

**POTENTIAL JURISDICTIONAL
WATERS EVALUATION**

**WOODLANDS GOLF CLUB
SEAFORD, DELAWARE**

May 2010

Prepared for:

Sussex County
P.O. Box 589
2 The Circle
Georgetown, Delaware 19947

Prepared by:

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Project No. 7864.EB

TABLE OF CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1.	INTRODUCTION	1
2.	SITE DESCRIPTION	1
3.	DOCUMENTS REVIEWED	2
4.	SITE RECONNAISSANCE	3
5.	FINDINGS	4
6.	CONCLUSIONS	4

FIGURE

Figure 1 U.S.G.S Topographic Map Location Sketch

APPENDICES

Appendix A	Scope of Services
Appendix B	National Wetland Inventory
Appendix C	State of Delaware Wetland Assessment Program Map
Appendix D	Federal Emergency Management Agency Federal Insurance Rate Map
Appendix E	Soil Survey
Appendix F	Aerial Photographs
Appendix G	Photographs

1. INTRODUCTION

1.1 PURPOSE

This report summarizes Duffield Associates, Inc.'s (Duffield Associates) potential jurisdictional waters evaluation of the approximately 41.4-acre portion ("Lot 3") of the Woodlands Golf Park located near Seaford, Sussex County, Delaware (Figure 1). Lot 3 is herein referred to as "the Property." Representatives of Sussex County requested this evaluation to identify potential waterways and wetlands present within the Property. In general, certain waterways and wetlands are features that may fall under state and federal jurisdiction. Work within the waterways and wetlands may require permits from the state and federal regulatory agencies. The wetlands portion of this evaluation was conducted utilizing the methods described in the U.S. Army Corps of Engineers *Wetlands Delineation Manual* (1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*, dated October 2008.

1.2 DETAILED SCOPE OF SERVICES

Duffield Associates reviewed selected maps and aerial photographs pertaining to the Property and nearby lands, and performed a walking visual reconnaissance in accordance with the scope of services described in our proposal, dated April 1, 2010. A copy of the approved scope of services is presented in Appendix A.

1.3 LIMITATIONS AND EXPECTATIONS

While this evaluation was performed in an effort to generally characterize the potential jurisdictional waters/wetlands of the Property, the conclusions and recommendations are based solely on conditions encountered at the time of the reconnaissance effort. Actual jurisdictional determination of the waters or wetlands identified can only be conducted by the appropriate regulatory agencies. This is not a report suitable for jurisdictional determination as the boundary of the waters/wetlands have not been flagged and surveyed for depiction on a plan.

2. SITE DESCRIPTION

2.1 LOCATION AND LEGAL DESCRIPTION

The Property is a portion (Lot 3) of the Woodlands Golf Park located southwest of Lonesome Road near Seaford, Sussex County, Delaware (Figure 1). Lot 3 is a 41.4-acre portion of Tax Parcel No. 53101500002101. The Property is currently zoned residential (AR-1).

2.2 SITE AND VICINITY GENERAL CHARACTERISTICS

The predominant use of land in the vicinity of the Property is for agricultural purposes. Forested lands are also present in the vicinity of the Property.

2.3 CURRENT USE OF THE PROPERTY

Currently, the Property is developed as a nine (9) hole golf course with a clubhouse, tees, greens, and three (3) ponds. The Property has not operated as a golf course since 2006.

3. DOCUMENTS REVIEWED

The applicable U.S. Geological Survey (USGS) topographic map, National Wetland Inventory (NWI), State of Delaware Wetlands Assessment Project (SWAP) map, Federal Emergency Management Agency (FEMA) Federal Insurance Rate Maps (FIRM), and Sussex County Soil Survey, 1970, published by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), and available aerial photographs were reviewed prior to the site reconnaissance.

3.1 TOPOGRAPHY AND WATER FEATURES

Based on a review of the applicable USGS topographic map, the elevation of the Property ranges from approximately 15 to 25 feet above mean sea level. The Property slopes south-southeast towards Turtle Branch based on the topographic map and the site reconnaissance (see Figure 1).

According to the USGS topographic map, there are no water features present on the Property. Turtle Branch is approximately 200 feet from the Property's southwestern border and flows southeast to the Nanticoke River.

3.2 NWI

The NWI map (Appendix B) does not depict the presence of potentially jurisdictional waters or wetlands within the Property.

3.3 SWMP

The SWMP map (Appendix C) does not depict the presence of potentially jurisdictional waters or wetlands within the Property.

3.4 FLOOD ZONE

Based on a review of the applicable FEMA FIRM (Appendix D), the Property is zoned as an area outside the 100- and 500-year floodplains. Water bodies (e.g., streams, creeks, and lakes) are not shown within the Property on the FIRM.

3.5 SOILS

A review of the USDA online database (Appendix E) indicated that Pepperbox-Rockawalk, Lenni, and Glasboro soils are mapped on the site. According to the database, Pepperbox-Rockawalk soils are comprised of loamy sand with 0 to 5 percent slopes. The Lenni and Glasboro soils are described as sandy loams with 0 to 2 percent slopes.

3.6 HISTORICAL INFORMATION

Duffield Associates reviewed aerial photographs to evaluate historical land use and potential jurisdictional water features apparent within the Property. Our review included photographs from the years 1937, 1954, 1961, 1968, 1992, 1997, and 2007 (Appendix F).

The Property appears to have been used for agricultural purposes from 1937 to 1992 with little change through the years reviewed. Ponds are not present on the Property during this time period. The agricultural ditch is apparent in the northeastern corner of the Property in the 1954, 1961, and 1992 aerial photographs as a linear feature and, in 1992 also a vegetated feature. The golf park is present, as are the three (3) ponds in the 1997 photograph.

4. SITE RECONNAISSANCE

Duffield Associates' personnel completed a reconnaissance of the Property on April 21, 2010. The walking reconnaissance consisted of a visual review of vegetation and hydrology, and if necessary, soil borings, for recognized water or wetland features. Data sheets were not recorded and the potential boundaries of waters or wetlands were not flagged or staked. Photographs were taken and the location and direction of the photographs are depicted in Appendix G.

The former golf park is vegetated with grasses and sporadic pine trees throughout (Photograph 1). Three (3) man-made ponds are present on the Property (Photographs 2 and 3). These ponds apparently were constructed during the development of the golf course in upland areas. One (1) agricultural ditch borders the proposed eastern boundary of the Property. The ditch was not flowing but contained standing water (Photograph 4). This ditch does not apparently connect via culvert or other means to the ponds. Vegetation in the ditch consisted of trees (e.g., red maple and red cypress). Soil borings were not conducted as apparent wetland areas were not observed.

5. FINDINGS

The Property appears to have been used for agricultural purposes from 1937 to 1995 when the golf park was constructed. According to the current property owner, the Property was developed into Woodlands Golf Park in 1995 and operated as a golf park until closure in 2006. The Property was evaluated for the presence of wetlands with the methods described in the U.S. Army Corps of Engineers *Wetlands Delineation Manual* (1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*, October 2008. In addition, the Property was evaluated for potential jurisdictional waterways (e.g., ditches and streams).

Four (4) water features were observed during the site reconnaissance; three (3) ponds and the agricultural ditch. Based on historical aerial photography review, the three (3) ponds present on the Property appear to be man-made features constructed in uplands when the golf park was developed. Based on aerial photography review, the ditch that borders the east Property boundary was constructed for agricultural purposes. The ditch did not have flowing water or an apparent ordinary high water mark. These ponds and the ditch are not depicted on the USGS, Soil Survey, NWI, SWMP, or FEMA maps.

6. CONCLUSIONS

This report summarizes Duffield Associates' potential jurisdictional waters evaluation of the approximately 41.4-acre portion ("Lot 3") of the Woodlands Golf Park located near Seaford, Sussex County, Delaware. Lot 3 is a portion of the former Woodlands Golf Park. Representatives of Sussex County requested this evaluation to identify potential waterways and wetlands present within the Property. If present, certain waterways and wetlands are features that may fall under state and federal jurisdiction, and work within such areas may require permits from the regulatory agencies.

Based on resource map review and site reconnaissance, wetlands were not observed on the Property. For wetlands to be present, vegetation, soils, and hydrology should reflect wetland conditions.

Four (4) water features were observed during the site reconnaissance. The three (3) ponds were constructed during the golf park development as ornamental features. Based on aerial photograph review, these features were constructed in upland areas. These ponds do not appear to be connected to the agricultural ditch. The agricultural ditch, the fourth water feature observed was apparently constructed and maintained as an agricultural ditch during the farming practices prior to the development of the golf park.

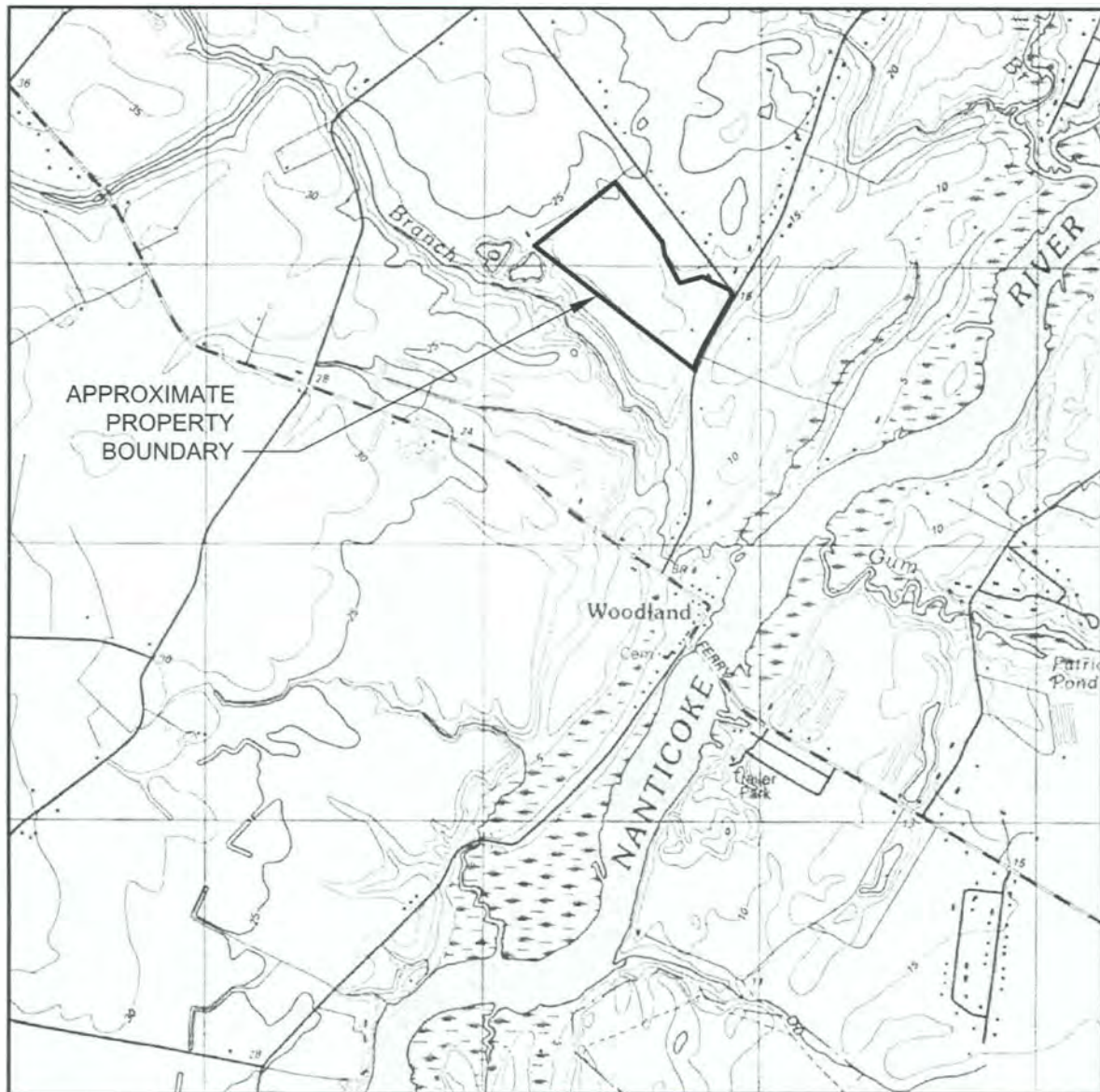
Man-made ponds constructed in uplands, which have no connectivity or exchange with other jurisdictional waters, are not regulated water bodies. It is Duffield Associates' opinion that the three (3) ponds on the Property are man-made features, constructed in uplands and are not water features that would fall under the jurisdiction of state or federal regulatory agencies.

The agricultural ditch, however, is a water feature that could potentially be a regulated water body. If work is proposed within the agricultural ditch, it is the opinion of Duffield Associates that a waters of the U.S. delineation with flagging and survey be conducted, and jurisdictional determination be obtained from the State of Delaware, Department of Natural Resources and Environmental Control, Wetlands and Subaqueous Lands Section and U.S. Army Corps of Engineers regulatory agencies.

WORD:7864EB.0510.WATERS EVALUATION.RPT

FIGURE 1

U.S.G.S. TOPOGRAPHIC MAP
LOCATION SKETCH



NOTE:

THIS LOCATION SKETCH IS ADAPTED FROM THE U.S.G.S. TOPOGRAPHIC MAP, 7.5 MINUTE SERIES, FOR SHARPTOWN, MD.-DEL., 1993.

DATE:
3 MAY 2010

SCALE:
1" = 2,000'

PROJECT NO.
7864.EB

SHEET:
FIGURE 1

SITE LOCATION SKETCH

WOODLANDS GOLF PARK

SEAFORD ~ SUSSEX COUNTY ~ DELAWARE

DESIGNED BY: JLG

DRAWN BY: GAZ

CHECKED BY:

FILE: A7864EB-Loc

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APPENDIX A

SCOPE OF SERVICES

SCOPE OF SERVICES

Duffield Associates' wetland specialist will perform a wetlands/waters determination for the entire property. This determination will include review of available pertinent information including, but not necessarily limited to:

- National Wetland Inventory maps;
- Soil Survey maps;
- U.S. Geological Survey maps; and
- Aerial photography.

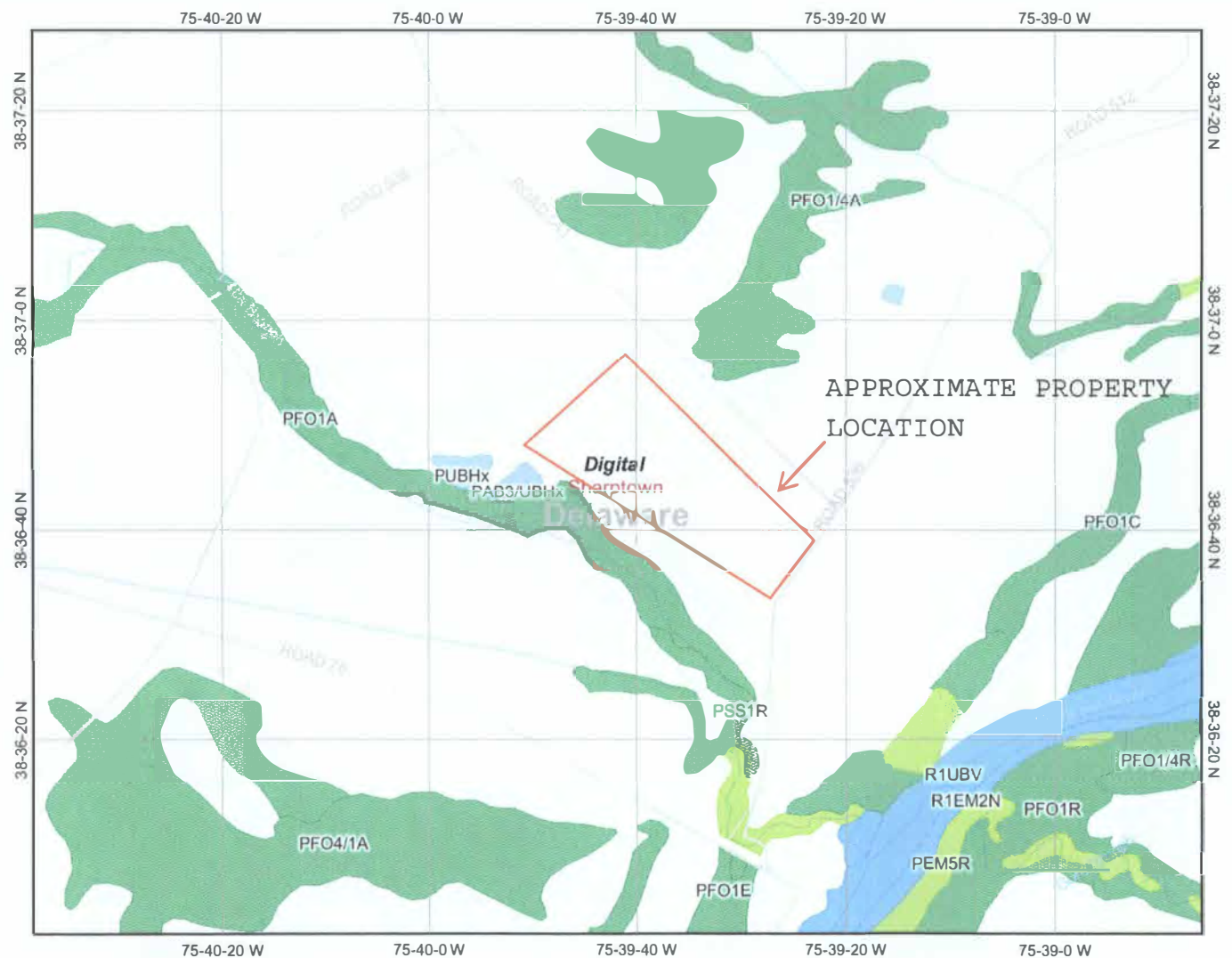
The determination will also include a site reconnaissance of the property. The purpose of the wetland determination is to determine the presence/absence of wetlands and/or other potentially regulated waters located on the property. If present, the approximate extent of the wetlands/waters will be drawn on a plan for the intended use of feasibility evaluations for site development. A letter report will be provided as part of the deliverable.

Should additional wetlands/waters evaluations become necessary, you will be provided with a fee estimate under separate letter. This scope of services does not include the staking and survey of wetland data points, agency coordination or submittal, or a delineation report for agency submittal.

APPENDIX B

NATIONAL WETLAND INVENTORY

Woodlands Golf Park



Legend

Ohio_wet_scan

- 0
- 1
- Out of range

Interstate
Major Roads

- Other Road
- Interstate
- State highway
- US highway

Roads

Cities

USGS Quad Index 24K
Lower 48 Wetland Polygons

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Lower 48 Available Wetland Data

Non-Digital

Digital

No Data

Scan

NHD Streams

Counties 100K

States 100K

South America

North America



Scale: 1:18,638

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Map center: 38° 36' 45" N, 75° 39' 42" W

APPENDIX C

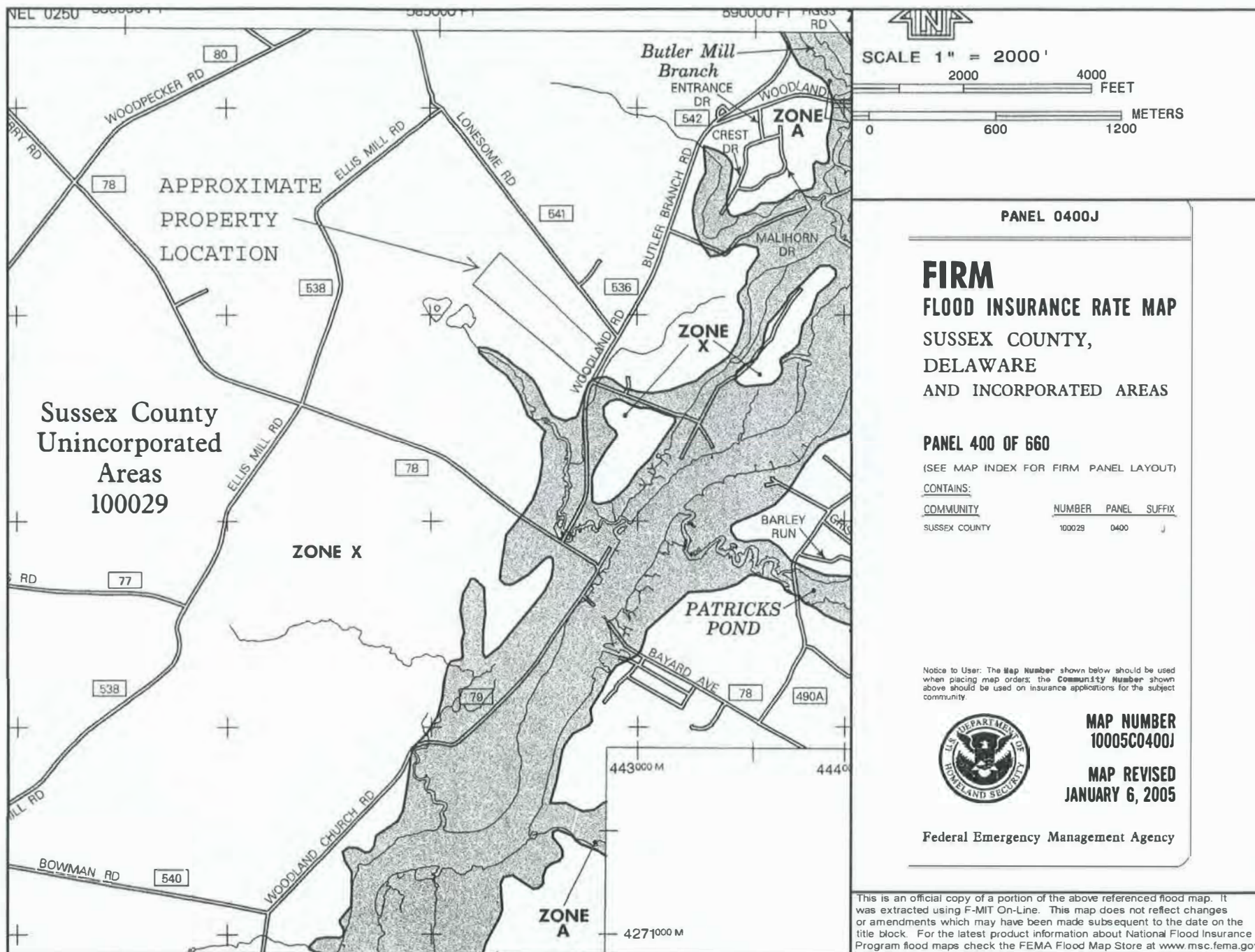
STATE OF DELAWARE WETLAND ASSESSMENT PROGRAM MAP



APPENDIX C STATE WETLAND ASSESSMENT PROGRAM MAP
ADAPTED FROM [HTTP://MAPS.DNREC.DELAWARE.GOV/TIDALWETLANDSMAPIINDEX/](http://maps.dnrec.delaware.gov/tidalwetlandsmapiindex/)

APPENCIX D

FEDERAL EMERGENCY MANAGEMENT AGENCY FEDERAL RATE INSURANCE MAP



APPENDIX D FLOOD INSURANCE RATE MAP

APPENDIX E

SOIL SURVEY

APPENDIX E SOIL SURVEY



Map Scale: 1:8,060 if printed on A size (8.5" x 11") sheet.



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Map Unit Legend

Sussex County, Delaware (DE005)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
EvD	Evesboro loamy sand, 5 to 15 percent slopes	7.9	3.7%
GoA	Glassboro sandy loam, 0 to 2 percent slopes	1.9	0.9%
HnA	Hammonton sandy loam, 0 to 2 percent slopes	7.8	3.7%
HuA	Hurlock loamy sand, 0 to 2 percent slopes	0.6	0.3%
HvA	Hurlock sandy loam, 0 to 2 percent slopes	26.0	12.3%
leB	Ingleside loamy sand, 2 to 5 percent slopes	2.3	1.1%
KfA	Keyport fine sandy loam, 0 to 2 percent slopes	4.8	2.3%
LfA	Lenni sandy loam, 0 to 2 percent slopes	6.6	3.1%
Ln	Lenape-Nanticoke complex, very frequently flooded, tidal	4.3	2.0%
LO	Longmarsh and Indiantown soils, frequently flooded	9.7	4.6%
PpA	Pepperbox loamy sand, 0 to 2 percent slopes	19.4	9.2%
PpB	Pepperbox loamy sand, 2 to 5 percent slopes	5.9	2.8%
PrA	Pepperbox-Rockawalkin complex, 0 to 2 percent slopes	70.5	33.4%
PrB	Pepperbox-Rockawalkin complex, 2 to 5 percent slopes	28.2	13.4%
PsA	Pepperbox-Rosedale complex, 0 to 2 percent slopes	4.7	2.2%
PsB	Pepperbox-Rosedale complex, 2 to 5 percent slopes	7.8	3.7%
W	Water	2.7	1.3%
Totals for Area of Interest		211.0	100.0%



Soil Map—Sussex County, Delaware
(Woodlands Golf Park)

MAP LEGEND






















Area of Interest (AOI)



 Area of Interest (AOI)

Soils

 Soil Map Units

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

-  Gully
-  Short Steep Slope
-  Other




Political Features

-  Cities

Water Features

-  Oceans
-  Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

Map Scale: 1:8,060 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 18N NAD83

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

Soil Survey Area: Sussex County, Delaware
Survey Area Data: Version 9, Oct 18, 2006

Date(s) aerial images were photographed: 7/16/2006

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.



APPENDIX F

AERIAL PHOTOGRAPHS



State of Delaware

1937



Scale 1:24,011

0 0.1 0.2 0.4
Kilometers

0 650 1300 2600
Feet



Magnetic Declination
Approx. 11 mils

DataMIL Mini Map



Data on map are based on Delaware framework data layers. The Delaware DataMIL is maintained by the Delaware Geological Survey (DGS) and served via the Delaware Department of Technology and Information (DTI) internet.



State of Delaware



1954



Scale 1:24,009

0 0.1 0.2 0.4
Kilometers

0 650 1300 2600
Feet

Data on map are based on Delaware framework data layers. The Delaware DataMIL is maintained by the Delaware Geological Survey (DGS) and served via the Delaware Department of Technology and Information (DTI) internet.



Magnetic Declination
Approx. 11 mils

DataMIL Mini Map





State of Delaware

1961

Delaware
DataMIL
Data Management & Information Layer



Scale 1:24,009

0 0.1 0.2 0.4
Kilometers

0 650 1300 2600
Feet



Magnetic Declination
Approx. 11 mils

DataMIL Mini Map



Data on map are based on Delaware framework data layers. The Delaware DataMIL is maintained by the Delaware Geological Survey (DGS) and served via the Delaware Department of Technology and Information (DTI) internet.

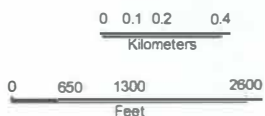


State of Delaware

1968



Scale 1:24,009



Data on map are based on Delaware framework data layers. The Delaware DataMIL is maintained by the Delaware Geological Survey (DGS) and served via the Delaware Department of Technology and Information (DTI) internet.

Magnetic Declination
Approx. 11 mils

DataMIL Mini Map





State of Delaware

1992



Scale 1:24,003

0 0.1 0.2 0.4
Kilometers

0 650 1300 2600
Feet

Data on map are based on Delaware framework data layers. The Delaware DataMIL is maintained by the Delaware Geological Survey (DGS) and served via the Delaware Department of Technology and Information (DTI) internet.

Magnetic Declination
Approx. 11 mils

DataMIL Mini Map





State of Delaware

1997



75°39'0"W



75°39'0"W

Scale 1:12,020

0 0.04 0.09 0.18
Kilometers

0 325 650 1300
Feet

Data on map are based on Delaware framework data layers. The Delaware DataMIL is maintained by the Delaware Geological Survey (DGS) and served via the Delaware Department of Technology and Information (DTI) internet.


Magnetic Declination
Approx. 11 mils

DataMIL Mini Map





State of Delaware

2002




Scale 1:12,013

0 0.04 0.09 0.18
Kilometers

0 325 650 1300
Feet

Data on map are based on Delaware framework data layers. The Delaware DataMIL is maintained by the Delaware Geological Survey (DGS) and served via the Delaware Department of Technology and Information (DTI) internet.


Magnetic Declination
Approx. 11 mils

DataMIL Mini Map





State of Delaware

2007




Scale 1:12,009

0 0.04 0.09 0.18
Kilometers

0 325 650 1300
Feet

Data on map are based on Delaware framework data layers. The Delaware DataMIL is maintained by the Delaware Geological Survey (DGS) and served via the Delaware Department of Technology and Information (DTI) internet.

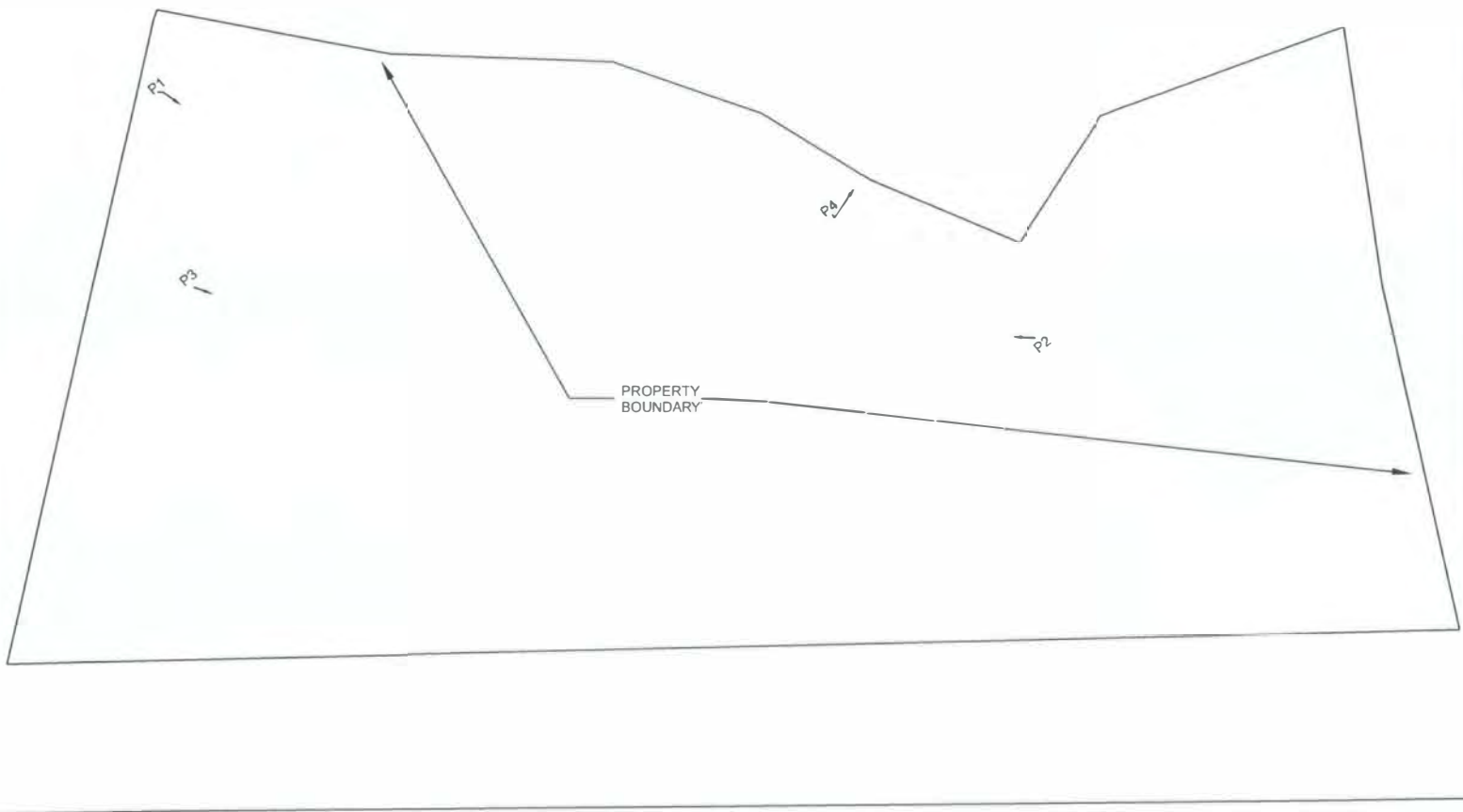

Magnetic Declination
Approx. 11 mils

DataMIL Mini Map



APPENDIX G

PHOTOGRAPHS



NOTES:

1. THIS PRELIMINARY CONCEPT PLAN IS ADAPTED FROM PUBLIC DOMAIN AERIAL IMAGE TILES FROM THE DELAWARE DATAMIL WEBSITE. IMAGES ARE DATED 2008.

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- P1 → PHOTOGRAPH LOCATION AND DIRECTION

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HARRINGTON, DE 19033
TEL: 302.251.1000
FAX: 302.251.1001
WWW.DUFFIELDASSOCIATES.COM

DATE	PROJECT NO.	SCALE	APPENDIX
20 APRIL 2010	7854 EB	1"=350'	G

PHOTOGRAPH DIRECTION AND LOCATION SKETCH

WOODLANDS GOLF CLUB

SEAFORD-SUSSEX COUNTY - DELAWARE

DATE: 20 APRIL 2010

SCALE: 1"=350'

PROJECT NO: 7854 EB

APPENDIX G



Photograph 1 –Woodlands Golf Park, vegetated with
grasses and sporadic pine trees.



Photograph 2 –Eastern, man-made pond constructed in uplands
for the golf park.

**Woodlands Golf Park Potential
Jurisdictional Waters Evaluation**



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Project No. 7864.EB

Date: April 21, 2010



Photograph 3 –Western, man-made pond, constructed in uplands.



Photograph 4 –Agricultural ditch at proposed east Property boundary.

**Woodlands Golf Park Potential
Jurisdictional Waters Evaluation**



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