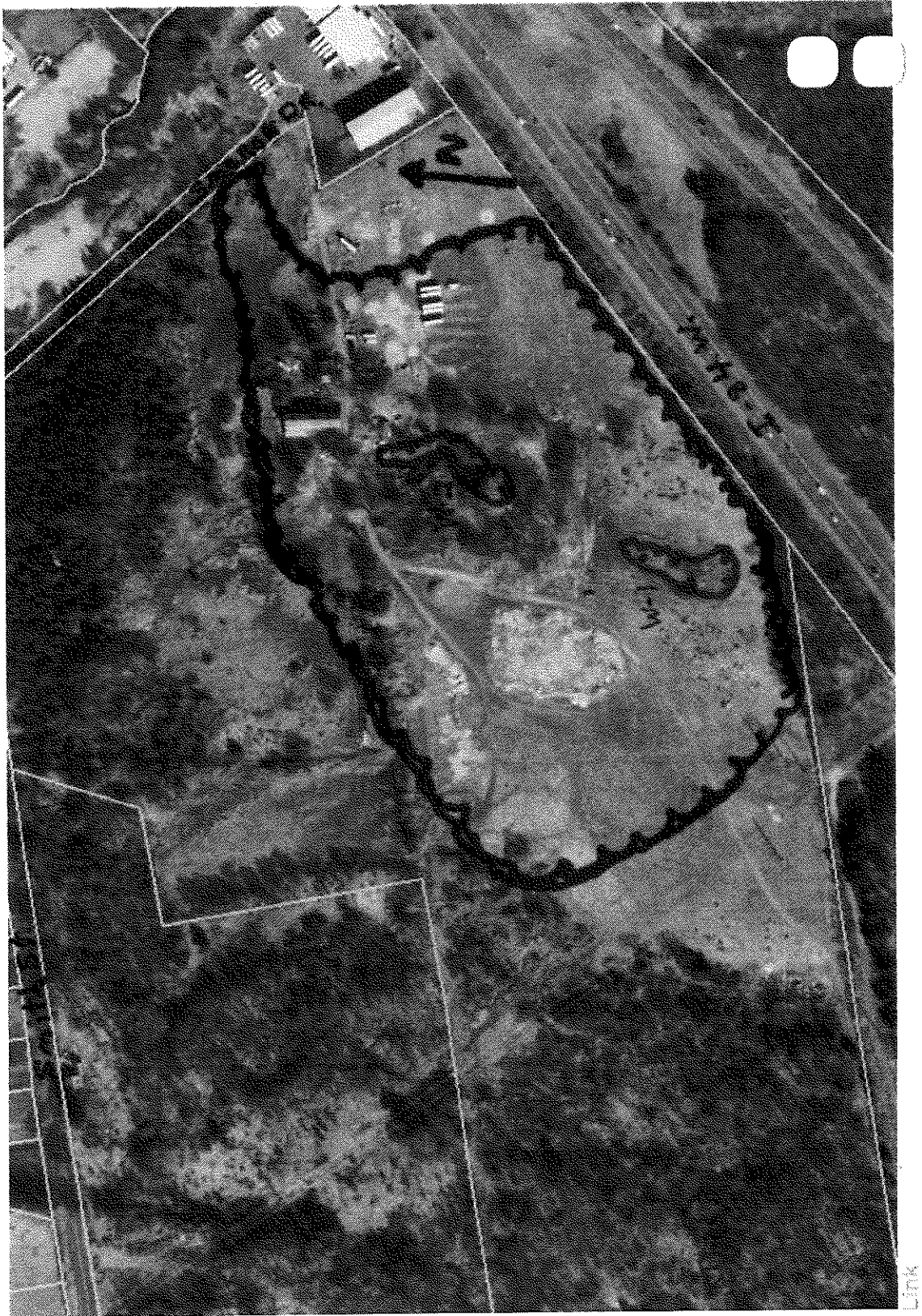
Several electrical transmission lines bisect the property which along with the existing site slopes and wetland areas limit the possible onsite areas where the subject project can be located. The project site also borders I-84 along its south limits.

There are two (2) separate wetlands areas within the project limits. These wetlands occupy self-contained low lying areas of the site. No inlets or outlets from either wetland were observed.

The first Wetland Area, W-1, (19,978 s.f.) consists of an overgrown former hayfield type wetland. The wetland has a noticeable concave shape where surface water runoff from its localized drainage area can collect. The underlying soils consist of Wilbraham poorly drained soils with slowly permeable hardpan characteristics within 24 to 36 inches below the soil surface.

This wetland shown in the photos on page 3 is becoming overgrown with Multiflora Rose along its outer edges and in numerous slightly elevated low mounds. Smartweed, Sedges, Rushes, and Goldenrods dominate the very dense herbaceous strata. Scattered Elderberry shrubs are scattered within the wetland limits. No other tree or shrub species were observed within the defined wetland limits.

Aerial View of Project Site w/ Adjacent Roads & Buildings



Preliminary Site Plan w/ Wetlands Indicated

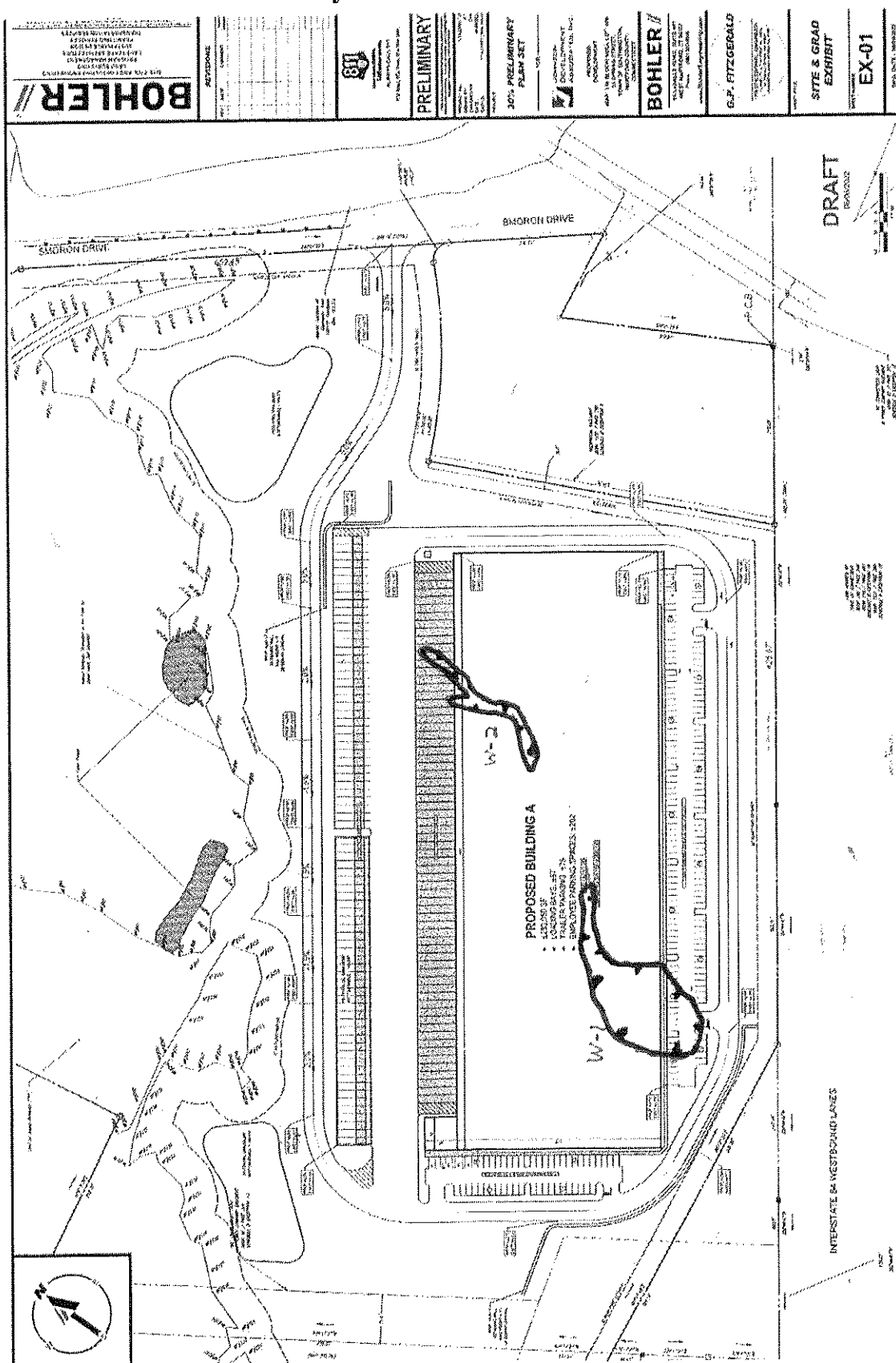


Photo # W-1a - SW Overview of Wetland W-1 looking towards Transmission Lines



Photo #W-1b - Close-up View of Uplands Adjacent to East Side of Wetland W-1



The second Wetland Area, W-2, (2,950 s.f.) can be categorized as a Palustrine Forested wetland. This wetland has scattered deciduous tree cover ranging from pole/saplings sizes to mature specimen with trunks larger than 20" dbh. Tree species include Sugar Maples, *Acer saccharum*, Red Maples, *Acer rubrum*; and Willows, *Salix spp.*. Shrub species include Silky Dogwood, *Cornus amomum*; Elderberry, *Sambucus canadensis*; and Multiflora Rose, *Rosa multiflora*. This wetland also has a slight concave shape where surface water runoff from its localized drainage area can collect. There is a slight gradient to the north within this wetland.

The underlying soils consist of extensively disturbed Wilbraham poorly drained soils with slowly permeable hardpan characteristics within 24 to 36 inches below the soil surface. Farm roads and or trails have been constructed through this wetland. In the NW corner of the wetland a manmade ditch channel was constructed to collect surface water from storm and perched sources and convey it to a small excavated pool area at the extreme northern end.

WETLAND FUNCTIONS AND VALUES

The US Army Corps of Engineers utilizes an evaluation methodology that provides for a descriptive evaluation of wetland and watercourse resources. The methodology is contained within a document entitled "The Highway Methodology Workbook, Supplement", US Army Corps of Engineers, New England Division, November 1995. Rather than providing a "rating" number or subjective rank such as low, medium, or high, this evaluation approach provides a qualitative description of the physical characteristics of the wetland/watercourse resource, identifies the functions and values exhibited, and these basis for the conclusions using "best professional judgment".

I have prepared a separate evaluation for each of the wetland resource areas described above. The documentation for each of these evaluations can be found attached to this report.

The following Functions and Values were identified as existing within the wetland resource subareas by the evaluation process. The size of the wetland resources (22,929 s.f.), level of disturbances, existing vegetative cover, and their separation from other wetlands to the north all have a limiting effect on the levels of functions and values. These functions and values are influenced to impacted by the existing levels of adjacent development. The levels of human activity immediately to the east and those associated with the noise levels of the adjacent I-84 corridor have already had an impact on the functioning of the subject wetland.

Flood Flow Alteration functioning is present with the subject wetlands. This functioning is the result of: (1) the relatively flat grades; (2) the concave shape that collects and retains storm water runoff; (3) and the lack of any inlet and or outlet flows. This functioning is limited by the small size of the wetlands and the lack of any connection to a watercourse.

Sediment/Toxicant Retention functioning is a primary functioning of the subject wetlands. This functioning is a result of the relatively flat grades and irregular topography which creates shallow pockets. Water entering this wetland is reduced in velocity allowing time for sediment contained in the storm water runoff to settle.

Nutrient Removal is the other primary functioning of the wetland resource areas. This determination of functioning is based on the above described characteristics as well as the ability of the existing dense tree and shrub vegetation to absorb excess nutrients from storm water runoff passing through the wetland. The trees and shrubs will then be able to use the excess nutrients as a food source.

Wildlife Habitat functioning is the final primary functioning of the subject wetland resource areas. The availability of food supplies, cover protection and nesting sites is provided in both wetland areas. A water supply is also available seasonally in both wetlands.

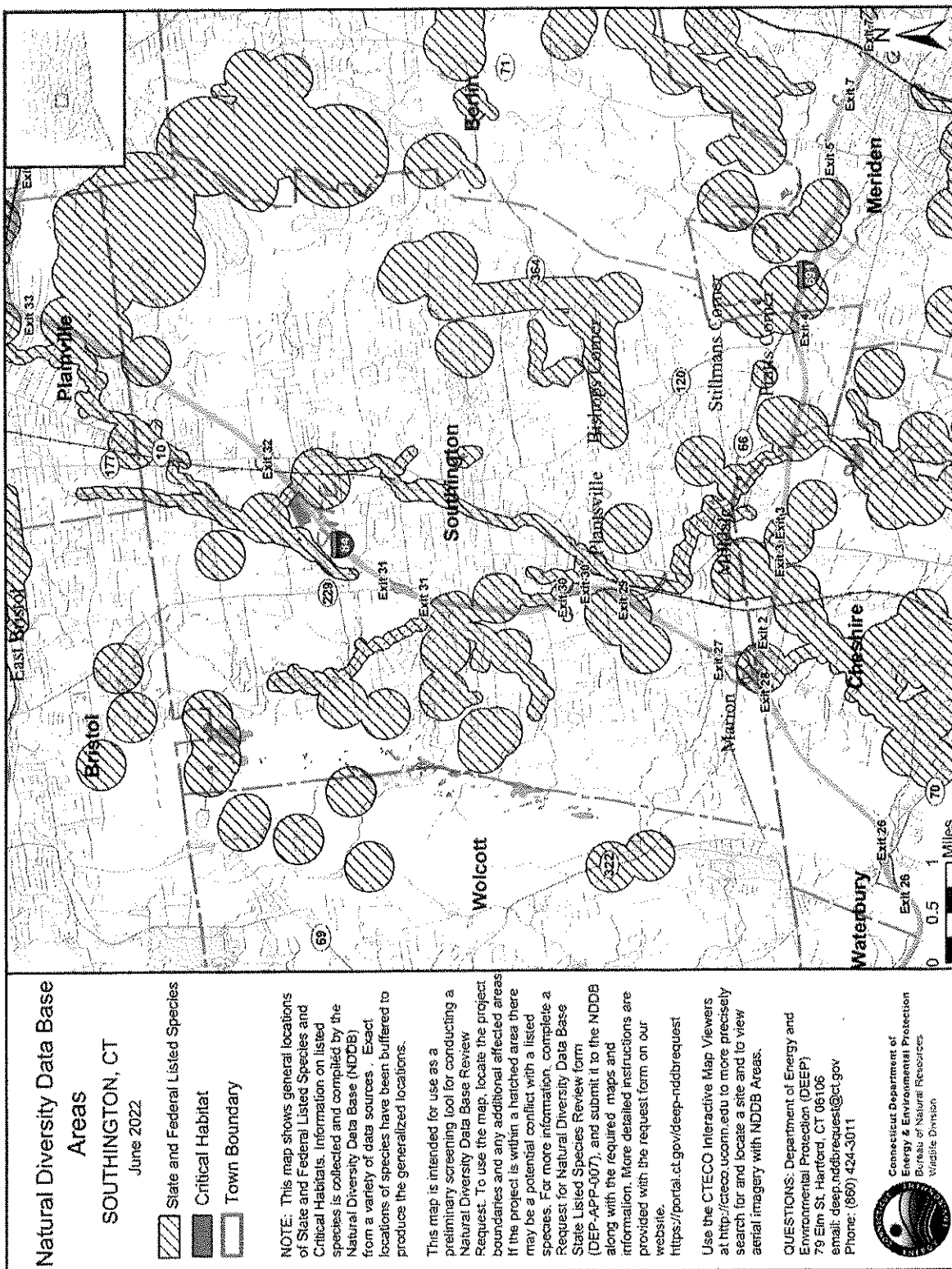
If you have any questions regarding this report, or need additional assistance with this site, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "David H. Lord". The signature is fluid and cursive, with the first name "David" and last name "Lord" being clearly legible.

David H. Lord
Certified Soil Scientist
& Environmental Consultant

APPENDIX



The
Highway
Methodology
Workbook
Supplement



US Army Corps
of Engineers®
New England District

Wetland Functions and Values
A Descriptive Approach

What are wetland functions and values?

Wetland functions and values form a very important part of Section 404 permit decisions by the Corps. **Functions** are self-sustaining properties of a wetland ecosystem that exist in the absence of society. Functions result from both living and non-living components of a specific wetland. These include all processes necessary for the self-maintenance of the wetland ecosystem such as primary production and nutrient cycling. Therefore, functions relate to the ecological significance of wetland properties without regard to subjective human values.

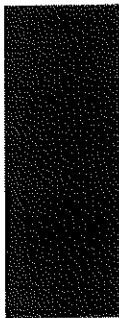
For example, a wetland that has slowly moving water performs the function of retaining sediments and toxicants. That is, the physical characteristic of a wetland that causes surface water to move slowly serves to let suspended particulates settle out of that water. This function traps sediments carried to it in runoff from uplands or upstream areas and clarifies the water. Identification of that function helps the Corps evaluate (1) whether the impacts of a project may impair that function and (2) whether such impacts are permissible.



Great Blue Heron

Values are benefits that derive from either one or more functions and the physical characteristics associated with a wetland. Most wetlands have corresponding societal value. This is recognized in various federal, state, and local wetland legislation that was enacted to protect these resources. The value of a particular wetland function, or combination thereof, is based on human judgment of the worth, merit, quality, or importance attributed to those functions. For example, a particular wetland might be

considered valuable because it is known to store flood waters upgradient or adjacent to a developed area. That function is valuable to society because it attenuates flood waters which lessens the destructive severity of flood events. Another wetland might be valued because its combination of diverse wildlife habitat and picturesque setting offers various recreational and educational opportunities. The judgment of value is based on the opinion of recognized experts whose views are ultimately weighed and considered by the Corps in its permit process.



What wetland functions and values are considered by the Corps in its Section 404 permit process?

The 13 functions and values that are considered by the Regulatory Branch for any Section 404 wetland permit are listed below. The list includes eight functions and five values. Values are grouped together at the end of the list.

These are not necessarily the only wetland functions and values possible, nor are they so precisely defined as to be unalterable. However, they do represent the best working "palette" of descriptors which can be used to paint an objective representation of the wetland resources associated with a proposed project.



GROUNDWATER RECHARGE/DISCHARGE — This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where groundwater can be discharged to the surface.



FLOODFLOW ALTERATION (Storage & Desynchronization) — This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.



FISH AND SHELLFISH HABITAT — This function considers the effectiveness of seasonal or permanent waterbodies associated with the wetland in question for fish and shellfish habitat.

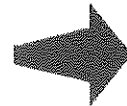


SEDIMENT/TOXICANT/PATHOGEN RETENTION — This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens.



NUTRIENT REMOVAL/RETENTION/TRANSFORMATION — This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

PRODUCTION EXPORT (Nutrient) — This function relates to the effectiveness of the wetland to produce food or usable products for humans or other living organisms.



SEDIMENT/ShORELINE STABILIZATION — This function relates to the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.



WILDLIFE HABITAT — This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.



RECREATION (Consumptive and Non-Consumptive) — This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive activities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland, whereas non-consumptive activities do not.



EDUCATIONAL/SCIENTIFIC VALUE — This value considers the effectiveness of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.



UNIQUENESS/HERITAGE — This value relates to the effectiveness of the wetland or its associated waterbodies to produce certain special values. Special values may include such things as archaeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geologic features.



VISUAL QUALITY/AESTHETICS — This value relates to the visual and aesthetic qualities of the wetland.



THREATENED or ENDANGERED SPECIES HABITAT — This value relates to the effectiveness of the wetland or associated waterbodies to support threatened or endangered species.

ES

Wetland Function-Value Evaluation Form

Total area of wetland 19,979sf Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? Yes
 Adjacent land use Fallow Agriculture - Industrial Distance to nearest roadway or other development >100 ft.
 Dominant wetland systems present Old Farm Fields Contiguous undeveloped buffer zone present No
 Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? Upper
 How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland ID W-1
 Latitude 41.6270 Longitude 72.8839
 Prepared by: D Lord Date 6-23-22
 Wetland Impact: Type Forest Area 19,979
 Evaluation based on: Office X Field _____
 Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N	6		Hardpan present
Floodflow Alteration	Y	3,5,6,7,9,18	X	Limited due to small drainage area
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	3,4,5,8,9,13,15	X	Limited Sources - Concave shape enhances retention
Nutrient Removal	Y	3,7,8,11,12,15	X	Dense vegetation and concave shape increase duration and enhance removal
Production Export	N	1,4,7		
Sediment/Shoreline Stabilization	N			
Wildlife Habitat	Y	4,7,8,13		Limited by size and lack of vegetative diversity
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N	13		
Visual Quality/Aesthetics	N	3,5,9		
ES Endangered Species Habitat	N			Refer to attached CT NDDB map
Other				













Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 2,950 Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? Yes
 Adjacent land use Fallow Agriculture - Industrial Distance to nearest roadway or other development >100 ft
 Dominant wetland systems present Palustrine Contiguous undeveloped buffer zone present No
 Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? Upper
 How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-2
 Latitude 41.6270 Longitude 72.8839
 Prepared by: D Lord Date 6-23-22
 Wetland Impact: Type Barren Fill Area 2,950
 Evaluation based on: Office X Field _____
 Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	N	6,13,15		Hardpan present
 Floodflow Alteration	Y	7		Limited due to very limited drainage area
Fish and Shellfish Habitat	N			
 Sediment/Toxicant Retention	Y	1,4,7	X	Very small size, concave shape and microtopographic relief enhances limited retention
 Nutrient Removal	Y	3,4,7,9	X	Dense vegetation and concave shape enhance removal
 Production Export	N	1,4,7		
 Sediment/Shoreline Stabilization	N			
 Wildlife Habitat	Y	7,8,19	X	Limited by size and enhanced by vegetative diversity
 Recreation	N			
 Educational/Scientific Value	N			
 Uniqueness/Heritage	N	13		
 Visual Quality/Aesthetics	N	9		
 Endangered Species Habitat	N			Refer to attached CT NDDB map
Other				

Notes: * Refer to backup list of numbered considerations.

APPENDIX A: ACOE HIGHWAY METHODOLOGY CRITERIA

GROUNDWATER RECHARGE/DISCHARGE - Considers the potential for groundwater recharge and/or discharge.

CONSIDERATIONS/QUALIFIERS

1. Public or private wells occur downstream of the wetland.
2. Potential exists for public or private wells downstream of the wetland.
3. Wetland is underlain by stratified drift.
4. Gravel or sandy soils present in/or adjacent to the wetland.
5. Fragipan does not occur in the wetland.
6. Fragipan, impervious soils, or bedrock, does occur in the wetland.
7. Wetland is associated with a perennial or intermittent watercourse.
8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.
9. Wetland is associated with a watercourse but lacks a defined outlet or contains a constricted outlet.
10. Wetland contains only an outlet.
11. Groundwater quality of stratified drift aquifer of wetland meets drinking water standards.
12. Quality of water associated with the wetland is high.
13. Signs of groundwater discharge are present (e.g. springs).
14. Water temperature suggests it is a discharge site.
15. Wetland shows signs of variable water levels.
16. Piezometer data demonstrates discharge.

FLOODFLOW ALTERATION - Considers the effectiveness of the wetland in reducing flood damage by water retention.

CONSIDERATIONS/QUALIFIERS

1. Area of this wetland is large relative to its watershed.
2. Wetland occurs in the upper portions of its watershed.
3. Effective flood storage is small or non-existent upslope of or above the wetland.
4. Wetland watershed contains a high degree of impervious surfaces.
5. Wetland contains hydric soils which are able to absorb and detain water.
6. Wetland exists in a relatively flat area that has flood storage potential.
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.
8. During flood events, wetland retains higher volumes of water than under normal rainfall events.
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.
10. In the event of a large storm, wetland may receive and detain excessive flood water from watercourse.
11. Valuable properties or resources are located in or near the floodplain downstream from wetland.
12. The watershed has a history of economic loss due to flooding.
13. This wetland is associated with one or more watercourses.
14. This wetland watercourse is sinuous or diffuse.
15. This wetland outlet is constricted.
16. Channel flow velocity is affected by this wetland.
17. Land uses downstream are protected by this wetland.
18. This wetland contains a high density of vegetation.

FISH AND SHELLFISH HABITAT - Considers effectiveness of watercourse associated with wetland for fish habitat.

CONSIDERATIONS/QUALIFIERS

1. Forest land dominant in the watershed above this wetland.
2. Abundance of cover objects present.
3. Size of this wetland is able to support large fish/shellfish populations.
4. Wetland is part of a larger, contiguous watercourse.
5. Wetland has sufficient size/depth in open water so as not to freeze solid, retains some open water in winter.
6. Stream width (bank to bank) is more than 50 feet.
7. Quality of the watercourse associated with wetland able to support healthy fish/shellfish populations.
8. Streamside vegetation provides shade for the watercourse.
9. Spawning areas are present (submerged vegetation or gravel beds).
10. Food is available to fish/shellfish populations within this wetland.
11. Barrier(s) to anadromous fish (dams, including beaver dams, water falls, road crossing, etc.) are absent from stream.
12. Evidence of fish is present.

13. Wetland is stocked with fish.
14. The watercourse is persistent.
15. Man-made streams are absent.
16. Water velocities are not too excessive for fish usage.
17. Defined stream channel is present.

SEDIMENT/TOXICANT/PATHOGEN RETENTION -Considers effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff from surrounding uplands, or upstream eroding wetland areas.

CONSIDERATIONS/QUALIFIERS

1. Potential sources of excess sediment are in the watershed above the wetland.
2. Potential or known sources of toxicants are in the watershed above the wetland.
3. Opportunity for sediment trapping by slow moving water or deepwater habitat are present in this wetland.
4. Mineral, fine grained, or organic soils are present.
5. Long duration water retention time is present in this wetland.
6. Public or private water sources occur downstream.
7. The wetland edge is broad and intermittently aerobic.
8. The wetland is known to have existed for more than 50 years.
9. Drainage ditches have not been constructed in the wetland.
10. Wetland is associated with an intermittent or perennial stream, or a lake.
11. Channelized flows have visible velocity decreases in the wetland.
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.
13. No indicators of erosive forces are present. No high water velocities are present.
14. Diffuse water flows are present in the wetland.
15. Wetland has a high degree of water and vegetation interspersion.
16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulation are present.

NUTRIENT REMOVAL/RETENTION/TRANSFORMATION -Considers effectiveness of wetland as a trap for nutrients in runoff from uplands or contiguous wetlands, and ability of wetland to process these nutrients into other trophic levels.

CONSIDERATIONS/QUALIFIERS

1. Wetland is large relative to the size of its watershed.
2. Deep water or open water habitat exists.
3. Overall potential for sediment trapping exists in the wetland.
4. Potential sources of excess nutrients present in the watershed above the wetland.
5. Wetland saturated for most of the season. Pondered water is present in the wetland.
6. Deep organic/sediment deposits are present.
7. Slowly drained mineral, fine grained, or organic soils, are present.
8. Dense vegetation is present.
9. Emergent vegetation and/or dense woody stems are dominant.
10. Aquatic diversity/abundance sufficient to utilize nutrients.
11. Opportunity for nutrient attenuator exists.
12. Vegetation diversity/abundance sufficient to utilize nutrients.
13. Waterflow through this wetland is diffuse.
14. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.
15. Water moves slowly through this wetland.

PRODUCTION EXPORT (Nutrient) - Considers effectiveness of wetland to produce food or usable products.

CONSIDERATIONS/QUALIFIERS

1. Wildlife food sources grow within this wetland.
2. Detritus development is present within this wetland
3. Economically or commercially used products found in this wetland.
4. Evidence of wildlife use found within this wetland.
5. Higher trophic level consumers are utilizing this wetland.
6. Fish or shellfish develop or occur in this wetland.
7. High vegetation density is present.
8. Wetland exhibits high degree of plant community structure/species diversity.
9. High aquatic diversity/abundance is present.
10. Nutrients exported in wetland watercourses (permanent outlet present).
11. "Flushing" of relatively large amounts Of organic plant material occurs from this wetland.
12. Wetland contains flowering plants which are used by nectar-gathering insects.
13. High production levels occurring however, no visible signs of export (assumes export is attenuated).

SEDIMENT/ShORELINE STABILIZATION - Considers effectiveness of wetland to stabilize stream banks, shorelines.

CONSIDERATIONS/QUALIFIERS

1. Indications of erosion, siltation present
2. Topographical gradient is present in wetland.
3. Potential sediment sources are present up-slope.
4. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.
5. A sharp bank between the open waterbody or stream and the adjacent land exists with dense roots throughout.
6. Wide wetland (>10') bordering watercourse, lake, or pond.
7. High flow velocities in the wetland.
8. Potential sediment sources present upstream.
9. The watershed is of sufficient size to produce channelized flow.
10. Open water fetch is present.
11. Boating activity is present.
12. Dense vegetation is bordering watercourse, lake, or pond.
13. High percentage of energy absorbing emergents and/or shrubs bordering watercourse, lake or pond.
14. Vegetation comprised of large trees and shrubs which withstand floods and stabilize shoreline on a large scale (feet).
15. Dense herb layer which stabilizes sediments/shoreline on a small scale (inches) during flood erosive events.

WILDLIFE HABITAT - Considers effectiveness of wetland to provide habitat for various resident and migrant animals.

CONSIDERATIONS/QUALIFIERS

1. Wetland is not degraded by human activity.
2. Water quality of the watercourse, pond, or lake wetland meets or exceeds Class A or B standards.
3. Wetland is not fragmented by development.
4. Upland surrounding this wetland is undeveloped.
5. 40% of wetland edge bordered by upland wildlife habitat (e.g. woodland, active farmland, idle land) 500' wide.
6. Wetland contiguous with other wetland systems connected by watercourse or lake.
7. Wildlife overland access to other wetlands is present.
8. Wildlife food sources are within this wetland or are nearby.
9. Wetland exhibits a high degree of interspersed vegetation classes and/or open water.
10. Two or more islands or inclusions of upland within the wetland are present.
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.
12. More than three acres of shallow permanent open water including streams in or adjacent to wetland are present.
13. Density of the wetland vegetation is high.
14. Wetland exhibits a high degree of plant species diversity.
15. Wetland exhibits a high degree of diversity in plant community structure.
16. Plant/animal indicator species present.
17. Animal signs observed (tracks, scats, nesting areas, etc.)
18. Seasonal uses vary for wildlife, wetland appears to support varied population diversity.
19. Wetland contains or has potential to contain a high population of insects.
20. Wetland contains or has potential to contain large amphibian populations.
21. Wetland has a high avian utilization or its potential.
22. Indications of less disturbance-tolerant species present.
23. Signs of wildlife habitat enhancement present (birdhouses, nesting boxes, etc.).

RECREATION - Considers suitability of wetland and associated watercourses to provide recreation.

CONSIDERATIONS/QUALIFIERS

1. Wetland is part of a recreation area, park, forest, or refuge.
2. Fishing is available within or from the wetland.
3. Hunting is permitted in the wetland.
4. Hiking occurs or has potential to occur within the wetland.
5. Wetland is a valuable wildlife habitat.
6. The watercourse, pond, or lake, associated with the wetland is unpolluted.
7. High visual/aesthetic quality of this potential recreation site.
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.
9. Watercourse associated with this wetland is wide and deep enough to accommodate non-powered boating.

10. Off-road public parking available at the potential recreation site.
11. Accessibility and travel ease is present at this site.
12. The wetland is within a short drive or safe walk from highly populated public and private areas.

EDUCATIONAL/SCIENTIFIC VALUE - Considers suitability of wetland as outdoor classroom or for scientific study.

CONSIDERATIONS/QUALIFIERS

1. Wetland contains or is known to contain threatened, rare, or endangered species.
2. Little or no disturbance is occurring in this wetland.
3. Potential educational site contains a diversity of accessible or potentially accessible wetland classes.
4. Potential educational site is undisturbed and natural.
5. Wetland is considered to be a valuable wildlife habitat.
6. Wetland is located within a nature preserve or wildlife management area.
7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.
9. Potential educational site is within safe walking distance or a short drive to schools.
10. Potential educational site within safe walking distance to other plant communities.
11. Direct access to perennial stream at potential educational site available.
12. Direct access to pond or lake at potential educational site available.
13. No known safety hazards within the potential educational site.
14. Public access to the potential educational site is controlled.
15. Handicap accessibility is available.
16. Site is currently used for educational or scientific purposes.

UNIQUENESS/HERITAGE - Considers effectiveness of the wetland or its waterbodies to provide special values.

CONSIDERATIONS/QUALIFIERS

1. Upland surrounding wetland primarily urban.
2. Upland surrounding wetland developing rapidly.
3. More than 3 acres of shallow permanent open water occur in wetlands (less than 6.6' deep) including streams.
4. Three or more wetland classes present.
5. Deep and/or shallow marsh, or wooded swamp dominate.
6. High degree of interspersed vegetation and/or open water occurring in this wetland.
7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
8. Potential educational site is within a short drive or a safe walk from schools.
9. Off-road parking at potential educational site is suitable for school buses.
10. No known safety hazards exist within this potential educational site.
11. Direct access to perennial stream or lake at potential educational site.
12. Two or more wetland classes visible from primary viewing locations.
13. Low-growing wetlands (marshes, scrub-shrub, open water) visible from primary viewing locations.
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
15. Large area of wetland is dominated by flowering plants, plants with vibrant colors in different seasons.
16. Appearance of the wetland visible from primary viewing areas is unpolluted and/or undisturbed.
17. Overall view of the wetland is available from the surrounding upland.
18. Quality of the water associated with the wetland is high.
19. Opportunities for wildlife observations are available.
20. Historical buildings occur within the wetland.
21. Presence of pond or pond site and remains of a dam occur within the wetland.
22. Wetland within 50 yards of the nearest perennial watercourse.
23. Visible stone or earthen foundations, dams, standing structures or associated features occur in wetland.
24. Wetland contains critical habitat for a state or federally listed threatened or endangered species.
25. Wetland is known to be a study site for scientific research.
26. Wetland is a natural landmark or recognized by the natural heritage inventory as exemplary natural area.
27. Wetland has local significance because it serves several functional values.
28. Wetland has biological, geological, or other features which are locally rare or unique.
29. Wetland is known to contain an important archaeological site.
30. Wetland is hydrologically connected to a state or federally designated scenic river.
31. Wetland is located in an area experiencing a high wetland loss rate.

VISUAL QUALITY/AESTHETICS - Considers the visual quality of the wetland.

CONSIDERATIONS/QUALIFIERS

1. Multiple wetland classes visible from primary viewing locations.
2. Emergent marsh and/or open water visible from primary viewing locations.
3. Diversity of vegetation species visible from primary viewing locations.
4. Wetland dominated by flowering plants, or plants which turn vibrant colors in different seasons.
5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.
6. Visible surrounding land use form contrasts with wetland.
7. Wetland views absent of trash, debris, and signs of disturbance.
8. Wetland is considered to be a valuable wildlife habitat.
9. Wetland is easily accessed.
10. Low noise level at primary viewing locations.
11. Unpleasant odors absent at primary viewing locations.

ENDANGERED SPECIES HABITAT- Considers the ability of wetland to support threatened/endangered species.

CONSIDERATIONS/QUALIFIERS

1. Wetland contains or is known to contain threatened or endangered species.
2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.