

Basis of Design Report (30%) Design Stage Operable Unit Two (OU2) Standard Chlorine of Delaware Superfund Site New Castle, New Castle County, Delaware

### **APPENDIX C:**

# Wetlands and Other Waters of the U.S. Delineation Report

### **Executive Summary**

The Standard Chlorine of Delaware site has seen multiple historical releases of chlorobenzenes during its past use as a manufacturing plant. This has led to contamination of the site soils and surrounding wetlands and waterways. In 2002, the property was abandoned to the custody of the United States Environmental Protection Agency (USEPA) and Delaware Department of Natural Resources (DNREC). The USEPA has designated multiple Operable Units to manage cleanup of the site (Project). The contents of this report relate to the delineation of wetlands and waterbodies conducted within the area of cleanup activity.

On behalf of the USEPA, AECOM conducted a wetland and watercourse delineation within the Standard Chlorine of Delaware site (Project) study area. The purpose of this report is to provide documentation of wetland boundary determination. The delineation involved a desktop review of existing information and a field delineation of wetlands and watercourses. Information collected during the desktop review was used in conjunction with the field delineation to identify regulated areas pursuant to regulations established by the United States Environmental Protection Agency (USEPA) under Section 404 of the Clean Water Act and delegated to the United States Army Corps of Engineers (USACE), as well as regulations established by DNREC under 7 DE Administrative Code: 7500 Wetlands and Subaqueous Lands, and 7 DE Administrative Code: Chapter 66: Delaware Wetlands Act. Permitting is not required for this project, but the substantive requirements of these regulations must be met.

Field delineation of the study area was conducted between August 28 - September 29, 2023 by AECOM wetland scientists. The wetlands and watercourse delineation identified five wetlands and 14 watercourses within the study area. The total delineated wetland area was 55.16 acres. The total delineated length of watercourses within the study area was 8,334 feet.

### **Table of Contents**

| 1 | Intro | ductior  | 1                                 | 1-1 |
|---|-------|----------|-----------------------------------|-----|
|   | 1.1   | Site De  | escription                        | 1-1 |
| 2 | Meth  | ods      |                                   | 2-1 |
|   | 2.1   | Deskto   | p Data Review                     | 2-1 |
|   | 2.2   | Field D  | Pelineation Methods               | 2-1 |
|   |       | 2.2.1    | Wetlands                          | 2-1 |
|   |       | 2.2.2    | Watercourses                      | 2-2 |
|   |       | 2.2.3    | Mapping                           | 2-3 |
| 3 | Resu  | ilts and | Discussions                       | 3-1 |
|   | 3.1   | Deskto   | p Data                            | 3-1 |
|   |       | 3.1.1    | Soils                             | 3-1 |
|   |       | 3.1.2    | NWI Wetlands                      | 3-1 |
|   |       | 3.1.3    | Delaware State Regulated Wetlands | 3-2 |
|   |       | 3.1.4    | Watercourses                      | 3-2 |
|   | 3.2   | Field D  | Delineation                       | 3-3 |
|   |       | 3.2.1    | Wetlands                          | 3-3 |
|   |       | 3.2.2    | Watercourses                      | 3-5 |
| 4 | Sum   | mary ai  | nd Conclusions                    | 4-1 |
| 5 | Refe  | rences   |                                   | 5-1 |

### Appendices

| Appendix A | USGS StreamStats Results         |
|------------|----------------------------------|
| Appendix B | Wetland Determination Data Forms |
| Appendix C | Watercourse Data Forms           |
| Appendix D | Photographic Log                 |

#### Figures

| Figure 1 | Project Location Map            |
|----------|---------------------------------|
| Figure 2 | Desktop Resources Map           |
| Figure 3 | DE State Regulated Wetlands Map |
| Figure 4 | Resource Delineation Map        |
|          |                                 |

#### Tables

| Table 1 | Mapped Soils within the Study Area            |
|---------|---|
| Table 2 | Wetlands Identified within the Study Area     |
| Table 3 | Watercourses Identified within the Study Area |

## **1** Introduction

The Standard Chlorine of Delaware site has seen multiple historical releases of chlorobenzenes during its past use as a manufacturing plant. This has led to contamination of the site soils and surrounding wetlands and waterways. In 2002, the property was abandoned to the custody of the United States Environmental Protection Agency (USEPA) and Delaware Department of Natural Resources (DNREC). The USEPA has designated multiple Operable Units to manage cleanup of the site (Project). The contents of this report relate to the delineation of wetlands and waterbodies conducted within the area of cleanup activity.

On behalf of the USEPA, AECOM conducted a wetland and watercourse delineation at the Standard Chlorine of Delaware Superfund Site (Project), located in New Castle County, Delaware. The purpose of this report is to provide documentation of wetland boundary determination. The delineation involved a desktop review of existing information and a field delineation of wetlands and watercourses. Information collected during the desktop review was used in conjunction with the field delineation to identify regulated areas pursuant to regulations established by the United States Environmental Protection Agency (USEPA) under Section 404 of the Clean Water Act and delegated to the United States Army Corps of Engineers (USACE), as well as regulations established by DNREC under 7 DE Administrative Code: 7500 Wetlands and Subaqueous Lands, and 7 DE Administrative Code: Chapter 66: Delaware Wetlands Act Permitting is not required for this project, but the substantive requirements of these regulations must be met.

The Project Study Area (PSA) is approximately 173 acres and includes a section of the Red Lion Creek extending from the River Road (State Route 9) bridge approximately 0.4 miles upstream to the west as well as the property affected by the historical releases. The PSA is illustrated in **Figures 1, 2, and 3**.

#### 1.1 Site Description

The PSA is approximately 173 acres and includes a section of the Red Lion Creek extending from the River Road (State Route 9) bridge approximately 0.4 miles upstream to the west. The rest of the PSA consists of wetlands dominated by *Phragmites* australis, hardwood forest, and maintained meadow areas over the prior location of the manufacturing plant. The PSA is bordered by maintained powerline right-of-ways on the west, east, and north boundaries.

## 2 Methods

This section describes the sources used in the desktop data review and the methods used during the field delineation process.

### 2.1 Desktop Data Review

A desktop data review of existing information was conducted to assess the potential presence of watercourses, wetlands, and/or wetland indicators within the study area prior to conducting the field delineation. Information reviewed included:

- United States Geological Survey (USGS) Saint Georges, DE 7.5-minute series topographical quadrangles (NGS, 2023) (**Figure 1**);
- United States Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) soil survey (USDA-NRCS, 2023) (Figure 2);
- United States Fish and Wildlife Services' (USFWS) National Wetland Inventory (NWI) Wetland Mapper (USFWS, 2023) (**Figure 2**);
- USGS National Hydrography Dataset (USGS, 2023);
- Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (FEMA, 2020) (**Figure 2**);
- USGS StreamStats (USGS, 2023) (Appendix A); and
- Delaware Department of Natural Resources and Environmental Control (DNREC) State Regulated Wetlands Map Index (DNREC 2024) (Figure 3).

### 2.2 Field Delineation Methods

Field delineation of the study area was conducted between August 28 - September 29, 2023 by AECOM wetland scientists.

#### 2.2.1 Wetlands

Wetlands were delineated using the routine method defined by the USACE *Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the Regional Supplement to the *Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0* (USACE, 2010). The routine method documents three parameters: vegetation, soil characteristics, and hydrology. It evaluates these parameters for evidence of wetland conditions. Wetland boundaries were identified, and the limits were documented using a combination of GPS and surveying equipment: Trimble S5 Robotic Total Station, and Trimble R10 Base and Rover, both capable of sub-foot accuracy. Data collected with the unit were transferred into a database for use in the development of mapping to be included with this report, agency consultations, permit applications, and plans. Paired upland and wetland data points were established at each wetland area to confirm delineated boundary conditions. Information regarding the vegetation, soil characteristics, and hydrology for each data point was documented using the USACE Atlantic and Gulf Coastal Plain Wetland Determination Data Form (**Appendix B**). Wetlands were classified based on dominant plant community or mix of communities [i.e., palustrine forested (PFO), palustrine scrub/shrub (PSS), palustrine emergent (PEM), and palustrine unconsolidated bottom (PUB)].

#### 2.2.1.1 Vegetation

Vegetation evaluation included identification of trees, saplings and shrubs, herbaceous plants, and woody vine species. As per the USACE guidance for this region, all vegetation strata were evaluated in an approximate 30-foot radius plot. For each stratum, plants were identified to the lowest taxon possible, and the dominant species were determined based on the absolute percent cover of each species. The wetland indicator status of each species was determined using the USACE *2020 National Wetland Plant List* (USACE, 2020).

#### 2.2.1.2 Soils

At each wetland sample location, a spade shovel or a one-piece hand-auger was used to excavate the soil for inspection of the soil profile. Soil horizon depths were measured and recorded. Each distinct horizon in the soil profile was also examined for hue, value, and chroma using a Munsell Soil color chart (Munsell Color, 2009). In addition, the texture, physical characteristics, and redoximorphic features, if present, of each horizon were noted. This information was used to evaluate the indicators of hydric soil conditions that meet USACE criteria.

#### 2.2.1.3 Hydrology

Wetland areas were evaluated by visual inspection for the presence of wetland hydrologic indicators, including but not limited to inundation, observed saturation, water marks, drift lines, sediment deposits, water-stained leaves, surface scour, drainage patterns, and/or morphological plant adaptations.

#### 2.2.2 Watercourses

Watercourses were identified by a defined streambed and bank; hydrologically sorted substrate material; observable dimension, pattern and profile; and the presence of an ordinary high-water mark (OHWM). Watercourse limits were delineated by identifying both the thalweg and OHWM of each bank. The OHWM was determined by the first substantial break in slope between the edge of the stream bed and the surrounding terrain, often displaying a clear line from scour where terrestrial vegetation was not present. All watercourse boundaries were marked with

sequentially numbered flags on the left and right banks (when facing downstream), and boundary points were collected using a GPS unit and/or survey equipment. Information regarding the stream including geomorphology, flow regime, and other streams characteristics was documented using an AECOM-modified *Physical Characterization/Water Quality Field Data Sheet*. The original base data sheets can be found in the United States Environmental Protection Agency's (USEPA) *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish* (Barbour et al., 1999) (**Appendix C**).

#### 2.2.3 Mapping

GPS data collected during the delineation was projected onto georeferenced aerial images to create maps used to illustrate the location and size of the delineated wetlands and watercourses for incorporation into the wetland delineation report and future use in agency consultations, permit applications, and plans.

## **3 Results and Discussions**

The following is a summary of findings from the desktop data review and the results of the field delineation efforts.

### 3.1 Desktop Data

The following provides the results of the desktop data review conducted for the soils, watercourses, and NWI wetlands within the study area.

#### 3.1.1 Soils

Soils mapped within the study area were identified from the USDA-NRCS soils database. The review indicated that seven soil mapping units are present in the study area. One of the soil mapping units is listed as being a major hydric soil, and two are listed as having major hydric soil inclusions (USDA-NRCS, 2023). The soils mapped in the study area are listed in Table 1 and are illustrated in **Figure 2**.

| Soil Map<br>Unit | Description  | Hydric Rating<br>by Map Unit<br>(%) |
|------------------|--|-------------------------------------|
| NM               | Nanticoke and Mannington soils, very frequently flooded, tidal | 100                                 |
| ReA              | Reybold silt loam, 0 to 2% slopes                              | 0                                   |
| ReB              | Reybold silt loam, 2 to 5%slopes                               | 0                                   |
| ReC              | Reybold silt loam, 5 to 10% slopes                             | 0                                   |
| SaD              | Sassafras sandy loam, 10 to 15% slopes                         | 5                                   |
| SaE              | Sassafras sandy loam, 15 to 25% slopes                         | 5                                   |
| Up               | Urban land   | 0                                   |

#### Table 1: Mapped Soils within the Study Area

#### 3.1.2 NWI Wetlands

USFWS NWI maps illustrate wetland habitats and vegetation communities using interpretation of aerial photography. The data on these maps provide general boundaries of potential wetlands and require ground surveys to accurately define the boundaries of wetlands present, if any, and determine their proper classification. The habitats and communities identified are classified according to the scheme provided in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979).

A review of the USFWS NWI Wetlands Mapper website identified nine NWI features within the study area (**Figure 2**). The features include the main channel of the Red Lion Creek and surrounding estuarine and freshwater wetlands. These features are described as:

- Estuarine, subtidal, unconsolidated bottom, subtidal (E1UBL)
- Estuarine, intertidal, emergent, *Phragmites australis*, irregularly flooded, oligohaline (E2EM5P6)
- Palustrine, emergent, persistent, seasonally flooded fresh tidal (PEM1R)
- Palustrine, forested, broad-leaved deciduous, seasonally flooded (PFO1C)
- Palustrine, forested, broad-leaved deciduous, seasonally flooded-fresh tidal (PFO1R)
- Palustrine, forested, broad-leaved deciduous, temporarily flooded (PFO1A)
- Palustrine, scrub-shrub, broad-leaved deciduous, seasonally flooded-fresh tidal (PSS1R)
- Palustrine, unconsolidated bottom, permanently flooded, excavated (PUBHx)

#### 3.1.3 Delaware State Regulated Wetlands

A review of the DNREC State Regulated Wetlands Map Index identified several state regulated wetlands classified as water and marsh wetlands within the study area (DNREC, 2024) (**Figure 3**). These wetlands are limited to the Red Lion Creek and its associated marsh floodplains.

#### 3.1.4 Watercourses

The study area drains directly into the Red Lion Creek which is within the Red Lion Creek-Frontal Delaware River Watershed (HUC 020402050703). Red Lion Creek-Frontal Delaware River Watershed is located at the lower end of the Brandywine-Christina subbasin, which is within the Lower Delaware Basin. Based on available National Flood Hazard Layer (FEMA, 2023), the portion of Red Lion Creek within the study area is mapped as a 100-year FEMA floodplain. Floodplain data is displayed on **Figure 2**.

The drainage area of Red Lion Creek was calculated using the USGS StreamStats (Version 4.18.1) Web Application. The drainage area of Red Lion Creek at the downstream limit of the PSA is 8.67 square miles. Copies of the USGS StreamStats results for all watercourses are provided in **Appendix A**.

According to 7 DE Administrative Code: 7500 Wetlands and Subaqueous Lands, Red Lion Creek and its drainage basin have Designated Use categories of public water supply (freshwater sections only, goal use – not currently attained), industrial water supply, primary

contact recreation, secondary contact recreation, fish, aquatic life & wildlife, agricultural water supply (freshwater sections only) (DNREC, 2023).

#### 3.2 Field Delineation

The field delineation conducted between August 28 - September 29, 2023, resulted in the identification of fifteen watercourses and five wetlands within the study area. Mapping showing the location and extent of the wetlands and watercourses is illustrated on **Figure 3**, and a photographic log is provided in **Appendix D**.

#### 3.2.1 Wetlands

Five wetlands were identified within the study area, one of which contains mapped Delaware State Regulated Wetlands. At least one wetland sample point was taken for each wetland to characterize the properties of the hydrology, vegetation, and soil of the wetland. The field data forms are provided in **Appendix B**. Due to the installation of a tide gate on Rt 9 downstream of the PSA, it was noted that the classification of these wetlands did not include any estuarine features as initially indicated by the NWI features described in Section 3.1.2. Water levels were observed over the course of several months and no tidal pattern was observed, indicating that the tide gate is functioning.

| Wetland<br>Identification <sup>(1)</sup> | Classification | Watershed              | Delineated<br>Size (acres) <sup>(2)</sup> |  |
|--|----------------|------------------------|---|--|
| W-JRK-001                                | PEM            | Red Lion Creek-Frontal | 47.99                                     |  |
|  | PFO            | Delaware River         | 6.57                                      |  |
| W-JRK-002                                | PEM            | -                      | 0.25                                      |  |
| W-JRK-003                                | PEM            |                        | 0.10                                      |  |
| W-JRK-004                                | PEM            |                        | 0.21                                      |  |
| W-JRK-005                                | PEM            | -                      | 0.04                                      |  |
|  |                | Total delineated acres | 55.16                                     |  |

#### Table 2: Wetlands Identified within the Study Area

Notes:

PEM = Palustrine Emergent

PFO = Palustrine Forested

(1) Wetland ID generated by AECOM during field delineation

(2) Area of the wetland as delineated within the Study Area

#### 3.2.1.1 Wetland W-JRK-001 PEM

W-JRK-001 PEM is a PEM wetland community located within the greater W-JRK-001 complex. The PEM community represents the Phragmites australis dominated wetland adjacent to Red Lion Creek, as well as a small segment of PEM community in a cleared powerline ROW at the western side of the PSA. This wetland also contains areas mapped as Delaware State Regulated Wetlands and classified as marsh wetlands (**Figure 3**). Surface water runoff, high water table, spring seeps, and flooding from Red Lion Creek all contribute to the hydrology of this wetland. The wetland boundary generally follows the toe of slope. Observed wetland hydrology indicators included Surface Water (A1), High Water Table (A2), Soil Saturation (A3), Drainage Patterns (B10), Geomorphic Position (D2), and FAC-neutral Test (D5). The observed dominant vegetation included common reed (Phragmites australis), Japanese stiltgrass (Microstegium vimineum), false nutsedge (Cyperus strigosus), and sensitive fern (Onoclea sensibilis). The observed hydric soil indicators included Depleted Matrix (F3) and Depleted Below Dark Surface (A11).

#### 3.2.1.2 Wetland W-JRK-001 PFO:

W-JRK-001 PFO is a PFO wetland community located within the greater W-JRK-001 complex. The PFO community represents a forest on the west side of the PSA crossed by multiple stream channels, as well as a forested edge to the PEM community adjacent to Red Lion Creek. Surface water runoff, high water table, spring seeps, and flooding from Red Lion Creek all contribute to the hydrology of this wetland. The wetland boundary generally follows the toe of slope. Observed wetland hydrology indicators included Surface Water (A1), High Water Table (A2), Soil Saturation (A3), Drift Deposits (B3), Water-Stained Leaves (B9), Drainage Patterns (B10), Geomorphic Position (D2), and FAC-neutral Test (D5). The observed dominant vegetation included red oak (Acer rubrum), green ash (Fraxinus pennsylvanica), spicebush (Lindera benzoin), arrowwood viburnum (Viburnum dentatum), black willow (Salix nigra), common reed, netted chainfern (Woodwardia areolate), sensitive fern, small-spike false nettle (Boehmeria cylindrica), oriental bittersweet (Celasturs orbiculatus), and Japanese honeysuckle (Lonicera japonica) amongst others. The observed hydric soil indicators included Depleted Below Dark Surface (A11), Depleted Matrix (F3), and Redox Dark Surface (F6).

#### 3.2.1.3 Wetland W-JRK-002 PEM:

W-JRK-002 is a PEM wetland that is located within the eastern section of the PSA. The wetland is a depression crossed by stream S-JRK-011. Surface water runoff, high water table, and spring seeps all contribute to the hydrology of this wetland. The wetland boundary follows the toe of slope of hillsides and microtopographic relief surrounding the stream and its channels. Observed wetland hydrology indicators included Saturation (A3), Drainage Patterns (B10), and Geomorphic Position (D2). The observed dominant vegetation included silver maple (Acer Saccharinum), spicebush, amur honeysuckle (Lonicera maackii), Japanese stiltgrass, common reed, poison ivy (Toxicodendron radicans), raspberry (Rubus idaeus), and oriental bittersweet. The soil observed met the Depleted Matrix (F3) indicator for hydric soils.

#### 3.2.1.4 Wetland W-JRK-003 PEM

W-JRK-003 is a PEM wetland that is located within the eastern side of the facility property. The wetland is an isolated depression that extends north and south of the facilities northern fence

line. Surface water runoff, and poor draining soil containing fill material contribute to the hydrology of this wetland. The wetland boundary follows the toe of slope of the slight topographic depression as well as visible transition patterns in vegetation. Observed wetland hydrology indicators included Geomorphic Position (D2) and FAC-Neutral Test (D5). The observed dominant vegetation included common reed, dotted smartweed (Persicaria punctata), and soft rush (Juncus effusus). Observed hydric soil indicators included Depleted Matrix (F3) and Redox Depressions (F8).

#### 3.2.1.5 Wetland W-JRK-004 PEM

W-JRK-004 is a PEM wetland that is located within the eastern side of the facility property. The wetland is an isolated depression that extends north and south of the facilities northern fence line. The wetland is located west of an access road and west of wetland W-JRK-003. Surface water runoff, and poor draining soil containing fill material contribute to the hydrology of this wetland. The wetland boundary follows the toe of slope of the slight topographic depression as well as visible transition patterns in vegetation. Observed wetland hydrology indicators included Geomorphic Position (D2) and FAC-Neutral Test (D5). The observed dominant vegetation included common reed, and soft rush (Juncus effusus). The soil observed met the Redox Depressions (F8) indicator for hydric soils.

#### 3.2.1.6 Wetland W-JRK-005 PEM

W-JRK-005 is a PEM wetland that is located north of the facility property fence line. The wetland is a small, isolated depression that is located north of wetland W-JRK-004 and west of the access road. extends north and south of the facilities northern fence line. Surface water runoff, and poor draining soil containing fill material contribute to the hydrology of this wetland. The wetland boundary follows the toe of slope of the slight topographic depression as well as visible transition patterns in vegetation. Observed wetland hydrology indicators included Geomorphic Position (D2) and FAC-Neutral Test (D5). The observed dominant vegetation included redtop (Agrostis gigantea), and path rush (Juncus tenuis). Observed hydric soil indicators included Depleted Matrix (F3) and Redox Depressions (F8).

#### 3.2.2 Watercourses

Fourteen watercourses were identified within the study area; field data forms are located in **Appendix C**. Brief descriptions of the watercourses are provided below. In addition to delineated watercourses, multiple channels within the wetland were extrapolated from elevation survey data and aerial imagery. They were unable to be ground verified due to the inability to safely access the interior of the wetland. These channels are also illustrated on **Figure 3**.

| Watercourse<br>Identification | Local Name            | Stream Class | Top of Bank<br>Width<br>(average feet) | Delineated<br>Length<br>(linear feet) |
|-------------------------------|-----------------------|--------------|--|---------------------------------------|
| S-JRK-001                     | UNT to Red Lion Creek | Intermittent | 8                                      | 374                                   |
| S-JRK-002                     | UNT to Red Lion Creek | Ephemeral    | 9                                      | 38                                    |
| S-JRK-003                     | UNT to Red Lion Creek | Perennial    | 9.35                                   | 3,086                                 |
| S-JRK-004                     | UNT to Red Lion Creek | Ephemeral    | 7                                      | 189                                   |
| S-JRK-005                     | UNT to Red Lion Creek | Ephemeral    | 5.5                                    | 104                                   |
| S-JRK-006                     | UNT to Red Lion Creek | Intermittent | 4.5 to 7                               | 662                                   |
| S-JRK-006A                    | UNT to Red Lion Creek | Intermittent | 2.38                                   | 26                                    |
| S-JRK-007                     | UNT to Red Lion Creek | Intermittent | 10.5                                   | 577                                   |
| S-JRK-008                     | UNT to Red Lion Creek | Ephemeral    | 7                                      | 159                                   |
| S-JRK-009                     | UNT to Red Lion Creek | Intermittent | 6                                      | 82                                    |
| S-JRK-010                     | UNT to Red Lion Creek | Ephemeral    | 7.5 to 8                               | 354                                   |
| S-JRK-011                     | UNT to Red Lion Creek | Intermittent | 6.75                                   | 451                                   |
| S-JRK-012                     | UNT to Red Lion Creek | Intermittent | 2.5                                    | 82                                    |
| S-JRK-013                     | Red Lion Creek        | Perennial    | 47                                     | 2,150                                 |
|                               |                       | Total d      | elineated length:                      | 8,334                                 |

#### Table3: Watercourses Identified within the Study Area

#### 3.2.2.1 Watercourse S-JRK-001

Watercourse S-JRK-001 (UNT to Red Lion Creek) is a moderate gradient, intermittent watercourse that flows westward through the southwestern part of the PSA, surrounded by small riparian and upland woodlands. The stream reach within the PSA originates just north of Governor Lea Road and just west of the Trash Tech property and drains further to the west into wetland W-JRK-001. The stream has a moderately linear flow morphology with riffle/pool/run complexes although the stream had no flow at the time of survey. The stream has an approximate TOB width of 8 feet and total depth of 2 feet. The substrate consists of cobble, gravel, sand, and silt, and contains a moderate percentage of detritus. The delineated length of the watercourse is 374 feet.

#### 3.2.2.2 Watercourse S-JRK-002

Watercourse S-JRK-002 (UNT to Red Lion Creek) is a moderate gradient, ephemeral watercourse that flows north within the southwestern part of the PSA, surrounded by small riparian and upland woodlands. The stream reach originates southwest of stream S-JRK-001 at a culvert directly north of Governor Lea Road and drains into S-JRK-001 to the north. The stream has a generally linear flow morphology with pool/run complexes although the stream had no flow at the time of survey. The stream had an approximate TOB width of 9 feet and total

depth of 2 feet. The substrate consists of sand and silt and contains a small percentage of detritus. The delineated length of the watercourse is 38 feet.

#### 3.2.2.3 Watercourse S-JRK-003

Watercourse S-JRK-003 (UNT to Red Lion Creek) is a low gradient, perennial watercourse that flows north through the western part of the PSA, surrounded by a large riparian woodland and phragmites dominated wetlands. The stream reach within the PSA originates just north of Governor Lea Road via a large culvert and drains far to the north directly into Red Lion Creek (S-JRK-013). The stream flow morphology has a moderate to advanced sinuosity with riffle/pool/run complexes. The stream has an approximate TOB width of 9.35 feet and total depth of 1.8 feet. The substrate consists of cobble, gravel, sand, and silt, and contains a small percentage of detritus. The delineated length of the watercourse is 3,086 feet.

#### 3.2.2.4 Watercourse S-JRK-004

Watercourse S-JRK-004 (UNT to Red Lion Creek) is a high gradient, ephemeral watercourse that flows west within the western part of the PSA, surrounded by upland woodlands. The stream reach within the PSA originates from a culvert at the top of a steep slope just west of the Trash Tech property and drains into wetland W-JRK-001 downslope and to the west. The stream flow morphology has a slight sinuosity with riffle/pool/run complexes although there was no flow present at the time of survey. The stream has an approximate TOB width of 7 feet and total depth of 2.5 feet. The substrate consists of cobble, gravel, sand, silt, and contains a moderately high percentage of detritus. The delineated length of the watercourse is 189 feet.

#### 3.2.2.5 Watercourse S-JRK-005

Watercourse S-JRK-005 (UNT to Red Lion Creek) is a high gradient, ephemeral watercourse that flows west within the western part of the PSA, surrounded by upland woodlands. The stream reach within the PSA originates from a culvert at the top of a steep slope just west of the Trash Tech property and drains into wetland W-JRK-001 downslope and to the west. The stream is located just north of stream S-JRK-004. The stream flow morphology has a moderate sinuosity with riffle/pool/run complexes although there was no flow present at the time of survey. The stream has an approximate TOB width of 5.5 feet and total depth of 3.5 feet. The substrate consists of boulders, cobble, gravel, sand, and silt, and contains a small percentage of detritus. The delineated length of the watercourse is 104 feet.

#### 3.2.2.6 Watercourse S-JRK-006

Watercourse S-JRK-006 (UNT to Red Lion Creek) is a low gradient, intermittent watercourse that flows north through the western part of the PSA, surrounded by large riparian woodlands. The stream reaches within the PSA originate from a spring seep within the southwestern end of wetland W-JRK-001 and drain into S-JRK-007 to the north. The stream flow morphology has a

low to moderate sinuosity with riffle/pool/run complexes. The stream has an approximate TOB width of 4.5-7 feet and total depth between 1 and 3.4 feet. The substrate consists of cobble, gravel, sand, and silt, and contains a moderately high percentage of muck-mud components. The delineated length of the watercourse is 662 feet.

#### 3.2.2.7 Watercourse S-JRK-006A

Watercourse S-JRK-006A (UNT to Red Lion Creek) is a low gradient, intermittent watercourse that flows northwest within the western part of the PSA, surrounded by large riparian woodlands. The stream reach originates from a spring seep within the southwestern end of wetland W-JRK-001 and drains into S-JRK-006 to the northwest. The stream has a moderately linear flow morphology with pool/run complexes. The stream has an approximate TOB width of 2.38 feet and total depth of 0.9 feet. The substrate consists of silt and contains a moderately high percentage of detritus and muck-mud components. The delineated length of the watercourse is 26 feet.

#### 3.2.2.8 Watercourse S-JRK-007

Watercourse S-JRK-007 (UNT to Red Lion Creek) is a low gradient, intermittent watercourse that flows north within the western part of the PSA, surrounded by large riparian woodlands. The stream reach originates from a spring seep within the western end of wetland W-JRK-001 and drains into S-JRK-007 to the northwest. The stream has a moderately linear flow morphology with pool/run complexes. The stream has an approximate TOB width of 10.5 feet and total depth of 4.1 feet. The substrate consists of sand, silt, and clay, and contains a low percentage of detritus. The delineated length of the watercourse is 577 feet.

#### 3.2.2.9 Watercourse S-JRK-008

Watercourse S-JRK-008 (UNT to Red Lion Creek) is a high gradient, ephemeral watercourse that flows west within the western part of the PSA, surrounded by large riparian and upland woodlands. The stream reach originates from a culvert along the top of a hillside bordering the Trash Tech property to the east and drains into stream S-JRK-003. The stream is located north of S-JRK-005. The stream has a moderately sinuous flow morphology with riffle/pool/run complexes although no flow was present at the time of survey. The stream has an approximate TOB width of 7 feet and total depth of 3 feet. The substrate consists of boulders, cobble, gravel, sand, and silt, and contains a moderate percentage of detritus. The delineated length of the watercourse is 159 feet.

#### 3.2.2.10 Watercourse S-JRK-009

Watercourse S-JRK-009 (UNT to Red Lion Creek) is a low gradient, ephemeral watercourse that flows northeast within the western part of the PSA, surrounded by large riparian woodlands. The stream reach originates from a spring seep within wetland W-JRK-001 and drains into

stream S-JRK-006 to the northeast. The stream has a generally linear flow morphology with pool/run complexes. The stream has an approximate TOB width of 6 feet and total depth of 1.2 feet. The substrate consists of cobble, sand, and silt, and contains a moderate percentage of detritus and muck-mud components. The delineated length of the watercourse is 82 feet.

#### 3.2.2.11 Watercourse S-JRK-010

Watercourse S-JRK-010 (UNT to Red Lion Creek) is a high gradient, ephemeral watercourse that flows west within the western part of the PSA, surrounded by large riparian and upland woodlands. The stream reaches originate from the top of a hillside at the western side of the facility property and drain into wetland W-JRK-001. The stream is located east of the W-JRK-001 PFO 2 data point. The stream has a moderately sinuous flow morphology with riffle/pool/run complexes although no flow was present at the time of survey. The stream has an approximate TOB width of 7.5-8 feet and total depth of 4 feet. The substrate consists of boulders, cobble, gravel, sand, and silt, and contains a low percentage of detritus. The delineated length of the watercourse is 354 feet.

#### 3.2.2.12 Watercourse S-JRK-011

Watercourse S-JRK-011 (UNT to Red Lion Creek) is a moderate gradient, intermittent watercourse that flows north within the eastern part of the PSA, surrounded by large riparian and upland woodlands. The stream reach originates from a culvert along the east side embankment of the facility property and braids throughout wetland W-JRK-002. The stream exits wetland W-JRK-002 to the north and drains into wetland W-JRK-001. Apart from the inwetland braiding, the stream has a generally linear flow morphology with pool/run complexes although no flow was present at the time of survey. The stream has an approximate TOB width of 6.75 feet and total depth of 0.75 feet. The substrate consists of sand, and silt, and contains a moderate percentage of detritus and muck-mud components. The delineated length of the watercourse is 451 feet.

#### 3.2.2.13 Watercourse S-JRK-012

Watercourse S-JRK-012 (UNT to Red Lion Creek) is a high gradient, intermittent watercourse that flows east within the western part of the PSA, surrounded by large riparian and upland woodlands as well as a cleared ROW. The stream reach originates from a spring fed culvert at the base of the berm on the eastern side of the cleared ROW. The stream hydrology is fed by groundwater associated with wetland community W-JRK-001 PEM 2. The stream dissipates to the east into wetland W-JRK-001 (PFO 1A). The stream has a slightly sinuous flow morphology with riffle/pool/run complexes. The stream has an approximate TOB width of 2.5 feet and total depth of 1 foot. The substrate consists of gravel, sand, and silt, and contains a small percentage of detritus and muck-mud components. The delineated length of the watercourse is 82 feet.

#### 3.2.2.14 Watercourse S-JRK-013

Watercourse S-JRK-013 (Red Lion Creek) is a low gradient, perennial watercourse that flows east across the northern most end of the PSA, surrounded by a large common reed dominated floodplain and riparian and upland woodlands. The stream is open ended both upstream and downstream from the PSA extents. The stream reach within the PSA has a generally linear flow morphology that lacks riffle/pool complexes. The stream has an approximate TOB width of 47 feet and total depth of 3 feet. The substrate consists of just silt and contains a moderately high percentage of muck-mud components. The delineated length of the watercourse is 2,150 feet.

## **4** Summary and Conclusions

The wetlands and watercourse delineation identified five wetlands and 14 watercourses within the study area. One delineated wetland contained mapped Delaware State Regulated Marsh Wetlands. The total delineated wetland area was 55.16 acres. The total delineated length of watercourses within the study area was 8,334 feet. Permitting is not required for this project, but the substantive requirements of these regulations must be met.

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### **Figures**



L:\DCS\Projects\ENV\60707136\_Standard\_Chlorine\_Field\900\_CAD\_GIS\920\_GIS\maps\StandardChlorine\_Figure 1 - USGS.mxd



| PUBHx: Palustrine, | unconsolidated | bottom, | permanently |
|--------------------|----------------|---------|-------------|
| flooded, excavated |                |         |             |

Up: Urban land

SaD: Sassafras sandy loam, 10 to 15 percent slopes SaE: Sassafras sandy loam, 15 to 25 percent slopes

Ω

NWI WETLAND 100 YEAR FLOODPLAIN 500 1,000 1,500 2,000 Feet

09/2023 SOIL MAP UNIT: USDA-NRCS, SOIL SURVEY GEOGRAPHIC DATABASE FOR NEW CASTLE COUNTY, DE, 09/2023

#### **DESKTOP RESOURCES MAP** NEW CASTLE, NEW CASTLE COUNTY, DE









NEW CASTLE, NEW CASTLE COUNTY, DE



CHANNEL

0

100

200

300

400

Feet

### FIGURE 4 **RESOURCE DELINEATION MAP** NEW CASTLE, NEW CASTLE COUNTY, DE

















Checked by: JRK

Date: 6/13/2024



300

400

Feet

200

CHANNEL

0

100

# FIGURE 4

#### **RESOURCE DELINEATION MAP** NEW CASTLE, NEW CASTLE COUNTY, DE



**Appendix A – USGS Streamstats Results** 

#### StreamStats Report

 Region ID:
 DE

 Workspace ID:
 DE20231106154925082000

 Clicked Point (Latitude, Longitude):
 39.60537, -75.63060

 Time:
 2023-11-06 10:49:51 -0500



#### Collapse All

#### > Basin Characteristics

| Parameter Code | Parameter Description                   | Value | Unit         |
|----------------|---|-------|--------------|
| DRNAREA        | Area that drains to a point on a stream | 8.67  | square miles |

#### > Bankfull Statistics

Bankfull Statistics Parameters [Atlantic Plain D Bieger 2015]

| Parameter Code                           | Parameter Name                 | Value       | Units        | Min Limit | Max Limit  |
|--|--------------------------------|-------------|--------------|-----------|------------|
| DRNAREA                                  | Drainage Area                  | 8.67        | square miles | 0.30888   | 1086.8715  |
| Bankfull Statistics Parame               | ters [USA Bieger 2015]         |             |              |           |            |
| Parameter Code                           | Parameter Name                 | Value       | Units        | Min Limit | Max Limit  |
| DRNAREA                                  | Drainage Area                  | 8.67        | square miles | 0.07722   | 59927.7393 |
| Bankfull Statistics Parame               | ters [VA MD Coastal Plain b    | ankfull SIR | 2007 5162]   |           |            |
| Parameter Code                           | Parameter Name                 | Value       | Units        | Min Limit | Max Limit  |
| DRNAREA                                  | Drainage Area                  | 8.67        | square miles | 0.28      | 113        |
|  |                                |             |              |           |            |
| Bankfull Statistics Flow Re              | port [Atlantic Plain D Bieger  | 2015]       |              |           |            |
| Bankfull Statistics Flow Re<br>Statistic | eport [Atlantic Plain D Bieger | 2015]       |              | Value     | Unit       |

#### 11/6/23, 10:51 AM

StreamStats

| Statistic   | Value                        | Unit             |
|---|------------------------------|------------------|
| Bieger_D_channel_depth  | 2.15                         | ft               |
| Bieger_D_channel_cross_sectional_area                                       | 46.4                         | ft^2             |
| Bankfull Statistics Flow Report [USA Bieger 2015]                           |                              |                  |
|   |                              |                  |
| Statistic   | Value                        | Unit             |
| Statistic<br>Bieger_USA_channel_width                                       | <b>Value</b><br>26.5         | Unit<br>ft       |
| Statistic         Bieger_USA_channel_width         Bieger_USA_channel_depth | <b>Value</b><br>26.5<br>1.91 | Unit<br>ft<br>ft |

#### Bankfull Statistics Flow Report [VA MD Coastal Plain bankfull SIR2007 5162]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

| Statistic           | Value | Unit   | SE   |
|---------------------|-------|--------|------|
| Bankfull Width      | 23    | ft     | 23.1 |
| Bankfull Depth      | 2.07  | ft     | 18.1 |
| Bankfull Area       | 47.6  | ft^2   | 28.6 |
| Bankfull Streamflow | 103   | ft^3/s | 59.3 |

#### Bankfull Statistics Flow Report [Area-Averaged]

| Statistic                               | Value | Unit   |      |
|---|-------|--------|------|
| Bieger_D_channel_width                  | 22.5  | ft     |      |
| Bieger_D_channel_depth                  | 2.15  | ft     |      |
| Bieger_D_channel_cross_sectional_area   | 46.4  | ft^2   |      |
| Bieger_USA_channel_width                | 26.5  | ft     |      |
| Bieger_USA_channel_depth                | 1.91  | ft     |      |
| Bieger_USA_channel_cross_sectional_area | 54.9  | ft^2   |      |
| Bankfull Width                          | 23    | ft     | 23.1 |
| Bankfull Depth                          | 2.07  | ft     | 18.1 |
| Bankfull Area                           | 47.6  | ft^2   | 28.6 |
| Bankfull Streamflow                     | 103   | ft^3/s | 59.3 |

#### Bankfull Statistics Citations

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?

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#### 11/6/23, 10:51 AM

Application Version: 4.18.1 StreamStats Services Version: 1.2.22 NSS Services Version: 2.2.1 StreamStats
**Appendix B – Wetland Data Forms** 

| U.S. Army Corps of Engineers<br>WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region<br>See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R   | OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a) |
|--|---|
| Project/Site: Standard Chlorine City/County: New Castle,   | New Castle Co. Sampling Date: 9/1/23  |
| Applicant/Owner: United States Environmental Protection Agency (EPA)   | State: DE Sampling Point: W-JRK-001-PEM 1   |
| Investigator(s): J. Keil, C. Barrett Section, Township, Range: N/  | A   |
| Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, nor  | ne): concave Slope (%): 1   |
| Subregion (LRR or MLRA): LRR S. MLRA 149A Lat: 39 601738   | 538349 Datum: NAD 83  |
| Soil Map Unit Name: SaF: Sassafras sandy loam 10 to 15% slopes   | NWI classification: PFM1R   |
| Are climatic / hydrologic conditions on the site typical for this time of year?  |   |
| Are Vagetation Soil or Hydrology $a_{1}a_{2}a_{3}a_{4}a_{5}a_{5}a_{5}a_{5}a_{5}a_{5}a_{5}a_{5$   |   |
| Are Vegetation, Soil, or Hydrologysignificantly disturbed? Are Normal Circle   |   |
| Are vegetation, soil, of Hydrologynaturally problematic? (if needed, explai  | n any answers in Remarks.)  |
| SUMMARY OF FINDINGS – Attach site map showing sampling point location  | s, transects, important features, etc.  |
| Hydrophytic Vegetation Present?       Yes       X       No       Is the Sampled Area         Hydric Soil Present?       Yes       X       No       within a Wetland?         Wetland Hydrology Present?       Yes       X       No       Is the Sampled Area | Yes <u>X</u> No   |
| Remarks:<br>This is the data point for the palustrine emergent wetland (PEM) community within wetland (001) dor<br>berm and is adjacent to a palustrine forested wetland (PFO) community. It is in a depression and had<br>as a mucky surface.               | ninated by phragmities and beginning south of a<br>d surface water in spots (not at soil core) as well                    |
| HYDROLOGY  |   |
| Wetland Hydrology Indicators:  | econdary Indicators (minimum of two required)   |
| Primary Indicators (minimum of one is required; check all that apply)  | Surface Soil Cracks (B6)  |
| X Surface Water (A1) Aquatic Fauna (B13)   | Sparsely Vegetated Concave Surface (B8)   |
| X High Water Table (A2) Marl Deposits (B15) (LRR U) X Seturation (A2)  | Drainage Patterns (B10)   |
| Water Marks (B1)   | Dry-Season Water Table (C2)   |
| Sediment Deposits (B2) Presence of Reduced Iron (C4)   | Cravfish Burrows (C8)   |
| Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6)   | Saturation Visible on Aerial Imagery (C9)   |
| Algal Mat or Crust (B4) Thin Muck Surface (C7)   | Geomorphic Position (D2)  |
| Iron Deposits (B5) Other (Explain in Remarks)  | Shallow Aquitard (D3)   |
| Inundation Visible on Aerial Imagery (B7)  | FAC-Neutral Test (D5)   |
| Water-Stained Leaves (B9)  | _Sphagnum Moss (D8) (LRR T, U)  |
| Field Observations:  |   |
| Surface Water Present? Yes X No Depth (inches): 2.5  |   |
| Saturation Present? Yes X No Depth (inches): 0 Wetland Hvr   | drology Present? Yes X No   |
| (includes capillary fringe)  |   |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if avail  | able:   |
| Remarks:   |   |
| Several primary and secondary indicators of wetland hydrology were observed. Wetland hydrology is  | present.  |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |

Sampling Point: W-JRK-001-PEM 1

|   | Absolute     | Dominant        | Indicator    |  |
|---|--------------|-----------------|--------------|--|
| Tree Stratum (Plot size: 30 ft )                        | % Cover      | Species?        | Status       | Dominance Test worksheet:                                      |
| 1   |              |                 |              | Number of Dominant Species                                     |
| 2.  |              |                 |              | That Are OBL, FACW, or FAC: (A)                                |
| 3.  |              |                 |              | Total Number of Dominant                                       |
| 4.  |              |                 |              | Species Across All Strata: 4 (B)                               |
| 5.  |              |                 |              | Percent of Dominant Species                                    |
| 6.  |              |                 |              | That Are OBL, FACW, or FAC: 100.0% (A/B)                       |
| 7.  |              |                 |              | Prevalence Index worksheet:                                    |
| 8   |              |                 |              | Total % Cover of: Multiply by:                                 |
|   |              | -Total Cover    |              | $OBI \text{ species}$ 0 $x_1 = 0$                              |
| 50% of total cover                                      | 20%          | of total cover: |              | $\frac{105}{105} = \frac{105}{105} = \frac{105}{100}$          |
| Sopling/Shrub Strotum (Plot size: 20 ft )               | 2078         | or total cover. |              | $\frac{1}{100} \times 2 = \frac{1}{210}$                       |
| <u>Sapling/Shiub Stratum</u> (Plot size. <u>30 it</u> ) | -            | N/s s           |              | FAC species $15$ $x_3 = 45$                                    |
| 1. Fraxinus pennsylvanica                               |              | Yes             | FACW         | FACU species $2 \times 4 = 8$                                  |
| 2. Acer negundo   | 5            | Yes             | FAC          | UPL species $0 \times 5 = 0$                                   |
| 3.  |              |                 |              | Column Totals: <u>122</u> (A) <u>263</u> (B)                   |
| 4.  |              |                 |              | Prevalence Index = B/A = 2.16                                  |
| 5   |              |                 |              | Hydrophytic Vegetation Indicators:                             |
| 6.  |              |                 |              | 1 - Rapid Test for Hydrophytic Vegetation                      |
| 7.  |              |                 |              | X 2 - Dominance Test is >50%                                   |
| 8.  |              |                 |              | X 3 - Prevalence Index is $\leq 3.0^1$                         |
|   | 10           | =Total Cover    |              | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)      |
| 50% of total cover: 5                                   | 20%          | of total cover: | 2            |  |
| Herb Stratum (Plot size: 30 ft )                        |              |                 |              |  |
| 1 Phragmites australis                                  | 90           | Yes             | FACW         |  |
| 2 Boehmeria cylindrica                                  | 5            | <u> </u>        | FACW         | Indicators of hydric soil and wetland hydrology must be        |
|   | 5            | No              |              | Definitions of Four Vagetation Strate:                         |
|   |              |                 | FACW         | Deminions of Four Vegetation Strata.                           |
| 4.  |              |                 |              | <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or |
| 5   |              |                 |              | height   |
| 6.  |              |                 |              | holgh  |
| 7   |              |                 |              | Sapling/Shrub – Woody plants, excluding vines, less            |
| 8   |              |                 |              | than 3 in. DBH and greater than 3.28 ft (1 m) tall.            |
| 9   |              |                 |              |  |
| 10  |              |                 |              | Herb All borboccous (non woody) planta, regardlage             |
| 11  |              |                 |              | of size, and woody plants less than 3.28 ft tall.              |
| 12.   |              |                 |              |  |
|   | 100          | =Total Cover    |              | Woody Vine – All woody vines greater than 3.28 ft in           |
| 50% of total cover: 5                                   | 0 20%        | of total cover: | 20           | height.  |
| Woody Vine Stratum (Plot size: 30 ft )                  |              |                 |              |  |
| 1 Persicaria perfoliata                                 | 10           | Yes             | FAC          |  |
| 2 Vitis aestivalis                                      | 2            | <u></u> No      | FACU         |  |
| 2. 1113 destruits                                       |              |                 | 1400         |  |
| S   |              | <u> </u>        |              |  |
| 4.  |              |                 |              |  |
| 5.  |              |                 |              | Hydrophytic  |
|   | 12           | =Total Cover    |              | Vegetation   |
| 50% of total cover:                                     | <u> </u>     | of total cover: | 3            | Present?   |
| Remarks: (If observed, list morphological adaptation    | ns below.)   |                 |              |  |
| Vegetation observed meets the dominance test and        | prevalence i | ndex indicators | for hydrophy | ytic vegetation.   |
|   |              |                 |              |  |
|   |              |                 |              |  |

| Profile Desc            | ription: (Describe t  | o the dep   | th needed to doc    | ument th               | he indica         | ator or c                | onfirm the        | e absence of ind             | icators.)                        |                                 |
|-------------------------|-----------------------|-------------|---------------------|------------------------|-------------------|--------------------------|-------------------|------------------------------|----------------------------------|---------------------------------|
| (inchos)                |                       | 0/.         | Color (maist)       | X Featur               |                   | $100^2$                  | Төх               | 4.150                        | Ro                               | marka                           |
| (inches)                | Color (moist)         | <u>%</u>    | Color (moist)       | 70                     | Туре              | LOC                      | 167               | kture                        | Re                               | marks                           |
| 0-12                    | 10YR 4/2              | 90          | 7.5YR 5/6           | 10                     | С                 | М                        | Mucky L           | oam/Clay P                   | rominent red                     | ox concentrations               |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       | <u> </u>    |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         | ·                     |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
| <sup>1</sup> Type: C=Co | oncentration, D=Depl  | etion, RM:  | =Reduced Matrix, N  | MS=Masi                | ked San           | d Grains.                |                   | <sup>2</sup> Location: PL=Po | ore Lining, M                    | =Matrix.                        |
| Hydric Soil I           | ndicators: (Applica   | ble to all  | LRRs, unless oth    | erwise n               | oted.)            |                          |                   | Indicators for Pr            | oblematic H                      | ydric Soils <sup>3</sup> :      |
| Histosol                | (A1)                  |             | Thin Dark S         | urface (S              | 69) <b>(LRR</b>   | S, T, U)                 | _                 | 1 cm Muck (A                 | 49) <b>(LRR O)</b>               |                                 |
| Histic Ep               | vipedon (A2)          |             | Barrier Islan       | ids 1 cm               | Muck (S           | 12)                      | _                 | 2 cm Muck (A                 | A10) <b>(LRR S)</b>              |                                 |
| Black His               | stic (A3)             |             | (MLRA 15            | 53B, 153               | D)                |                          | _                 | Coast Prairie                | Redox (A16)                      | 1                               |
| Hydroge                 | n Sulfide (A4)        |             | Loamy Mucl          | ky Minera              | al (F1) <b>(L</b> | .RR O)                   |                   | (outside M                   | LRA 150A)                        |                                 |
| Stratified              | I Layers (A5)         |             | Loamy Gley          | ed Matrix              | x (F2)            |                          | -                 | Reduced Ver                  | tic (F18)                        |                                 |
| Organic                 | Bodies (A6) (LRR P,   | T, U)       | X Depleted Ma       | atrix (F3)             |                   |                          |                   | (outside M                   | LRA 150A, 1                      | 50B)                            |
| 5 cm Mu                 | cky Mineral (A7) (LR  | R P, T, U)  | Redox Dark          | Surface                | (F6)              |                          | -                 | Piedmont Fig                 | odplain Soils                    | (F19) <b>(LRR P, T)</b>         |
| Muck Pro                | esence (A8) (LRR U)   | 1           | Depleted Da         | ark Surfa              | ce (⊢7)           |                          | -                 | Anomalous E                  | Bright Flooapi                   | ain Soils (F20)                 |
|                         | ck (A9) (LKK P, I)    | (^ 4 4 )    | Redox Depr          | essions (              | (F8)              |                          |                   | (MLKA 153                    | B)                               |                                 |
| Depieted                | Below Dark Surface    | (A11)       |                     | LKK U)                 |                   | 451)                     | -                 |                              | lateriai (r∠i)                   | ~ (E00)                         |
|                         | rairie Reday (A12)    | U PA 150/   |                     | DILLO (F. 1<br>DOGO MO | 1) (IVILIN)       | 1 13 1)                  | орт) <sup>-</sup> | very snanow                  | W Dark Surface (F22)             |                                 |
| Sandy M                 | lucky Mineral (S1) (L | RR O S      |                     | face (F1?              |                   |                          | 0,                | Rarrier Island               | LNA 130, 13                      | ZA III FL, 134)<br>Matrix (TS7) |
| Sandy G                 | ileved Matrix (S4)    | nn 0, 0,    | Delta Ochric        | ~ (F17) <b>(F</b>      |                   | , , <del>, ,</del><br>1) | -                 | (MLRA 153                    | B. 153D)                         |                                 |
| Sandy R                 | edox (S5)             |             | Reduced Ve          | ertic (F18             |                   | 150A, 1                  | 50B)              | Other (Explai                | n in Remarks                     | ;)                              |
| Stripped                | Matrix (S6)           |             | Piedmont Fl         | loodplain              | Soils (F          | 19) <b>(MLF</b>          | RA 149A)          |                              |                                  | ·)                              |
| Dark Sur                | face (S7) (LRR P, S   | , T, U)     | X Anomalous         | Bright Fl              | oodplain          | Soils (F:                | 20)               |                              |                                  |                                 |
| Polyvalu                | e Below Surface (S8)  | )           | (MLRA 14            | 49A, 153               | C, 153D)          |                          | ,                 | <sup>3</sup> Indicators of   | hydrophytic                      | vegetation and                  |
| (LRR S                  | S, T, U)              |             | Very Shallov        | w Dark S               | Surface (F        | 22)                      |                   | wetland hy                   | drology must                     | be present,                     |
|                         |                       |             | (MLRA 13            | 38, 152A               | in FL, 1          | 54)                      |                   | unless dist                  | unless disturbed or problematic. |                                 |
| Restrictive I           | _ayer (if observed):  |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
| Type:                   |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
| Depth (ir               | iches):               |             |                     |                        |                   |                          | Hydric            | Soil Present?                | Yes                              | No                              |
| Remarks:                | ·                     |             |                     |                        |                   |                          | -                 |                              |                                  |                                 |
| Soil characte           | eristics observed mee | et requirem | ents for depleted r | matrix an              | nd anoma          | lous brig                | ght floodpla      | ain soil indicators.         | Hydric soil is                   | s present.                      |
|                         |                       |             |                     |                        |                   | -                        |                   |                              | -                                |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |
|                         |                       |             |                     |                        |                   |                          |                   |                              |                                  |                                 |

| U.S. Army Corps of Engineers<br>WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region<br>See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R   | OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a)  |
|--|--|
| Project/Site: Standard Chlorine Citv/County: New Castle.   | New Castle Co. Sampling Date: 9/1/23   |
| Applicant/Owner: United States Environmental Protection Agency (EPA)   | State: DF Sampling Point: W-IRK-001 PEM 2  |
| Investigator(s): J Keil C Barrett Section Township Bange: N/   | Δ  |
| Landform (hillside terrace etc.): Hillside   | (%)  |
| Subragion (LBP or MLPA): LBP S. MLPA 140A Lat: 30 601024   | S20072   |
| Soil Man Linit Name: SaE: Sassafras sandy loam 10 to 15% slopes  | NWL classification: N/A  |
| Are alimetic / hydrologic conditions on the site typical for this time of year?  |  |
| Are climatic / hydrologic conditions on the site typical for this time of year? Yes X  | (if no, explain in Remarks.)   |
| Are vegetation, Soil, or Hydrologysignificantly disturbed? Are "Normal Circl   | Imstances' present? Yes X No   |
| Are Vegetation, Soil, or Hydrologynaturally problematic? (If needed, explain)  | n any answers in Remarks.)   |
| SUMMARY OF FINDINGS – Attach site map showing sampling point location  | s, transects, important features, etc.   |
| Hydrophytic Vegetation Present?     Yes     X     No     Is the Sampled Area       Hydric Soil Present?     Yes     X     No     within a Wetland?       Wetland Hydrology Present?     Yes     X     No   | Yes_X_ No  |
| Remarks:<br>The palustrine emergent wetland (PEM) is within the right of way and has spring seeps flowing throug<br>wetland. It is a depression along a hillslope.   | on the wetland eastward towards the forested   |
| HYDROLOGY  |  |
| Wetland Hydrology Indicators:       Set         Primary Indicators (minimum of one is required; check all that apply)  | Surface Soil Cracks (B6)<br>Sparsely Vegetated Concave Surface (B8)<br>Drainage Patterns (B10)<br>Moss Trim Lines (B16)<br>Dry-Season Water Table (C2)<br>Crayfish Burrows (C8)<br>Saturation Visible on Aerial Imagery (C9)<br>Geomorphic Position (D2)<br>Shallow Aquitard (D3)<br>FAC-Neutral Test (D5)<br>Sphagnum Moss (D8) <b>(LRR T, U)</b> |
| Field Observations:  |  |
| Surface water Present?       res       X       No       Depth (inclus):       1         Water Table Present?       Yes       No       X       Depth (inclus):       0         Saturation Present?       Yes       No       X       Depth (inclus):       0       Wetland Hyc         (includes capillary fringe)       Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if avail | drology Present? Yes X No  |
| Remarks:<br>Several primary and secondary indicators of wetland hydrology were observed. Wetland hydrology is  | present.   |

Sampling Point: W-JRK-001 PEM 2

|   | Absolute     | Dominant        | Indicator    |  |
|---|--------------|-----------------|--------------|--|
| Tree Stratum (Plot size: 30 ft )                      | % Cover      | Species?        | Status       | Dominance Test worksheet:  |
| 1. fraxinus pennsylvanica                             | 2            | No              | FACW         | Number of Dominant Species   |
| 2.  |              |                 |              | That Are OBL, FACW, or FAC: (A)  |
| 3   |              |                 |              | Total Number of Dominant   |
| 4   |              |                 |              | Species Across All Strata: 5 (B)   |
| 5   |              |                 |              | Percent of Dominant Species  |
| 6.  |              |                 |              | That Are OBL, FACW, or FAC: 80.0% (A/B)  |
| 7.  |              |                 |              | Prevalence Index worksheet:  |
| 8.  |              |                 |              | Total % Cover of: Multiply by:   |
|   | 2            | =Total Cover    |              | OBL species 0 x 1 = 0  |
| 50% of total cover:                                   | 20%          | of total cover  | 1            | $\frac{1}{1} = \frac{1}{1} = \frac{1}$ |
| Sopling/Shrub Stratum (Plat size: 20 ft )             | 2070         |                 | <u>'</u>     | $\frac{1}{100} = \frac{1}{100} = \frac{1}$   |
| <u>Saping/Shrub Stratum</u> (Plot size. <u>30 n</u> ) | _            |                 | 54014        | FAC species $0 \times 3 = 0$   |
| 1. traxinus pennsylvanica                             | 5            | Yes             | FACW         | FACU species $0 	 x 4 = 0$   |
| 2.  |              |                 |              | UPL species 15 x 5 = 75  |
| 3   |              |                 |              | Column Totals: 97 (A) 239 (B)  |
| 4.  |              |                 |              | Prevalence Index = B/A = 2.46  |
| 5.  |              |                 |              | Hydrophytic Vegetation Indicators:   |
| 6.  |              |                 |              | 1 - Rapid Test for Hydrophytic Vegetation  |
| 7   |              |                 |              | X 2 - Dominance Test is >50%   |
| •   |              |                 |              | $\frac{1}{2}$ 2 Boliminarios Fostilo 2007  |
| o   |              |                 |              | $\times$ 3 - Frevalence index is $\leq$ 3.0  |
|   | 5            | = I otal Cover  |              | Problematic Hydrophytic Vegetation (Explain)   |
| 50% of total cover:3                                  | 3 20%        | of total cover: | 1            |  |
| Herb Stratum (Plot size: 30 ft )                      |              |                 |              |  |
| 1. phragmites australis                               | 30           | Yes             | FACW         | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be   |
| 2. onoclea sensibilis                                 | 15           | Yes             | FACW         | present, unless disturbed or problematic.  |
| 3. Cyperus strigosus                                  | 30           | Yes             | FACW         | Definitions of Four Vegetation Strata:   |
| 4.  |              |                 |              | <b>Tree</b> – Woody plants, excluding vines 3 in (7.6 cm) or   |
| 5.  |              |                 |              | more in diameter at breast height (DBH), regardless of   |
| 6   |              |                 |              | height.  |
| 7   |              |                 |              |  |
| 7   |              |                 |              | Sapling/Shrub – Woody plants, excluding vines, less  |
| 8   |              |                 |              | than 3 in. DBH and greater than 3.28 ft (1 m) tall.  |
| 9   |              |                 |              |  |
| 10  |              |                 |              | Herb – All berbaceous (non-woody) plants, regardless   |
| 11  |              | . <u></u>       |              | of size, and woody plants less than 3.28 ft tall.  |
| 12.   |              |                 |              |  |
|   | 75           | =Total Cover    |              | Woody Vine - All woody vines greater than 3.28 ft in   |
| 50% of total cover: 3                                 | 8 20%        | of total cover: | 15           | height.  |
| Woody Vine Stratum (Plot size: 30 ft )                |              |                 |              |  |
| 1 Ampelonsis brevinedunculata                         | 15           | Yes             | LIPI         |  |
|   |              | 100             | 012          |  |
| 2.  |              |                 |              |  |
| 3   |              |                 |              |  |
| 4   |              |                 |              |  |
| 5   |              |                 |              | Hydrophytic  |
|   | 15           | =Total Cover    |              | Vegetation   |
| 50% of total cover:8                                  | 3 20%        | of total cover: | 3            | Present? Yes X No  |
| Remarks: (If observed list morphological adaptation   | ns below )   |                 |              |  |
| Vegetation observed meets the dominance test and      | prevalence i | ndex indicators | for hydrophy | vtic vegetation.   |
|   |              |                 |              |  |
|   |              |                 |              |  |
|   |              |                 |              |  |

| Profile Desc            | ription: (Describe to   | o the dep    | th needed to doc  | ument t           | he indica         | ator or co       | onfirm th        | e absence of ind            | licators.)             |                             |  |
|-------------------------|---|--------------|-------------------|-------------------|-------------------|------------------|------------------|-----------------------------|------------------------|-----------------------------|--|
| Depth                   | Matrix  |              | Redo              | x Featur          | res               |                  |                  |                             |                        |                             |  |
| (inches)                | Color (moist)   | %            | Color (moist)     | %                 | Type <sup>1</sup> | Loc <sup>2</sup> | Те               | xture                       | Re                     | marks                       |  |
| 0-8                     | 10YR 3/2  | 100          |                   |                   | С                 | М                | Loam             | y/Clayey                    | Modified mucky mineral |                             |  |
| 8-18                    | 2.5Y 4/2  | 80           | 10YR 5/6          | 20                | С                 | М                | Loam             | y/Clayey                    | Silt                   | y loam                      |  |
|                         |   |              |                   |                   |                   |                  |                  |                             |                        |                             |  |
|                         |   |              |                   |                   |                   |                  |                  |                             |                        |                             |  |
|                         |   |              |                   |                   |                   |                  |                  |                             |                        |                             |  |
|                         |   |              |                   |                   |                   |                  |                  |                             |                        |                             |  |
|                         |   |              |                   |                   |                   |                  |                  |                             |                        |                             |  |
| <sup>1</sup> Type: C=Co | ncentration, D=Deple  | tion, RM=    | Reduced Matrix, N | //S=Mas           | ked San           | d Grains.        |                  | <sup>2</sup> Location: PL=P | ore Lining, M          | =Matrix.                    |  |
| Hydric Soil I           | ndicators: (Applicat  | ole to all L | RRs, unless oth   | erwise n          | oted.)            |                  |                  | Indicators for P            | roblematic H           | lydric Soils <sup>3</sup> : |  |
| Histosol                | (A1)  |              | Thin Dark S       | urface (S         | 39) <b>(LRR</b>   | S, T, U)         |                  | 1 cm Muck (                 | A9) <b>(LRR O)</b>     |                             |  |
| Histic Ep               | ipedon (A2)   |              | Barrier Islan     | ds 1 cm           | Muck (S           | 12)              |                  | 2 cm Muck (                 | A10) <b>(LRR S</b> )   | )                           |  |
| Black His               | stic (A3)   |              | (MLRA 15          | 53B, 153          | D)                |                  |                  | Coast Prairie               | e Redox (A16           | )                           |  |
| Hydroger                | n Sulfide (A4)  |              | Loamy Mucl        | ky Miner          | al (F1) <b>(L</b> | .RR O)           |                  | (outside M                  | ILRA 150A)             |                             |  |
| Stratified              | Layers (A5)   |              | Loamy Gley        | ed Matri          | x (F2)            |                  |                  | Reduced Ve                  | rtic (F18)             |                             |  |
| Organic I               | Bodies (A6) <b>(LRR P,</b> <sup>.</sup>   | T, U)        | X Depleted Ma     | atrix (F3)        | )                 |                  |                  | (outside M                  | ILRA 150A, 1           | 50B)                        |  |
| 5 cm Mu                 | cky Mineral (A7) <b>(LRI</b>  | R P, T, U)   | Redox Dark        | Surface           | (F6)              |                  |                  | Piedmont Fl                 | odplain Soils          | s (F19) <b>(LRR P, T)</b>   |  |
| Muck Pre                | esence (A8) (LRR U)   |              | Depleted Da       | ark Surfa         | ice (F7)          |                  |                  | Anomalous                   | Bright Floodpl         | lain Soils (F20)            |  |
| 1 cm Mu                 | ck (A9) <b>(LRR P, T)</b>   |              | Redox Depr        | essions           | (F8)              |                  |                  | <br>(MLRA 15                | 3B)                    |                             |  |
| X Depleted              | Below Dark Surface  | (A11)        | <br>Marl (F10) (  | LRR U)            | · · ·             |                  |                  | Red Parent                  | ,<br>Material (F21)    | )                           |  |
| Thick Da                | rk Surface (A12)  | ( )          | Depleted Oc       | hric (F1          | 1) (MLR)          | A 151)           |                  | Verv Shallow                | v Dark Surfac          | e (F22)                     |  |
| Coast Pr                | airie Redox (A16) ( <b>M</b> I  | RA 150A      | J Iron-Mangar     | nese Ma           | sses (F1)         | 2) (LRR (        | 0. P. T)         | (outside N                  | ILRA 138, 15           | i2A in FL. 154)             |  |
| Sandy M                 | ucky Mineral (S1) (LF   | R O. S)      | Umbric Surf       | ace (F13          | 3) (I RR F        | -, (<br>Р. Т. U) | <b>,</b> ,,,,,,  | Barrier Islan               | ds I ow Chror          | na Matrix (TS7)             |  |
| Sandy G                 | eved Matrix (S4)  |              | Delta Ochric      | · (F17) <b>(I</b> | ΜI RΔ 15          | , ., c,<br>1)    |                  | (MI RA 15                   | 3B 153D)               |                             |  |
| Sandy B                 | adox (S5)   |              | Beduced Ve        | rtic (F18         |                   | 150A 14          | 50B)             | Other (Evola                | in in Romark           | e)                          |  |
| Oundy R                 | Matrix (S6)   |              | X Piedmont Fl     |                   | Soile (F          | 10) <b>(MI P</b> | 002)<br>0A 1/0A) |                             |                        | 3/                          |  |
| Orrk Sur                |   | τ ιι         |                   | Bright El         | loodoloin         | Soile (E2        | 20)              |                             |                        |                             |  |
|                         | $\frac{1}{2} \left( \frac{1}{2} \right) \left( \frac{1}{2} \left( \frac{1}{2} \right) \right) \left( \frac{1}{2} \left( \frac{1}{2} \right) \right) \left( \frac{1}{2} \right) \left( 1$ | 1, 0)        |                   |                   |                   | 30IIS (F2        | 20)              | <sup>3</sup> Indiantara a   | fhudrophutia           | vocatation and              |  |
|                         |   |              |                   | 19A, 155          | C, 155D)          |                  |                  |                             |                        |                             |  |
| (LRR 3                  | 5, 1, 0)  |              |                   | W Dark S          |                   | -22)             |                  | wetland n                   | yarology mus           | t be present,               |  |
|                         |   |              | (MLRA 13          | oo, 152A          | in FL, 1          | 54)              |                  | uniess dis                  | turbea or pro          | Diematic.                   |  |
| Restrictive L           | ayer (if observed):   |              |                   |                   |                   |                  |                  |                             |                        |                             |  |
| Туре:                   |   |              |                   |                   |                   |                  |                  |                             |                        |                             |  |
| Depth (in               | ches):  |              |                   |                   |                   |                  | Hydri            | c Soil Present?             | Yes                    | No                          |  |
| Remarks:                |   |              |                   |                   |                   |                  |                  |                             |                        |                             |  |

Soil characteristics observed meet requirements for depleted matrix, piedmont floodplain soils, and anomalous bright floodplain soil indicators. Hydric soils are present.

| U.S. Army Corp<br>WETLAND DETERMINATION DATA SHEE<br>See ERDC/EL TR-10-20; the pro     | Plain Region  | OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a) |  |                                 |  |
|--|---|---|--|---------------------------------|--|
| Project/Site: Standard Chlorine  | City/Cour   | ity: New Castle, N  | ew Castle Co.                                | Sampling Date: 9/8/23           |  |
| Applicant/Owner: United States Environmental   | Protection Agency (EPA)   |   | State:DES                                    | Sampling Point: W-JRK-001 PEM 3 |  |
| Investigator(s): J. Keil, M. Curran  | Section, Town   | ship, Range: N/A  | <u> </u>                                     |                                 |  |
| Landform (hillside, terrace, etc.): Floodplain   | Local relief (cond  | ave, convex, none   | e): concave                                  | Slope (%): 8                    |  |
| Subregion (LRR or MLRA): LRR S, MLRA 149A  | Lat: 39.605065  | Long: -75.63  | 30437  | Datum: NAD 83                   |  |
| Soil Map Unit Name: W - Water  |   | 0   | NWI classificatio                            | n: E1UBL                        |  |
| Are climatic / hydrologic conditions on the site typic                                 | al for this time of year?   | Yes X N   |  | plain in Remarks )              |  |
| Are Vegetation Soil or Hydrology   | significantly disturbed?  | re "Normal Circur   | netances" present?                           |                                 |  |
| Are Vegetation, or Hydrology   |   |   |  |                                 |  |
| Are vegetation, Soli, or Hydrology   | naturally problematic?  | if needed, explain  | any answers in Rem                           | iarks.)                         |  |
| SUMMARY OF FINDINGS – Attach site  | map showing sampling p  | oint locations  | , transects, imp                             | ortant features, etc.           |  |
| Hydrophytic Vegetation Present?YesHydric Soil Present?YesWetland Hydrology Present?Yes | X     No     Is the Sa       X     No     within a       X     No | npled Area<br>Wetland?  | Yes X  | No                              |  |
| HYDROLOGY  |   |   |  |                                 |  |
| Wetland Hydrology Indicators:<br>Primary Indicators (minimum of one is required: ch    | eck all that apply)   | Sec   | condary Indicators (m<br>Surface Soil Cracks | (B6)                            |  |
| Surface Water (A1)   | ouatic Fauna (B13)  |   | Sparsely Vegetated                           | Concave Surface (B8)            |  |
| X High Water Table (A2)  | Aarl Deposits (B15) (LRR U)                                       |   | Drainage Patterns (I                         | B10)                            |  |
| X Saturation (A3)  | lydrogen Sulfide Odor (C1)  |   | Moss Trim Lines (B                           | 16)                             |  |
| Water Marks (B1)   | xidized Rhizospheres on Living F                                  | loots (C3)  | Dry-Season Water                             | Table (C2)                      |  |
| Sediment Deposits (B2)F  | resence of Reduced Iron (C4)                                      |   | Crayfish Burrows (C                          | 8)                              |  |
| Drift Deposits (B3)  | Recent Iron Reduction in Tilled So                                | ls (C6)   | Saturation Visible or                        | n Aerial Imagery (C9)           |  |
| Algal Mat or Crust (B4)  | hin Muck Surface (C7)   | X   | Geomorphic Positio                           | n (D2)                          |  |
| Iron Deposits (B5)   | other (Explain in Remarks)  |   | Shallow Aquitard (D                          | 3)                              |  |
| Water-Stained Leaves (B9)  |   |   | Sphagpum Moss (D                             | 8) <b>(I RR T II)</b>           |  |
| Field Observations:  |   |   |  |                                 |  |
| Surface Water Present? Yes No  | X Denth (inches):   |   |  |                                 |  |
| Water Table Present? Yes X No  | Depth (inches): 4   |   |  |                                 |  |
| Saturation Present? Yes X No   | Depth (inches): 0   | Wetland Hydr  | ology Present?                               | Yes X No                        |  |
| (includes capillary fringe)  |   |   |  |                                 |  |
| Describe Recorded Data (stream gauge, monitorin  | g well, aerial photos, previous ins                               | pections), if availa  | ble:   |                                 |  |
| Remarks:   |   |   |  |                                 |  |
| Several primary and secondary indicators of wetland                                    | nd hydrology were observed. Wet                                   | and hydrology is p  | present.                                     |                                 |  |

Sampling Point: W-JRK-001 PEM 3

|  | Absolute                   | Dominant        | Indicator    |  |
|--|----------------------------|-----------------|--------------|--|
| Tree Stratum (Plot size: 30 ft )                     | % Cover                    | Species?        | Status       | Dominance Test worksheet:  |
| 2.   |                            |                 |              | Number of Dominant Species           That Are OBL, FACW, or FAC:         2         (A) |
| 3  |                            |                 |              | Total Number of Dominant<br>Species Across All Strata: 2 (B)                           |
| 5.   |                            |                 |              | Percent of Dominant Species  |
| 7  |                            |                 | ·            | Prevalence Index worksheet:  |
| 8.   |                            |                 |              | Total % Cover of: Multiply by:   |
|  |                            | =Total Cover    |              | $\frac{1}{\text{OBL species}} \qquad 25 \qquad \text{x 1} = 25$                        |
| 50% of total cover:                                  | 20%                        | of total cover: |              | FACW species 75 $x 2 = 150$  |
| Sapling/Shrub Stratum (Plot size: 30 ft )            |                            |                 |              | FAC species $10 \times 3 = 30$   |
| 1.   |                            |                 |              | FACU species $0 	 x 4 = 0$   |
| 2.   |                            |                 |              | UPL species 0 x 5 = 0  |
| 3.   |                            |                 |              | Column Totals: 110 (A) 205 (B)   |
| 4.   |                            |                 |              | Prevalence Index = $B/A = 1.86$  |
| 5.   |                            |                 |              | Hydrophytic Vegetation Indicators:   |
| 6.   |                            |                 |              | 1 - Rapid Test for Hydrophytic Vegetation  |
| 7.   |                            |                 |              | X 2 - Dominance Test is >50%   |
| 8  |                            | ·               |              | X 3 - Prevalence Index is $\leq 3.0^{1}$   |
| ·  |                            | =Total Cover    |              | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                              |
| 50% of total cover                                   | 20%                        | of total cover: |              |  |
| Herb Stratum (Plot size: 30 ft )                     |                            |                 |              |  |
| 1 Phragmites australis                               | 70                         | Yes             | FACW         |  |
| 2. Persicaria punctata                               | 5                          | No              | OBI          | present, unless disturbed or problematic.  |
| 3. Persicaria pensylvanica                           | 5                          | No              | FACW         | Definitions of Four Vegetation Strata:   |
| 4 Pontederia cordata                                 | 10                         | No              | OBI          | Tree Weedy planta avaluding vince 2 in (7.6 cm) or                                     |
| 5 Leersia orvzoides                                  | 5                          | No              |              | more in diameter at breast height (DBH), regardless of                                 |
| 6 Hibiscus moscheutos                                | 5                          | No              |              | height.  |
| 7  |                            |                 |              |  |
| 8  |                            |                 |              | Sapling/Shrub – Woody plants, excluding vines, less                                    |
| 9  |                            | ·               |              | than 3 in. DBH and greater than 3.28 ft (1 m) tall.                                    |
| 10   |                            |                 |              |  |
| 10   |                            |                 |              | Herb – All herbaceous (non-woody) plants, regardless                                   |
| 12   |                            |                 |              | of size, and woody plants less than 3.28 ft tall.                                      |
|  | 100                        | -Total Cover    |              | Woody Vine – All woody vines greater than 3.28 ft in                                   |
| 50% of total cover: 50                               | 20%                        | of total cover: | 20           | height.  |
| Woody Vine Stratum (Plot size: 30 ft )               | 2070                       |                 |              |  |
| 1 Persicaria perfoliata                              | 10                         | Yes             | FAC          |  |
| 2  | 10                         | 100             | 1/10         |  |
| 3  |                            |                 |              |  |
| 4  |                            |                 |              |  |
| 5  |                            |                 |              |  |
|  | 10                         | -Total Cover    |              | Hydrophytic  |
| 50% of total cover: 5                                | 20%                        | of total cover: | 2            | Vegetation<br>Present? Yes X No  |
|  |                            |                 |              |  |
| Remarks: (If observed, list morphological adaptation | is below.)<br>prevalence i | ndex indicators | for hydrophy | vtic vegetation  |
|  |                            |                 |              | ,  |
|  |                            |                 |              |  |
|  |                            |                 |              |  |

SOIL

| Profile Desci           | ription: (Describe          | to the dep       | oth needed to doc  | ument t          | he indica         | ator or c        | onfirm th | e absence of ind             | icators.)                           |            |  |
|-------------------------|-----------------------------|------------------|--------------------|------------------|-------------------|------------------|-----------|------------------------------|-------------------------------------|------------|--|
| Depth                   | Matrix                      |                  | Redo               | x Featur         | res               |                  |           |                              |                                     |            |  |
| (inches)                | Color (moist)               | %                | Color (moist)      | %                | Type <sup>1</sup> | Loc <sup>2</sup> | Те        | xture                        | Remarks                             |            |  |
| 0-2                     | 10YR 3/2                    | 100              |                    |                  | С                 | М                | Mucky L   | .oam/Clay                    | Mucky mineral                       |            |  |
| 2-10                    | 10YR 4/1                    | 90               | 10YR 4/4           | 10               | С                 | М                | Loam      | //Clayey                     | Sandy loam                          |            |  |
| 10-11                   | 5YR 4/1                     | 100              |                    |                  | С                 | M                | Mucky L   | .oam/Clay                    | Silty clay loam                     |            |  |
|                         |                             | ·                |                    |                  |                   |                  |           |                              |                                     |            |  |
|                         |                             | ·                |                    |                  |                   |                  |           |                              |                                     |            |  |
| <sup>1</sup> Type: C=Co | ncentration, D=Dep          | letion, RM       | =Reduced Matrix, I | MS=Mas           | ked San           | d Grains         |           | <sup>2</sup> Location: PL=Po | ore Lining, M=Matrix.               |            |  |
| Hydric Soil In          | ndicators: (Applica         | ble to all       | LRRs, unless oth   | erwise r         | oted.)            |                  |           | Indicators for Pr            | oblematic Hydric Soils <sup>3</sup> | <b>'</b> = |  |
| Histosol (              | (A1)                        |                  | Thin Dark S        | urface (S        | 39) <b>(LRR</b>   | S, T, U)         |           | 1 cm Muck (A                 | (9) <b>(LRR O)</b>                  |            |  |
| Histic Epi              | ipedon (A2)                 |                  | Barrier Islan      | ds 1 cm          | Muck (S           | 12)              |           | 2 cm Muck (A                 | (10) <b>(LRR S)</b>                 |            |  |
| Black His               | stic (A3)                   |                  | (MLRA 15           | 53B, 153         | D)                |                  |           | Coast Prairie                | Redox (A16)                         |            |  |
| Hydrogen                | n Sulfide (A4)              |                  | Loamy Muc          | ky Miner         | al (F1) <b>(L</b> | .RR O)           |           | (outside M                   | utside MLRA 150A)                   |            |  |
| Stratified              | Layers (A5)                 |                  | Loamy Gley         | ed Matri         | x (F2)            |                  |           | Reduced Ver                  | d Vertic (F18)                      |            |  |
| Organic E               | Bodies (A6) <b>(LRR P</b> , | , T, U)          | X Depleted Ma      | atrix (F3)       | )                 |                  |           | (outside MLRA 150A, 150B)    |                                     |            |  |
| 5 cm Muc                | cky Mineral (A7) (LR        | R P, T, U        | Redox Dark         | Surface          | (F6)              |                  |           | Piedmont Flo                 | odplain Soils (F19) (LRR            | : P, T)    |  |
| Muck Pre                | esence (A8) (LRR U          | )                | Depleted Da        | ark Surfa        | ice (F7)          |                  |           | Anomalous B                  | right Floodplain Soils (F2          | 20)        |  |
| 1 cm Muo                | ck (A9) <b>(LRR P, T)</b>   |                  | Redox Depr         | essions          | (F8)              |                  |           | (MLRA 153                    | B)                                  | ,          |  |
| X Depleted              | Below Dark Surface          | e (A11)          | Marl (F10) (       | LRR U)           | ( )               |                  |           | Red Parent M                 | ,<br>laterial (F21)                 |            |  |
| Thick Da                | rk Surface (A12)            |                  | Depleted Oc        | chric (F1        | 1) (MLR)          | A 151)           |           | Verv Shallow                 | Dark Surface (F22)                  |            |  |
| Coast Pra               | airie Redox (A16) (N        | ILRA 150         | A) Iron-Mangar     | nese Ma          | sses (F1)         | 2) (LRR          | O. P. T)  | (outside M                   | LRA 138, 152A in FL, 15             | 54)        |  |
| Sandy Mu                | uckv Mineral (S1) <b>(L</b> | .RR O. S)        | Umbric Surf        | ace (F13         | B) (LRR F         | P. T. U)         | -,-,-,    | Barrier Island               | s I ow Chroma Matrix (TS            | 57)        |  |
| Sandy G                 | eved Matrix (S4)            |                  | Delta Ochric       | : (F17) <b>(</b> | MI RA 15          | , ., c,<br>i1)   |           | (MI RA 153                   | B. 153D)                            | 51)        |  |
| Sandy Re                | edox(S5)                    |                  | Reduced Ve         | ertic (F18       |                   | 150A. 1          | 50B)      | Other (Explai                | n in Remarks)                       |            |  |
| Stripped                | Matrix (S6)                 |                  | Piedmont Fl        | oodolair         | Soils (F          | 19) <b>(MI</b> I | RA 149A)  |                              | in in romano)                       |            |  |
| Dark Surf               | face (S7) <b>(I RR P S</b>  | тш               | X Anomalous        | Bright Fl        | loodolain         | Soils (F         | 20)       |                              |                                     |            |  |
| Bolyvalue               | Below Surface (S8           | ), <b>1, 0</b> ) | (MI RA 14          | 19A 153          |                   |                  | 20)       | <sup>3</sup> Indicators of   | hydrophytic vegetation a            | nd         |  |
|                         |                             | )                | Very Shallo        | N Dark S         | Surface (F        |                  |           | wetland by                   | drology must be present             | na         |  |
| (2.000                  | ., ., ., .,                 |                  | (MLRA 13           | 88, 152A         | in FL, 1          | 54)              |           | unless dist                  | urbed or problematic.               |            |  |
| Restrictive L           | ayer (if observed):         |                  | -                  |                  |                   | -                |           |                              | -                                   |            |  |
| Type:                   | - , , ,                     |                  |                    |                  |                   |                  |           |                              |                                     |            |  |
| Depth (in               | ches):                      |                  |                    |                  |                   |                  | Hydrid    | Soil Present?                | Yes No                              |            |  |
| Remarks:                |                             |                  |                    |                  |                   |                  |           |                              |                                     |            |  |

Soil characteristics observed meet requirements for depleted below dark surface, depleted matrix, and anomalous bright floodplain soil indicators. Hydric soils are present.

| U.S. Army Corps of Engineers<br>WETLAND DETERMINATION DATA SHEET – Atlantic and G<br>See ERDC/EL TR-10-20; the proponent agency is  | OMB Control #: 0710-0024, Exp: 11/30/2024ulf Coastal Plain RegionS CECW-CO-RCAUTOR Control #: 0710-0024, Exp: 11/30/2024CAUTOR Control #: 0710-0024, Exp: 11/30/2024Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a)   |
|---|--|
| Project/Site: Standard Chlorine   | City/County: New Castle New Castle Co. Sampling Date: 9/1/23   |
| Applicant/Quinar: Linited States Environmental Bratestian Agency //   | EDA) Stoto: DE Sampling Date: 3/1/20   |
|   | state. DE Sampling Point. WJRK 601 PF01  |
| Investigator(s): J. Keil, C. Barrett S  | ection, Township, Range: <u>N/A</u>  |
| Landform (hillside, terrace, etc.): hillside Loca   | al relief (concave, convex, none): <u>concave</u> Slope (%): <u>7</u>  |
| Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 39.601929  | Long: <u>-75.638872</u> Datum: NAD 83  |
| Soil Map Unit Name: SaE: Sassafras sandy loam, 10 to 15% slopes   | NWI classification: PFO1C  |
| Are climatic / hydrologic conditions on the site typical for this time of year  | r? Yes X No (If no, explain in Remarks.)   |
| Are Vegetation, Soil, or Hydrologysignificantly dist  | urbed? Are "Normal Circumstances" present? Yes X No  |
| Are Vegetation, Soil, or Hydrology naturally problem  | natic? (If needed, explain any answers in Remarks.)  |
| SUMMARY OF FINDINGS – Attach site map showing sa  | ampling point locations, transects, important features, etc.   |
| Hydrophytic Vegetation Present?       Yes       X       No         Hydric Soil Present?       Yes       X       No         Wetland Hydrology Present?       Yes       X       No  | Is the Sampled Area within a Wetland? Yes X No   |
| Remarks:<br>This palustrine forested wetland (PFO) community point is located dow<br>microdepressions. The point was taken on the western most side of the<br>the study area. This was the first of two points taken to describe this spo   | vnslope of groundwater seeps and included lots of buttressed roots and<br>study area. The PFO is large and encompasses most of the western side of<br>ecific community type.   |
| HYDROLOGY   |  |
| Primary Indicators (minimum of one is required; check all that apply)         X       Surface Water (A1)         High Water Table (A2)       Marl Deposits (B15) (L         Saturation (A3)       Hydrogen Sulfide Odo         Water Marks (B1)       Oxidized Rhizosphere         Sediment Deposits (B2)       Presence of Reduced         Drift Deposits (B3)       Recent Iron Reduction         Algal Mat or Crust (B4)       Thin Muck Surface (C         Iron Deposits (B5)       Other (Explain in Rem         Inundation Visible on Aerial Imagery (B7)       X         X       Water-Stained Leaves (B9)         Field Observations:       No       Depth (inches         Water Table Present?       Yes       No       X         Saturation Present?       Yes       No       X       Depth (inches | Surface Soil Cracks (B6)<br>Sparsely Vegetated Concave Surface (B8)<br>X Drainage Patterns (B10)<br>r (C1)<br>s on Living Roots (C3)<br>Iron (C4)<br>n in Tilled Soils (C6)<br>7)<br>arks)<br>Si:<br>(C2)<br>(C3)<br>(C4)<br>(C4)<br>(C4)<br>(C4)<br>(C4)<br>(C4)<br>(C4)<br>(C5)<br>(C6)<br>(C6)<br>(C6)<br>(C7)<br>(C6)<br>(C7)<br>(C6)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7)<br>(C7 |
| (includes capillary fringe)   |  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos,   | previous inspections), if available:   |
| Remarks:<br>Several primary and secondary indicators of wetland hydrology were ob   | served. Wetland hydrology is present.  |

Sampling Point: W-JRK-001 PFO 1A

| Irrealization         (Plot size:         30.1         (x. Cover         Species         (x. cover         Species         (x. cover         (x. cover)   |   | Absolute     | Dominant        | Indicator    |  |
|---|---|--------------|-----------------|--------------|--|
| 1         Add         Yes         FAL         Number of Dominant Species         (A)           3.   | <u>Tree Stratum</u> (Plot size: <u>30 ft</u> )      | % Cover      | Species?        | Status       | Dominance Test worksheet:  |
| 2.  | 1. <u>Acer rubrum</u>                               | 85           | Yes             | FAC          | Number of Dominant Species   |
| 5.  | 2.  |              |                 |              | $\frac{1}{1}$  |
| 5.  | 3   |              |                 |              | Total Number of Dominant   |
| Solution         Percent of Dominant Species           7.   | +   |              |                 |              |  |
| 0.  | 5   |              |                 |              | Percent of Dominant Species  |
| 1.         Construction         Multiply by:           8.   | 0<br>7  |              |                 |              | Prevalence Index worksheet:  |
| Bit is a set of the s | /   |              |                 |              | Total % Cover of Multiply by   |
| S0% of total cover:         43         20% of total cover:         17           Saping/Shub Stratum (Plot size:         30 ft         )         7         FACW species         8         20           1.         Fraxinus parnsylvanica         40         Yes         FACW         FACW species         5         X 4 =         20           2.         Viburrum of neithatum         5         No         FACW         Species         5         X 4 =         20           4.  | 0.  | 85           | -Total Cover    |              | $\frac{1}{\text{ORL energies}} = 0 \qquad \text{x1} = 0$   |
| Saping/Shub_Stratum       (Point star, Saping/Shub_Stratum       Constraints       Constraints <td>50% of total cover: 4</td> <td><u> </u></td> <td>of total cover:</td> <td>17</td> <td>FACW species <math>85 \times 2 = 170</math></td>   | 50% of total cover: 4                               | <u> </u>     | of total cover: | 17           | FACW species $85 \times 2 = 170$   |
| Standard Children (No block       Corr       40       Yes       FACW       FACW         1.       Fracking permistivanica       5       No       FAC       UPL species       5       x 4 =       20         2.       Makus sylvestris       5       No       UPL       Species       5       x 5 =       25         3.       Makus sylvestris       5       No       UPL       Species       5       x 6 =       267         4.  | Sapling/Shrub Stratum (Plot size: 30 ft )           |              |                 |              | FAC species 120 $x_3 = -360$   |
| International point system         International point system <th< td=""><td>1 Fraxinus pennsvlvanica</td><td>40</td><td>Yes</td><td>FACW</td><td>FACIL species 5 <math>x 4 = 20</math></td></th<>  | 1 Fraxinus pennsvlvanica                            | 40           | Yes             | FACW         | FACIL species 5 $x 4 = 20$   |
| Malus sylvesmis         5         No         UPL         Column Totals:         215         (A)         575         (B)           4.         5         0         UPL         Column Totals:         215         (A)         575         (B)           5.         0         1         Rapid Test for Hydrophylic Vegetation Indicators:         1         7.         1         Rapid Test for Hydrophylic Vegetation 1         X         2.         Dominance Test is >50%         X         3.         Prevalence Index is \$3.0°         Problematic Hydrophylic Vegetation 1         X         2.         Dominance Test is >50%         X         3.         Prevalence Index is \$3.0°         Problematic Hydrophylic Vegetation 1         X         2.         Dominance Test is >50%         X         3.         Prevalence Index is \$3.0°         Problematic Hydrophylic Vegetation 1         Explain           10         0         No         FACW         1         Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         Definitions of Four Vegetation Strata:           10         No         FAC         FAC         Tee - Woody plants, excluding vines, isss than 3 n. DBH and greater than 3.28 ft (1 m) tail.           11.   | 2. Viburnum dentatum                                | 5            | No              | FAC          | UPL species $5 \times 5 = 25$  |
| A   | 3 Malus svlvestris                                  | 5            | No              | UPL          | Column Totals: 215 (A) 575 (B)   |
| Hydrophylic Vegetation Indicators:         6.         7.         8.   | 4   |              |                 |              | $\frac{1}{2.67}$   |
| 6.  | 5   |              |                 |              | Hydrophytic Vegetation Indicators:   |
| 7.  | 6.  |              |                 |              | 1 - Rapid Test for Hvdrophytic Vegetation  |
| 8.  | 7   |              |                 |              | X 2 - Dominance Test is >50%   |
| 50       =Total Cover         50% of total cover:       25         20% of total cover:       25         20% of total cover:       10         1.       Onoclea sensibilis         2.       Phragnites australis         3.       Operus strigosus         4.       Microstegium vimineum         5.       No         7.       Siniax rotundifolia         6.       Rosa multiflora         7.       Siniax rotundifolia         8.   | ۲<br>۶  |              |                 |              | $\frac{1}{X}$ 2 - Prevalence Index is $\leq 3.0^{1}$   |
| 50% of total cover:       25       20% of total cover:       10         Herb Stratum (Plot size:       30 ft       )       1         1. Onoclea sensibilis       25       Yes       FACW         2. Phragmites austrais       10       No       FACW         3. Opperus strigosus       10       No       FACW         5. Similar rotundifolia       5       No       FAC         6. Rosa multiflora       5       No       FAC         7.  | 0   | 50           | -Total Cover    |              | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  |
| Hetb Stratum (Plot size:  | 50% of total cover: 2                               | <u> </u>     | of total cover: | 10           |  |
| 1.       Onoclea sensibilis       25       Yes       FACW       Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.         2.       Phragmites australis       10       No       FACW       Present, unless disturbed or problematic.         3.       Cyperus strigosus       10       No       FACW       Persent, unless disturbed or problematic.         4.       Microstegium vimineum       15       Yes       FAC       Tree – Woody plants, excluding vines, 3 in, (7.6 cm) or more in diameter at breast height (DBH), regardless of height.         7.       Samilar rotundifolia       5       No       FACU         8.  | Herb Stratum (Plot size: 30 ft )                    | <u> </u>     |                 |              |  |
| 1       Tobacia distribution       10       No       FACW       Indicators of nydric soil and weturen nydrology must be present, unless disturbed or problematic.         2.       Phragmites australis       10       No       FACW       Definitions of Four Vegetation Strata:         4.       Microstegium vimineum       15       Yes       FAC       Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.         7.   | 1 Onoclea sensibilis                                | 25           | Yes             | FACW         |  |
| 2       Thegrines diabation       10       FACW       FACW         3.       Cyperus strigosus       10       No       FACW         4.       Microstegium vimineum       15       Yes       FAC         5.       Smitax rotundifolia       5       No       FAC         7.       5       No       FAC         7.       5       No       FACU         7.       5       Sapling/Shrub – Woody plants, excluding vines, less than 3.28 ft (1 m) tall.         9.       10.       10       Yes       FAC         11.       70       =Total Cover       14       Woody Vine – All herbaceous (non-woody) plants, regardless of size, and woody vines greater than 3.28 ft in height.         10.       Yes       FAC       Yes       FAC  | 2 Phraomites australis                              | 10           | <u>No</u>       | FACW         | Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. |
| 3.  | 3 Ovnerus striansus                                 | 10           | No              | FACW         | Definitions of Four Vegetation Strata:   |
| Indicating the woody plants, excluding vines, one (no only only one).         5.       Smilax rotundifolia         5.       Smilax rotundifolia         6.       Rosa multiflora         7.       Solution on the second plants, excluding vines, one (no dimeter at breast height (DBH), regardless of height.         8.       Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.         9.       Sapling/Shrub – Woody plants, excluding vines, less than 3.28 ft (1 m) tall.         10.       The behavior of size, and woody plants, regardless of size, and woody plants less than 3.28 ft tall.         12.       To = Total Cover         50% of total cover:       35         20% of total cover:       14         Woody Vine Stratum (Plot size:       30 ft         3.       10       Yes         4.       10         5.       10       Yes         5.       10       Yes         5.       10       Yes         6.       5.       20% of total cover:       2         3.       10       Yes         4.       5       20% of total cover:       2         50% of total cover:       5       20% of total cover:       2         70% of total cover:       5<   | Microstegium vimineum                               | 15           | Yes             | FAC          | Tree Woody planta avaluding vince 2 in (7.6 cm) or   |
| 6.       Rosa multiflora       5       No       FACU       height.         7.   | 5 Smilax rotundifolia                               | 5            | <u> </u>        | FAC          | more in diameter at breast height (DBH), regardless of   |
| 0.       Total multifield       0       Total       Total       Total         7.  | 6 Rosa multiflora                                   | 5            | No              | FACU         | height.  |
| Sapling/Shrub – Woody plants, excluding vines, less         8.         9.         10.         11.         12.         50% of total cover:         30         1.         12.         70         50% of total cover:         30         1.         1.         50% of total cover:         30         1.         1.         70         =Total Cover         14         Woody Vine Stratum (Plot size:         30.         2.         3.         4.         5.         10.         10.         10.         Yes         50% of total cover:         10.         10.         =Total Cover         10.         =Total Cover         50% of total cover:  | 7   |              |                 | 17.00        |  |
| 0.  | 8   |              |                 |              | Sapling/Shrub – Woody plants, excluding vines, less  |
| 10.   | 9   |              |                 |              | than 3 in. DBH and greater than 3.28 $\pi$ (1 m) tail.   |
| 11.   | 10  |              |                 |              |  |
| 12.   | 11.   |              |                 |              | Herb – All herbaceous (non-woody) plants, regardless   |
| Top       Top       = Total Cover       Woody Vine – All woody vines greater than 3.28 ft in height.         Woody Vine Stratum (Plot size: 30 ft )       10       Yes       FAC         1.       Toxicodendron radicans       10       Yes       FAC         2.  | 12  |              |                 |              | of size, and woody plants less than 3.28 ft fall.  |
| 50% of total cover:       35       20% of total cover:       14         Woody Vine Stratum (Plot size:       30 ft       )         1.       Toxicodendron radicans       10       Yes       FAC         2.  |   | 70           | =Total Cover    |              | Woody Vine – All woody vines greater than 3 28 ft in   |
| Woody Vine Stratum (Plot size:30 ft)         1. Toxicodendron radicans10YesFAC         23   | 50% of total cover: 3                               | 5 20%        | of total cover: | 14           | height.  |
| 1.       Toxicodendron radicans       10       Yes       FAC         2.   | Woody Vine Stratum (Plot size: 30 ft )              | 2070         |                 |              |  |
| 10       10       100       110         2.  | 1. Toxicodendron radicans                           | 10           | Yes             | FAC          |  |
| 3.  | 2   |              |                 |              |  |
| 4.  | 3   |              |                 |              |  |
| 5.  | 4   |              |                 |              |  |
| Image: Stress of total cover   | 5.  |              |                 |              |  |
| 50% of total cover:       5       20% of total cover:       2       Present?       Yes_X       No         Remarks:       (If observed, list morphological adaptations below.)       Vegetation observed meets the dominance test and prevalence index indicators for hydrophytic vegetation.       Vegetation   |   | 10           | =Total Cover    |              | Hydrophytic  |
| Remarks: (If observed, list morphological adaptations below.)<br>Vegetation observed meets the dominance test and prevalence index indicators for hydrophytic vegetation.   | 50% of total cover: 5                               | 20%          | of total cover: | 2            | Present? Yes X No  |
| Vegetation observed meets the dominance test and prevalence index indicators for hydrophytic vegetation.  | Pamarka: (If abaan ad list marphalagical adaptation |              |                 |              |  |
|   | Vegetation observed meets the dominance test and    | prevalence i | ndex indicators | for hydrophy | vtic vegetation.   |
|   |   |              |                 |              |  |
|   |   |              |                 |              |  |

| Profile Desc<br>Depth     | ription: (Describe t<br>Matrix | o the dep   | oth needed to doc<br>Redo | u <b>ment tl</b><br>x Featur | h <b>e indic</b> a<br>res | ator or c            | onfirm the                | e absence of ind           | cators.)            |                           |  |  |
|---------------------------|--------------------------------|-------------|---------------------------|------------------------------|---------------------------|----------------------|---------------------------|----------------------------|---------------------|---------------------------|--|--|
| (inches)                  | Color (moist)                  | %           | Color (moist)             | %                            | Type <sup>1</sup>         | Loc <sup>2</sup>     | Тех                       | ture                       | Rem                 | arks                      |  |  |
| 0-10                      | 10YR 3/1                       | 95          | 5YR 3/4                   | 5                            | С                         | М                    | Loamy                     | /Clayey Pi                 | ominent redox       | concentrations            |  |  |
| 10-18                     | 10YR 5/2                       | 95          | 10YR 5/8                  | 5                            | С                         | М                    | Mucky L                   | oam/Clay Pi                | ominent redo        | concentrations            |  |  |
|                           |                                |             |                           |                              |                           |                      |                           |                            |                     |                           |  |  |
|                           |                                |             |                           |                              |                           |                      | _                         |                            |                     |                           |  |  |
|                           |                                |             |                           |                              |                           |                      |                           |                            |                     |                           |  |  |
|                           |                                |             |                           |                              |                           |                      |                           |                            |                     |                           |  |  |
|                           |                                |             |                           |                              |                           |                      |                           |                            |                     |                           |  |  |
| <sup>1</sup> Type: C=Co   | ncentration, D=Depl            | etion, RM   | =Reduced Matrix, N        | IS=Mas                       | ked Sand                  | d Grains.            |                           | Location: PL=Pc            | re Lining, M=I      | Matrix.                   |  |  |
| Hydric Soil I             | ndicators: (Applica            | ble to all  | LRRs, unless othe         | erwise n                     | oted.)                    |                      |                           | ndicators for Pr           | oblematic Hy        | dric Soils <sup>3</sup> : |  |  |
| Histosol                  | (A1)                           |             | Thin Dark S               | urface (S                    | 69) <b>(LRR</b>           | S, T, U)             | _                         | 1 cm Muck (A               | .9) <b>(LRR O)</b>  |                           |  |  |
| Histic Ep                 | ipedon (A2)                    |             | Barrier Islan             | ds 1 cm                      | Muck (S                   | 12)                  | _                         | 2 cm Muck (A               | .10) <b>(LRR S)</b> |                           |  |  |
| Black His                 | stic (A3)                      |             | (MLRA 15                  | 3B, 153                      | D)                        |                      | _                         | Coast Prairie Redox (A16)  |                     |                           |  |  |
| Hydroger                  | n Sulfide (A4)                 |             | Loamy Mucł                | y Minera                     | al (F1) <b>(L</b>         | .RR O)               |                           | (outside MLRA 150A)        |                     |                           |  |  |
| Stratified                | Layers (A5)                    |             | Loamy Gley                | ed Matrix                    | x (F2)                    |                      | _                         | Reduced Vertic (F18)       |                     |                           |  |  |
| Organic I                 | Bodies (A6) (LRR P,            | T, U)       | X Depleted Ma             | trix (F3)                    |                           |                      | (outside MLRA 150A, 150B) |                            |                     |                           |  |  |
| 5 cm Mu                   | cky Mineral (A7) <b>(LR</b>    | R P, T, U   | X Redox Dark              | Surface                      | (F6)                      |                      |                           | Piedmont Flo               | odplain Soils (     | F19) <b>(LRR P, T)</b>    |  |  |
| Muck Pre                  | esence (A8) (LRR U)            | )           | Depleted Da               | rk Surfa                     | ce (F7)                   |                      | -                         | Anomalous B                | right Floodplai     | in Soils (F20)            |  |  |
| 1 cm Mu                   | ck (A9) <b>(LRR P, T)</b>      |             | Redox Depre               | essions                      | (F8)                      |                      | -                         | (MLRA 153                  | B)                  |                           |  |  |
| X Depleted                | Below Dark Surface             | e (A11)     | Marl (F10) (I             | RR U)                        |                           |                      |                           | Red Parent M               | laterial (F21)      |                           |  |  |
| Thick Da                  | rk Surface (A12)               |             | Depleted Oc               | hric (F1                     | 1) (MLR                   | A 151)               | -                         | Very Shallow               | Dark Surface        | (F22)                     |  |  |
| Coast Pra                 | airie Redox (A16) (M           | LRA 150     | A) Iron-Mangar            | ese Ma                       | sses (F1)                 | 2) <b>(LRR</b>       | O, P, T)                  | (outside M                 | LRA 138, 152        | A in FL, 154)             |  |  |
| Sandy M                   | ucky Mineral (S1) (L           | RR 0, S)    | Umbric Surf               | ace (F13                     | 3) (LRR F                 | P, T, U)             | ,                         | Barrier Island             | s Low Chroma        | a Matrix (TS7)            |  |  |
| Sandy G                   | eved Matrix (S4)               |             | Delta Ochric              | (F17) (I                     | ÚLRA 15                   | 51)                  | -                         | (MLRA 153                  | B. 153D)            |                           |  |  |
| Sandy Re                  | edox (S5)                      |             | Reduced Ve                | rtic (F18                    | ) (MLRA                   | ,<br>150A, 1         | 50B)                      | Other (Explai              | n in Remarks)       |                           |  |  |
| Stripped                  | Matrix (S6)                    |             | Piedmont Fl               | òodolain                     | Soils (F                  | ,<br>19) <b>(MLF</b> | ,<br>RA 149A)             |                            | ,                   |                           |  |  |
| Dark Sur                  | face (S7) (LRR P. S.           | . T. U)     | Anomalous                 | Bright Fl                    | oodplain                  | Soils (F2            | 20)                       |                            |                     |                           |  |  |
| Polvvalue                 | e Below Surface (S8)           | )           | (MLRA 14                  | 9A. 153                      | C. 153D)                  |                      |                           | <sup>3</sup> Indicators of | hvdrophytic ve      | egetation and             |  |  |
| (LRR \$                   | S. T. U)                       | /           | Verv Shallov              | v Dark S                     | urface (F                 | ,<br>-22)            |                           | wetland hv                 | drology must k      | pe present.               |  |  |
| (                         | , , <b>, , , ,</b>             |             | (MLRA 13                  | 8, 152A                      | in FL, 1                  | ,<br>54)             |                           | unless dist                | urbed or probl      | ematic.                   |  |  |
| Restrictive L             | ayer (if observed):            |             |                           |                              |                           |                      |                           |                            |                     |                           |  |  |
| Туре:                     |                                |             |                           |                              |                           |                      |                           |                            |                     |                           |  |  |
| Depth (in                 | ches):                         |             |                           |                              |                           |                      | Hydric                    | Soil Present?              | Yes                 | No                        |  |  |
| Remarks:<br>Soil characte | ristics observed mee           | et requirer | nents for depleted b      | elow da                      | rk surfac                 | e. deplet            | ed matrix.                | and redox dark s           | urface indicato     | ors. Hvdric soils are     |  |  |

| U.S. Army Corps of Engineers<br>WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region<br>See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R   | OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a)  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| Project/Site: Standard Chlorine Citv/County: New Castle. New Castl | ew Castle Co. Sampling Date: 9/5/23  |  |  |  |  |  |  |  |
| Applicant/Owner: United States Environmental Protection Agency (EPA)   | State: DE Sampling Point: W-JRK-001 PFO 1B   |  |  |  |  |  |  |  |
| Investigator(s): J. Keil, M. Curran Section Township, Range: N/A   |  |  |  |  |  |  |  |  |
| Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none)  | ): concave Slope (%): 1  |  |  |  |  |  |  |  |
| Subregion (LRR or MLRA): LRR S MLRA 149A Lat: 39 599811  | 9334 Datum: NAD 83   |  |  |  |  |  |  |  |
| Soll Man Linit Name: SaE: Sassafras sandy loam 10 to 15% slones  | NWL description: DEC1C   |  |  |  |  |  |  |  |
| Are elimetia / budrelegia conditions on the site typical for this time of year?  |  |  |  |  |  |  |  |  |
| Are climatic / hydrologic conditions on the site typical for this time of year? $\text{Yes} \underline{X}$ in  |  |  |  |  |  |  |  |  |
| Are vegetation, soil, or Hydrologysignificantly disturbed? Are Normal Circuit  | istances present? Yes X No   |  |  |  |  |  |  |  |
| Are Vegetation, Soil, or Hydrologynaturally problematic? (If needed, explain a   | any answers in Remarks.)   |  |  |  |  |  |  |  |
| SUMMARY OF FINDINGS – Attach site map showing sampling point locations,  | , transects, important features, etc.  |  |  |  |  |  |  |  |
| Hydrophytic Vegetation Present?     Yes X     No     Is the Sampled Area   |  |  |  |  |  |  |  |  |
| Hydric Soil Present?   Yes X   No   within a Wetland?  | Yes X No   |  |  |  |  |  |  |  |
| Wetland Hydrology Present?   Yes X   No  |  |  |  |  |  |  |  |  |
| This palustrine forested wetland (PFO) community was taken at the southern end of the western side o (W-JRK-001 PFO1A) but located far to the south.   | f wetland (001). The community is the same as  |  |  |  |  |  |  |  |
| HYDROLOGY  |  |  |  |  |  |  |  |  |
| Primary Indicators (minimum of one is required; check all that apply)  | Surface Soil Cracks (B6)<br>Sparsely Vegetated Concave Surface (B8)<br>Drainage Patterns (B10)<br>Moss Trim Lines (B16)<br>Dry-Season Water Table (C2)<br>Crayfish Burrows (C8)<br>Saturation Visible on Aerial Imagery (C9)<br>Geomorphic Position (D2)<br>Shallow Aquitard (D3)<br>FAC-Neutral Test (D5)<br>Sphagnum Moss (D8) <b>(LRR T, U)</b> |  |  |  |  |  |  |  |
| Saturation Present? Yes No X Depth (inches): Wetland Hydro   | ology Present? Yes X No  |  |  |  |  |  |  |  |
| (includes capillary fringe)  |  |  |  |  |  |  |  |  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if availab  | ble:   |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Remarks:<br>Several primary and secondary indicators of wetland hydrology were observed. Wetland hydrology is pr   | resent.  |  |  |  |  |  |  |  |

Sampling Point: W-JRK-001 PFO 1B

|   | Absolute     | Dominant        | Indicator   |  |
|---|--------------|-----------------|-------------|--|
| Tree Stratum (Plot size: 30 ft )                        | % Cover      | Species?        | Status      | Dominance Test worksheet:  |
| 1. Acer rubrum  | 85           | Yes             | FAC         | Number of Dominant Species   |
| 2. Platanus occidentalis                                | 10           | No              | FACW        | That Are OBL, FACW, or FAC: <u>6</u> (A)   |
| <ol> <li>Liquidambar styraciflua</li> <li>4.</li> </ol> | 2            | No              | FAC         | Total Number of Dominant         Species Across All Strata:         10         (B) |
| 5   |              |                 |             | Percent of Dominant Species  |
| 6   |              |                 |             | That Are OBL, FACW, or FAC: 60.0% (A/B)  |
| 7   |              |                 |             | Prevalence Index worksheet:  |
| 8   |              |                 |             | Total % Cover of: Multiply by:   |
| -   | 97 :         | =Total Cover    |             | OBL species x 1 =0   |
| 50% of total cover: 49                                  | 20%          | of total cover: | 20          | FACW species 50 x 2 = 100  |
| Sapling/Shrub Stratum (Plot size: 30 ft )               |              |                 |             | FAC species119 x 3 =357  |
| 1. Lindera benzoin                                      | 20           | Yes             | FACW        | FACU species 32 x 4 = 128  |
| 2. Elaeagnus angustifolia                               | 5            | Yes             | FACU        | UPL species x 5 =  |
| 3   |              |                 |             | Column Totals: 201 (A) 585 (B)   |
| 4.  |              |                 |             | Prevalence Index = B/A =291  |
| 5   |              |                 |             | Hydrophytic Vegetation Indicators:   |
| 6   |              |                 |             | 1 - Rapid Test for Hydrophytic Vegetation  |
| 7   |              |                 |             | X 2 - Dominance Test is >50%   |
| 8   |              |                 |             | X 3 - Prevalence Index is $\leq 3.0^{1}$   |
|   | 25           | =Total Cover    |             | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                          |
| 50% of total cover:13                                   | 20%          | of total cover: | 5           |  |
| Herb Stratum (Plot size: 30 ft )                        |              |                 |             |  |
| 1. Microstegium vimineum                                | 30           | Yes             | FAC         | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be               |
| 2. Lindera benzoin                                      | 10           | Yes             | FACW        | present, unless disturbed or problematic.  |
| 3. Rosa multiflora                                      | 10           | Yes             | FACU        | Definitions of Four Vegetation Strata:   |
| 4. Boehmeria cylindrica                                 | 10           | Yes             | FACW        | Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or                            |
| 5. Alliaria petiolata                                   | 5            | No              | FACU        | more in diameter at breast height (DBH), regardless of                             |
| 6. Lonicera japonica                                    | 5            | No              | FACU        | height.  |
| 7.  |              |                 |             |  |
| 8.  |              |                 |             | <b>Sapling/Shrub</b> – Woody plants, excluding vines, less                         |
| 9.  |              |                 |             | than 3 m. DBh and greater than 3.20 m (1 m) tail.                                  |
| 10.   |              |                 |             |  |
| 11.   |              |                 |             | Herb – All herbaceous (non-woody) plants, regardless                               |
| 12.   |              |                 |             | of size, and woody plants less than 3.26 it tall.                                  |
|   | 70 :         | =Total Cover    |             | Woody Vine – All woody vines greater than 3.28 ft in                               |
| 50% of total cover: 35                                  | 20%          | of total cover: | 14          | height.  |
| Woody Vine Stratum (Plot size: 30 ft )                  |              |                 |             |  |
| 1. Vitis aestivalis                                     | 2            | Yes             | FACU        |  |
| 2. Celastrus orbiculatus                                | 5            | Yes             | FACU        |  |
| 3 Toxicodendron radicans                                | 2            | Yes             | FAC         |  |
| 4   |              |                 | 1710        |  |
|   |              |                 |             |  |
|   | <u> </u>     | -Total Cover    | <u> </u>    | Hydrophytic  |
| 50% of total cover: 5                                   | 20%          | of total cover: | 2           | Vegetation<br>Present? Ves X No  |
|   | 2078         |                 | ۷           |  |
| Remarks: (If observed, list morphological adaptations   | below.)      |                 |             |  |
| vegetation observed meets the dominance test and p      | revalence il | ndex indicators | for nyaroph | vic vegetation.  |

| Profile Desc   | cription: (Describe           | to the dep  | th needed to doc    | ument tl          | he indic          | ator or c        | onfirm th | e absence of in     | dicators.)                       |
|----------------|-------------------------------|-------------|---------------------|-------------------|-------------------|------------------|-----------|---------------------|----------------------------------|
| Depth          | Matrix                        |             | Redo                | x Featur          | es                |                  |           |                     |                                  |
| (inches)       | Color (moist)                 | %           | Color (moist)       | %                 | Type <sup>1</sup> | Loc <sup>2</sup> | Te        | exture              | Remarks                          |
| 0-3            | 10YR 3/2                      | 100         |                     |                   | С                 | М                | Loam      | y/Clayey            | Loam                             |
| 3-14           | 2.5Y 6/2                      | 90          | 10YR 5/6            | 10                | С                 | М                | Loam      | y/Clayey            | Silty loam                       |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                | ·                             | · ·         |                     |                   |                   |                  |           |                     |                                  |
|                |                               | · ·         |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
| <sup>1</sup> T |                               |             | De dese d Matrice   |                   |                   |                  |           | <sup>2</sup> l      | Denne Hindreine MALMartinite     |
| Type: C=C      | oncentration, D=Dep           | ble to all  | Reduced Matrix, i   | VIS=IVIAS         | ked San           | d Grains.        |           | Location: PL=       | Pore Lining, M=Matrix.           |
| Histosol       |                               |             | Thin Dark S         | urface (S         | S9) <b>(I RR</b>  | STIN             |           | 1 cm Muck           |                                  |
| Histic Fr      | nipedon (A2)                  |             | Barrier Islan       | idiade (e         | Muck (S           | (12)             |           | 2 cm Muck           | (A10) (I BB S)                   |
| Black Hi       | istic (A3)                    |             | (MLRA 15            | 53B. 153          | D)                | )                |           | Coast Prair         | ie Redox (A16)                   |
| Hvdroge        | en Sulfide (A4)               |             | Loamv Muc           | kv Miner          | al (F1) <b>(L</b> | RR O)            |           | (outside            | MLRA 150A)                       |
| Stratified     | d Lavers (A5)                 |             | Loamy Gley          | ed Matri          | x (F2)            | - /              |           | Reduced V           | ertic (F18)                      |
| Organic        | Bodies (A6) (LRR P            | , T, U)     | X Depleted Ma       | atrix (F3)        |                   |                  |           | (outside            | MLRA 150A, 150B)                 |
| 5 cm Mu        | ucky Mineral (A7) (LF         | R P, T, U)  | Redox Dark          | Surface           | (F6)              |                  |           | Piedmont F          | loodplain Soils (F19) (LRR P, T) |
| Muck Pr        | esence (A8) (LRR U            | )           | Depleted Da         | ark Surfa         | ce (F7)           |                  |           | Anomalous           | Bright Floodplain Soils (F20)    |
| 1 cm Mu        | uck (A9) <b>(LRR P, T)</b>    |             | Redox Depr          | essions           | (F8)              |                  |           | (MLRA 1             | 53B)                             |
| X Depleted     | d Below Dark Surface          | e (A11)     | Marl (F10) (        | LRR U)            |                   |                  |           | Red Parent          | Material (F21)                   |
| Thick Da       | ark Surface (A12)             |             | Depleted Oc         | chric (F1         | 1) <b>(MLR</b>    | A 151)           |           | Very Shallo         | w Dark Surface (F22)             |
| Coast P        | rairie Redox (A16) ( <b>N</b> | ILRA 1504   | ) Iron-Mangar       | nese Ma           | sses (F1          | 2) <b>(LRR</b> ( | O, P, T)  | (outside            | MLRA 138, 152A in FL, 154)       |
| Sandy M        | /lucky Mineral (S1) <b>(L</b> | .RR O, S)   | Umbric Surf         | ace (F13          | B) (LRR F         | P, T, U)         |           | Barrier Islar       | nds Low Chroma Matrix (TS7)      |
| Sandy G        | Gleyed Matrix (S4)            |             | Delta Ochrid        | c (F17) <b>(I</b> | MLRA 15           | 51)              |           | (MLRA 1             | 53B, 153D)                       |
| Sandy R        | Redox (S5)                    |             | Reduced Ve          | ertic (F18        | B) <b>(MLRA</b>   | 150A, 1          | 50B)      | Other (Expl         | ain in Remarks)                  |
| Stripped       | I Matrix (S6)                 |             | Piedmont Fl         | loodplain         | n Soils (F        | 19) <b>(MLF</b>  | RA 149A)  |                     |                                  |
| Dark Su        | rface (S7) (LRR P, S          | 5, T, U)    | Anomalous           | Bright Fl         | oodplain          | Soils (F2        | 20)       | 2                   |                                  |
| Polyvalu       | ie Below Surface (S8          | 3)          | (MLRA 14            | 49A, 153          | C, 153D)          | )                |           | °Indicators         | of hydrophytic vegetation and    |
| (LRR           | S, T, U)                      |             | Very Shallo         | w Dark S          | Surface (F        | -22)             |           | wetland I           | hydrology must be present,       |
|                |                               |             | (MLRA 13            | 38, 152A          | in FL, 1          | 54)              |           | unless di           | sturbed or problematic.          |
| Restrictive    | Layer (if observed):          |             |                     |                   |                   |                  |           |                     |                                  |
| Туре:          |                               |             |                     |                   |                   |                  |           |                     |                                  |
| Depth (i       | nches):                       |             |                     |                   |                   |                  | Hydri     | c Soil Present?     | Yes No                           |
| Remarks:       |                               |             |                     |                   |                   |                  |           |                     |                                  |
| Soil characte  | eristics observed me          | et requirem | ents for depleted l | below da          | rk surfac         | e, and de        | epleted m | atrix indicators. I | Hydric soils are present.        |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |
|                |                               |             |                     |                   |                   |                  |           |                     |                                  |

| WETLAND DETERMIN<br>See ERDC/E   | U.S. Army<br>ATION DATA S<br>L TR-10-20; t | <b>Plain Region</b><br>O-R | OMB Control #:<br>Requirement (<br>(Authority: Al | 0710-0024, Exp: 1<br>Control Symbol E.<br>R 335-15, paragrap | 1/30/2024<br>XEMPT:<br>oh 5-2a) |                      |                           |                 |
|--|--|----------------------------|---|--|---------------------------------|----------------------|---------------------------|-----------------|
| Project/Site: Standard Chl   | orine                                      |                            |   | City/Count   | ty: New Castle, N               | New Castle Co.       | Sampling Date:            | 9/1/23          |
| Applicant/Owner: United  | d States Environ                           | mental Prote               | ction Agency (E                                   | EPA)   | ·                               | State: DE            | Sampling Point            | W-JRK-001 PFO 2 |
| Investigator(s): J. Keil. C. B   | arrett                                     |                            | S   | ection. Towns  | ship. Range: N/A                |                      |                           |                 |
| Landform (hillside, terrace, e   | etc.): Depressio                           | on                         |   | al relief (conca   | ave. convex. non                | e): concave          | Slope (%):                | 5               |
| Subregion (I RR or MI RA):   |  | 49A Lat 3                  | 39 601576   |  | Long: -75.6                     | 38198                | Datum:                    | NAD 83          |
| Soil Map Unit Name: SaF:   | Sassafras sandv                            | loam, 10 to                | 15% slopes  |  | 20.1g. <u>010</u>               | NWI classificat      | ion: PFO1C                |                 |
| Are climatic / hydrologic con  | ditions on the sit                         | e typical for t            | his time of year                                  | ·?   | Ves X                           | No (If no e          | volain in Remark          | (5)             |
| Are Vegetation Soil  | or Hydro                                   |                            | significantly dist                                | urbed? Δ   | re "Normal Circu                | mstances" present?   |                           | No              |
| Are Vegetation, Soil   | , or Hydro                                 |                            | synnicantry dist                                  | motio?   | f poodod ovploir                |                      | $103 \underline{\Lambda}$ |                 |
|  |  |                            |   | nauc? (i   |                                 |                      |                           |                 |
| SUMMARY OF FINDI   | NGS – Attach                               | site map                   | showing sa  | ampling po   | oint locations                  | s, transects, im     | portant featu             | ures, etc.      |
| Hydrophytic Vegetation Pre<br>Hydric Soil Present?<br>Wetland Hydrology Presen   | esent?                                     | Yes X<br>Yes X<br>Yes X    | No<br>No  | Is the San<br>within a W                                     | npled Area<br>/etland?          | Yes_X_               | No                        |                 |
| Remarks:<br>This palustrine forested wetland (PFO) community was taken just southwest of the data point for community PEM 1 as the communities change from PEM to PFO. Data point is located on the eastern side of the southwest portion of study area. |  |                            |   |  |                                 |                      |                           |                 |
| HYDROLOGY  |  |                            |   |  |                                 |                      |                           |                 |
| Wetland Hydrology Indica   | ators:                                     |                            |   |  | <u>Se</u>                       | condary Indicators ( | minimum of two            | required)       |
| Primary Indicators (minimu   | m of one is requi                          | red; check a               | Il that apply)                                    |  |                                 | Surface Soil Crack   | (S (B6)                   | (5.0)           |
| Surface Water (A1)   |  | Aquatio                    | c Fauna (B13)                                     |  |                                 | _Sparsely Vegetate   | (R10)                     | ace (B8)        |
| Saturation (A3)  |  | Hvdroo                     | ien Sulfide Odo                                   | r (C1)   |                                 | Moss Trim Lines (    | (B16)<br>B16)             |                 |
| Water Marks (B1)   |  | X Oxidize                  | ed Rhizosphere                                    | s on Living Ro   | oots (C3)                       | Dry-Season Water     | Table (C2)                |                 |
| X Sediment Deposits (B2  | 2)   | Presen                     | ce of Reduced                                     | Iron (C4)  |                                 | Crayfish Burrows (   | C8)                       |                 |
| Drift Deposits (B3)  |  | Recent                     | Iron Reduction                                    | in Tilled Soil   | s (C6)                          | Saturation Visible   | on Aerial Imager          | ry (C9)         |
| Algal Mat or Crust (B4)  |  | Thin M                     | uck Surface (C                                    | 7)   | X                               | Geomorphic Positi    | ion (D2)                  |                 |
| Iron Deposits (B5)   |  | Other (                    | Explain in Rem                                    | arks)  |                                 | _Shallow Aquitard (  | D3)                       |                 |
| Inundation Visible on A  | erial Imagery (B                           | ()                         |   |  | <u></u> X                       | _FAC-Neutral Test    |                           |                 |
|  | (B9)                                       |                            |   |  |                                 |                      | Do) (LKK 1, U)            |                 |
| Surface Water Present?   | Yes  | No                         | Denth (inches                                     | <i>.</i> ).  |                                 |                      |                           |                 |
| Water Table Present?   | Yes  | No                         | Depth (inches                                     | s):  |                                 |                      |                           |                 |
| Saturation Present?  | Yes  | No                         | Depth (inches                                     | s):  | Wetland Hyd                     | rology Present?      | Yes_X                     | No              |
| (includes capillary fringe)  |  |                            |   |  |                                 |                      |                           |                 |
| Describe Recorded Data (s  | tream gauge, mo                            | onitoring well             | , aerial photos,                                  | previous insp  | ections), if availa             | able:                |                           |                 |
|  |  |                            |   |  |                                 |                      |                           |                 |
| Remarks:   |  |                            |   |  |                                 |                      |                           |                 |
| Several primary and secon  | dary indicators o                          | f wetland hyd              | drology were ob                                   | served. Wetla  | and hydrology is                | present.             |                           |                 |
|  |  |                            |   |  |                                 |                      |                           |                 |
|  |  |                            |   |  |                                 |                      |                           |                 |
|  |  |                            |   |  |                                 |                      |                           |                 |
|  |  |                            |   |  |                                 |                      |                           |                 |
|  |  |                            |   |  |                                 |                      |                           |                 |
|  |  |                            |   |  |                                 |                      |                           |                 |
|  |  |                            |   |  |                                 |                      |                           |                 |

Sampling Point: W-JRK-001 PFO 2

|  | Absolute      | e Dominant        | Indicator     |  |
|--|---------------|-------------------|---------------|--|
| Tree Stratum (Plot size: 30 ft )                 | % Cove        | r Species?        | Status        | Dominance Test worksheet:  |
| 1. Fraxinus pennsylvanica                        | 40            | Yes               | FACW          | Number of Dominant Species   |
| 2. Salix nigra                                   | 40            | Yes               | OBL           | That Are OBL, FACW, or FAC:9 (A)                                     |
| <ol> <li>Acer rubrum</li> <li>4.</li> </ol>      | 10            | No                | FAC           | Total Number of Dominant<br>Species Across All Strata: 10 (B)        |
| 5.   |               |                   |               | Percent of Dominant Species  |
| 6.   |               |                   |               | That Are OBL, FACW, or FAC:90.0% (A/B)                               |
| 7.   |               |                   |               | Prevalence Index worksheet:  |
| 8.   |               |                   |               | Total % Cover of: Multiply by:                                       |
|  | 90            | =Total Cover      |               | OBL species 40 x 1 = 40  |
| 50% of total cover:                              | 45 20         | % of total cover: | 18            | FACW species 160 x 2 = 320   |
| Sapling/Shrub Stratum (Plot size: 30 ft          | )             |                   |               | FAC species 35 x 3 = 105   |
| 1. Viburnum dentatum                             | <br>15        | Yes               | FAC           | FACU species 5 x 4 = 20  |
| 2. Lindera benzoin                               | 15            | Yes               | FACW          | UPL species 0 x 5 = 0  |
| 3. Fraxinus pennsylvanica                        | 5             | No                | FACW          | Column Totals: 240 (A) 485 (B)                                       |
| 4.   |               |                   |               | Prevalence Index = $B/A = 2.02$                                      |
| 5.   |               |                   |               | Hydrophytic Vegetation Indicators:                                   |
| 6  |               |                   |               | 1 - Rapid Test for Hydrophytic Vegetation                            |
| 7  |               |                   |               | X 2 - Dominance Test is >50%   |
| 8  |               |                   |               | $\frac{1}{2}$ 2 Dominative results 200 %                             |
|  |               | -Total Cover      |               | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)            |
| 50% of total cover                               | 19 20         |                   | 7             |  |
| Horb Stratum (Plat size: 20 ft )                 | 10 20         |                   |               |  |
| <u>     Bergemites custralia</u>                 | 20            | Vee               |               |  |
| Priragnines australis                            |               |                   |               | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be |
| 2. Onoclea sensibilis                            |               |                   |               | present, unless disturbed of problematic.                            |
| 3. Boenmena cylindrica                           |               | Yes               |               | Definitions of Four vegetation Strata:                               |
| 4. Impatiens capensis                            | 5             | NO                | FACW          | <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or       |
| 5.   |               |                   |               | height.  |
| 6.   |               |                   |               |  |
| 7  |               |                   |               | Sapling/Shrub – Woody plants, excluding vines, less                  |
| 8  |               |                   |               | than 3 in. DBH and greater than 3.28 ft (1 m) tall.                  |
| 9.   |               |                   |               |  |
| 10   |               |                   |               | Herb – All herbaceous (non-woody) plants, regardless                 |
| 11   |               |                   |               | of size, and woody plants less than 3.28 ft tall.                    |
| 12   |               |                   |               |  |
|  | 100           | =Total Cover      |               | <b>Woody Vine</b> – All woody vines greater than 3.28 ft in          |
| 50% of total cover:                              | 50 20         | % of total cover: | 20            | neight.  |
| Woody Vine Stratum (Plot size: 30 ft             | )             |                   |               |  |
| 1. Toxicodendron radicans                        | 5             | Yes               | FAC           |  |
| 2. Persicaria perfoliata                         | 5             | Yes               | FAC           |  |
| 3. Parthenocissus quinquefolia                   | 5             | Yes               | FACU          |  |
| 4.   |               |                   |               |  |
| 5  |               |                   |               | Hydrophytic  |
|  | 15            | =Total Cover      |               | Vegetation   |
| 50% of total cover:                              | 8 20          | % of total cover: | 3             | Present?   |
| Remarks: (If observed, list morphological adapta | tions below.) | o indov indicate- | for budrock   |  |
| vegetation observed meets the dominance test a   | na prevalenc  | e maex indicators | s for nyaroph | ylic vegetation.   |
|  |               |                   |               |  |

| Profile Desc   | ription: (Describe   | to the dept        | h needed to doc     | ument t   | he indica         | ator or c                    | onfirm the ab                           | sence of indi                  | cators.)       |                           |  |
|--|--|--------------------|---------------------|-----------|-------------------|------------------------------|---|--------------------------------|----------------|---------------------------|--|
| (inches)   | Color (moist)  |                    | Color (moist)       | % realu   | Tvpe <sup>1</sup> | Loc <sup>2</sup>             | Texture                                 |                                | Rem            | arks                      |  |
| <u>(</u>   |  |                    |                     |           | <u> , p</u>       |                              |   |                                |                |                           |  |
|  | 10YR 5/8   | 100                |                     |           | C                 | M                            | Sandy                                   |                                |                |                           |  |
| 3-6  | 10YR 3/2   | 100                |                     |           | C                 | Μ                            | Sandy                                   |                                |                |                           |  |
| 6-14   | 10YR 4/1   | 85                 | 5YR 4/6             | 15        | С                 | M                            | Loamy/Clayey Prominent redox concer     |                                |                | concentrations            |  |
|  |  |                    |                     |           |                   |                              |   |                                |                |                           |  |
|  |  |                    |                     |           |                   |                              |   |                                |                |                           |  |
|  |  |                    |                     |           |                   |                              |   |                                |                |                           |  |
|  |  |                    |                     |           |                   |                              |   |                                |                |                           |  |
|  |  |                    |                     |           |                   |                              |   |                                |                |                           |  |
| <sup>1</sup> Type: C=Co  | oncentration, D=Depl   | etion, RM=         | Reduced Matrix, N   | /IS=Mas   | ked San           | d Grains.                    | <sup>2</sup> Loc                        | ation: PL=Po                   | re Lining, M=  | Matrix.                   |  |
| Hydric Soil I  | ndicators: (Applica  | ble to all L       | RRs, unless othe    | erwise r  | noted.)           |                              | Indi                                    | cators for Pro                 | blematic Hy    | dric Soils <sup>3</sup> : |  |
| Histosol   | (A1)   |                    | Thin Dark S         | urface (S | 59) (LRR          | S, T, U)                     |   | 1 cm Muck (A                   | 9) (LRR O)     |                           |  |
| Histic Ep  | apedon (A2)  |                    | Barrier Islan       | ds 1 cm   | Muck (S           | 12)                          |   | 2 cm Muck (A                   | 10) (LRR S)    |                           |  |
| Black His  | stic (A3)  |                    | (MLRA 15            | 3B, 153   |                   |                              |   | Coast Prairie                  | Redox (A16)    |                           |  |
| Hydrogei   | Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR O) (outside MLRA 150A) |                    |                     |           |                   |                              |   |                                |                |                           |  |
| Stratified Layers (A5) Loamy Gleyed Matrix (F2) Reduced Vertic (F18    |  |                    |                     |           | IC (F18)          | <b>AD</b> )                  |   |                                |                |                           |  |
| Organic Bodies (A6) (LRR P, T, U) X Depleted Matrix (F3) (outside MLRA |  |                    |                     |           | RA 150A, 15       |                              |   |                                |                |                           |  |
| 5 cm Mucky Mineral (A7) (LRR P, T, U) Redox Dark Surface (F6)          |  |                    |                     |           | (F6)              |                              |   | Pleamont Floo                  | apiain Solis ( | (F19) (LRR P, I)          |  |
|  | esence (A8) (LRR U)  |                    | Depleted Da         | irk Suna  |                   |                              | Anomaious Bright Floodplain Solis (F20) |                                |                |                           |  |
|  | CK (A9) <b>(LRR P, T)</b>  | (                  |                     |           | (F8)              |                              |   |                                | RA 153B)       |                           |  |
| Depleted   | Below Dark Surface   | e (A11)            | Mari (F10) (I       | LRR U)    |                   |                              |   | Red Parent M                   | aterial (F21)  | (500)                     |  |
|  | irk Surface (A12)  |                    |                     |           |                   | 4 151)<br>0) <i>(</i> 1 DD ( |   | very Snallow                   | Dark Surrace   | (FZZ)                     |  |
| Coast Pr   | unie Redux (AT6) (N  |                    | International Surf  |           |                   | 2) (LRR (<br>) T II)         | J, P, I)                                |                                | -RA 130, 132   | A IN FL, 134)             |  |
| Sandy M  | loved Metrix (S1) (L   | KK 0, 3j           | Onibile Suit        |           |                   | -, I, U)<br>:4)              |   |                                |                |                           |  |
| Sandy B  |  |                    | Delta Ochino        | rtic (E19 |                   | 1504 1                       | 50B)                                    | (IVILKA 1551<br>Othor (Evoloin | in Romarka)    |                           |  |
| Stripped   | Matrix (S6)  |                    | Reduced Ve          | oodolair  | Soile (F          | 10) <b>(MI E</b>             | Δ 1/9A)                                 |                                |                |                           |  |
| Dark Sur   | face (S7) <b>(I RR P S</b>   | т ш                |                     | Bright Fl | loodolain         | Soils (E)                    |   |                                |                |                           |  |
| Bolyvalue  | a Below Surface (S8  | , <b>, , , , ,</b> | /MI RA 14           | 00 153    |                   |                              | -0)                                     | <sup>3</sup> Indicators of I   | hydrophytic y  | agetation and             |  |
|  |  | )                  | Very Shallo         | w Dark S  | Surface (F        |                              |   | wetland hvo                    | Irology must   | ne present                |  |
| (  | , , , , ,  |                    | (MLRA 13            | 8, 152A   | in FL, 1          | 54)                          |   | unless distu                   | irbed or probl | ematic.                   |  |
| Restrictive L  | aver (if observed):  |                    |                     |           |                   | ,                            |   |                                |                |                           |  |
| Type:  | ,  |                    |                     |           |                   |                              |   |                                |                |                           |  |
| Depth (in  | nches):  |                    |                     |           |                   |                              | Hydric Soi                              | I Present?                     | Yes            | No                        |  |
| Remarks:   |  |                    |                     |           |                   |                              |   |                                |                |                           |  |
| Soil characte  | ristics observed mee   | t requireme        | ents for a depleted | d matrix  | indicator.        | Hydric s                     | oils are preser                         | nt.                            |                |                           |  |
|  |  |                    | -                   |           |                   |                              | -                                       |                                |                |                           |  |
|  |  |                    |                     |           |                   |                              |   |                                |                |                           |  |
|  |  |                    |                     |           |                   |                              |   |                                |                |                           |  |

| U.S. Army Corps of Engineers<br>WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain R<br>See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R   | Comb Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a) |
|---|--|
| Project/Site: Standard Chlorine City/County: New City/City/City/City/City/City/City/City/ | Castle, New Castle Co. Sampling Date: 9/6/23   |
| Applicant/Owner: United States Environmental Protection Agency (EPA)  | State: DE Sampling Point: W-JRK-001 PFO 3  |
| Investigator(s): J. Keil, M. Curran Section, Township, Ran  | nge: N/A   |
| Landform (hillside, terrace, etc.): Floodplain Local relief (concave, conv  | vex. none): concave Slope (%): 5   |
| Subregion (I RR or MI RA): I RR S MI RA 149A Lat: 39 604426   | pg: -75 633707 Datum: NAD 83   |
| Soil Map Linit Name: NM: Nanticoke and Mappington soils, very frequently flooded, tidal   | NWI classification: E2EM5P6  |
| Are alimetia / hudralaria conditions on the site turical for this time of year?   |  |
| Are Vignated and the site typical for this time of year?  |  |
| Are Vegetation, Soil, or Hydrologysignificantly disturbed? Are "Norm  | hal Circumstances" present? Yes X No   |
| Are Vegetation, Soil, or Hydrologynaturally problematic? (If needed   | l, explain any answers in Remarks.)  |
| SUMMARY OF FINDINGS – Attach site map showing sampling point loc  | cations, transects, important features, etc.   |
| Hydrophytic Vegetation Present?       Yes       X       No       Is the Sampled Ar         Hydric Soil Present?       Yes       X       No       within a Wetland?         Wetland Hydrology Present?       Yes       X       No       within a Wetland?  | ea<br>Yes <u>X</u> No  |
| Remarks:<br>This palustrine forested wetland (PFO) community is located north of the facility and fringes b<br>the direct floodplain of the Red Lion Creek.   | etween the upland forest and the PEM wetland within  |
| HYDROLOGY   |  |
| Wetland Hydrology Indicators:   | Secondary Indicators (minimum of two required)   |
| Primary Indicators (minimum of one is required; check all that apply)   | Surface Soil Cracks (B6)   |
| Surface Water (A1) Aquatic Fauna (B13)  | Sparsely Vegetated Concave Surface (B8)  |
| X High Water Table (A2) Marl Deposits (B15) (LRR U)   | Drainage Patterns (B10)  |
| X Saturation (A3) Hydrogen Suitide Odor (C1)  | Moss Trim Lines (B16)  |
| OXidized Rhizospheres of Living Roots (C3)  | Cravifish Burrows (C8)   |
| Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6)  | Saturation Visible on Aerial Imagery (C9)  |
| Algal Mat or Crust (B4) Thin Muck Surface (C7)  | X Geomorphic Position (D2)   |
| Iron Deposits (B5) Other (Explain in Remarks)   | Shallow Aquitard (D3)  |
| Inundation Visible on Aerial Imagery (B7)   | X FAC-Neutral Test (D5)  |
| X Water-Stained Leaves (B9)   | Sphagnum Moss (D8) (LRR T, U)  |
| Field Observations:   |  |
| Surface Water Present?         Yes         No         X         Depth (inches):         0   |  |
| Water Table Present?       Yes X       No       Depth (inches):       8   |  |
| Saturation Present? Yes X No Depth (inches): 0 Wetla  | and Hydrology Present? Yes X No  |
| (Includes capillary fringe)   | if quailable:  |
| Describe Recorded Data (stream gauge, monitoring well, aenai photos, previous inspections),   | , il avaliadie.  |
| Remarks:  |  |
| Several primary and secondary indicators of wetland hydrology were observed. Wetland hydro  | ology is present.  |
|   |  |
|   |  |
|   |  |
|   |  |
|   |  |
|   |  |

Sampling Point: W-JRK-001 PFO 3

|  | Absolute      | Dominant        | Indicator    |  |
|--|---------------|-----------------|--------------|--|
| Tree Stratum (Plot size: 30 ft )                     | % Cover       | Species?        | Status       | Dominance Test worksheet:                                      |
| 1. Acer rubrum                                       | 80            | Yes             | FAC          | Number of Dominant Species                                     |
| 2.   |               |                 |              | That Are OBL, FACW, or FAC:6 (A)                               |
| 3.   |               |                 |              | Total Number of Dominant                                       |
| 4.   |               |                 |              | Species Across All Strata: 8 (B)                               |
| 5.   |               |                 |              | Percent of Dominant Species                                    |
| 6.   |               |                 |              | That Are OBL, FACW, or FAC: 75.0% (A/B)                        |
| 7.   |               |                 |              | Prevalence Index worksheet:                                    |
| 8.   |               |                 |              | Total % Cover of: Multiply by:                                 |
|  | 80 =          | =Total Cover    |              | OBL species 30 x 1 = 30  |
| 50% of total cover: 40                               | ) 20%         | of total cover: | 16           | FACW species 76 x 2 = 152                                      |
| Sapling/Shrub Stratum (Plot size: 30 ft )            |               |                 |              | FAC species 92 x 3 = 276                                       |
| 1. Viburnum dentatum                                 | 5             | Yes             | FAC          | FACU species $15 \times 4 = 60$                                |
| 2. Acer rubrum                                       | 5             | Yes             | FAC          | UPL species $0 	 x 5 = 0$                                      |
| 3. Salix nigra                                       | 5             | Yes             | OBL          | Column Totals: 213 (A) 518 (B)                                 |
| 4.   |               |                 |              | Prevalence Index = $B/A = 2.43$                                |
| 5.   |               |                 |              | Hydrophytic Vegetation Indicators:                             |
| 6.   |               |                 |              | 1 - Rapid Test for Hydrophytic Vegetation                      |
| 7  |               |                 |              | X 2 - Dominance Test is >50%                                   |
| 8  |               |                 |              | $X_{3}$ - Prevalence Index is $\leq 3.0^{1}$                   |
|  | 15            | -Total Cover    |              | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)      |
| 50% of total cover:                                  | 20%           | of total cover: | 3            |  |
| Horb Stratum (Plot size: 30 ft )                     | 2070          |                 |              |  |
| 1 Dhragmitaa australia                               | 50            | Voo             |              |  |
| Corov lurido   | 50            | No              |              | Indicators of hydric soil and wetland hydrology must be        |
| 2. Carex lunda                                       | 10            |                 |              | Definitions of Four Verstation Strate                          |
| 3. Boerimena cylindrica                              | 10            |                 |              | Demnitions of Four vegetation Strata:                          |
| 4. Woodwardia areolata                               |               | Yes             |              | <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or |
| 5. Liquidambar styracifiua                           | 2             |                 | FAC          | height.  |
| 6. Osmundastrum cinnamomeum                          | 2             |                 | FACW         |  |
| 7. Arisaema triphyllum                               | 2             | <u>N0</u>       | FACW         | Sapling/Shrub – Woody plants, excluding vines, less            |
| 8. Epilobium ciliatum                                | 10            | NO              | FACW         | than 3 in. DBH and greater than 3.28 ft (1 m) tall.            |
| 9  |               |                 |              |  |
| 10   |               |                 |              | Herb – All herbaceous (non-woody) plants, regardless           |
| 11   |               |                 |              | of size, and woody plants less than 3.28 ft tall.              |
| 12   |               |                 |              |  |
|  | 101 =         | =Total Cover    |              | Woody Vine – All woody vines greater than 3.28 ft in           |
| 50% of total cover: 51                               | 20%           | of total cover: | 21           | neight.  |
| Woody Vine Stratum (Plot size: 30 ft )               |               |                 |              |  |
| 1. Vitis riparia                                     | 2             | No              | FACW         |  |
| 2. Celastrus orbiculatus                             | 5             | Yes             | FACU         |  |
| 3. Lonicera japonica                                 | 10            | Yes             | FACU         |  |
| 4  |               |                 |              |  |
| 5  |               |                 |              | Hydrophytic  |
|  | 17 :          | =Total Cover    |              | Vegetation   |
| 50% of total cover: 9                                | 20%           | of total cover: | 4            | Present? Yes X No  |
| Remarks: (If observed, list morphological adaptation | s below.)     |                 |              |  |
| Vegetation observed meets the dominance test and     | orevalence ir | ndex indicators | for hydrophy | tic vegetation.  |
|  |               |                 |              |  |

| Profile Desc   | ription: (Describe           | to the dep  | th needed to doci    | ument t        | he indica                | ator or c                    | onfirm the absence            | of indicators.)       |                               |  |
|--|------------------------------|-------------|----------------------|----------------|--------------------------|------------------------------|-------------------------------|-----------------------|-------------------------------|--|
| Ueptn<br>(inches)  | Color (moist)                | %           | Color (moist)        | x Featur<br>%  | res<br>Type <sup>1</sup> | Loc <sup>2</sup>             | Texture                       |                       | Remarks                       |  |
| 0-3  | 10VR 3/2                     | 100         |                      | ,,,            | <u> </u>                 | <br>M                        | Mucky Loam/Clay               | Mucky minoral         |                               |  |
|  | 2 EVD 5/1                    |             | 2 EV E/4             |                |                          |                              |                               |                       |                               |  |
|  | 2.51K 5/1                    | 95          | 2.51 5/4             |                | <u> </u>                 |                              | Loamy/Clayey Silty loam       |                       |                               |  |
| 8-14   | 2.5Y 6/1                     | 95          | 2.5Y 5/4             | 5              | C                        | M                            | Loamy/Clayey Silty clay cloam |                       |                               |  |
|  |                              | <u> </u>    |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
| <sup>1</sup> Type: C=Co  | oncentration, D=Dep          | letion, RM  | =Reduced Matrix, N   | /IS=Mas        | ked San                  | d Grains                     | . <sup>2</sup> Location: I    | PL=Pore Lining,       | M=Matrix.                     |  |
| Hydric Soil I  | ndicators: (Applica          | ble to all  | LRRs, unless othe    | erwise r       | noted.)                  |                              | Indicators                    | for Problemation      | c Hydric Soils <sup>3</sup> : |  |
| Histosol   | (A1)                         |             | Thin Dark S          | urface (S      | S9) <b>(LRR</b>          | S, T, U)                     | 1 cm M                        | uck (A9) (LRR (       | 0)                            |  |
| Histic Ep  | ipedon (A2)                  |             | Barrier Islan        | ds 1 cm        | Muck (S                  | 12)                          | 2 cm M                        | uck (A10) <b>(LRR</b> | S)                            |  |
| Black His  | stic (A3)                    |             | (MLRA 15             | 3B, 153        | BD)                      |                              | Coast F                       | Prairie Redox (A      | 16)                           |  |
| Hydroger   | n Sulfide (A4)               |             | Loamy Muck           | ky Miner       | al (F1) <b>(L</b>        | .RR O)                       | (outs                         | ide MLRA 150A         | A)                            |  |
| Stratified   | Layers (A5)                  |             | Loamy Gleye          | ed Matri       | x (F2)                   |                              | Reduce                        | ed Vertic (F18)       |                               |  |
| Organic I  | Bodies (A6) <b>(LRR P</b> ,  | T, U)       | X Depleted Ma        | atrix (F3)     | )                        |                              | (outs                         | ide MLRA 150A         | A, 150B)                      |  |
| 5 cm Mucky Mineral (A7) (LRR P, T, U) Redox Dark Surface (F6) Piedmont Floodplain Soils (F19) (L |                              |             |                      |                |                          | oils (F19) <b>(LRR P, T)</b> |                               |                       |                               |  |
| Muck Presence (A8) (LRR U) Depleted Dark Surface (F7) Anomalous Bright Floodplain Sol            |                              |             |                      |                | dplain Soils (F20)       |                              |                               |                       |                               |  |
| 1 cm Mu  | ck (A9) <b>(LRR P, T)</b>    |             | Redox Depre          | essions        | (F8)                     |                              | (MLR                          | A 153B)               |                               |  |
| X Depleted   | Below Dark Surface           | e (A11)     | Marl (F10) <b>(I</b> | _RR U)         |                          |                              | Red Pa                        | rent Material (F      | 21)                           |  |
| Thick Da   | rk Surface (A12)             |             | Depleted Oc          | hric (F1       | 1) <b>(MLR</b>           | A 151)                       | Very St                       | nallow Dark Surf      | face (F22)                    |  |
| Coast Pr   | airie Redox (A16) ( <b>N</b> | ILRA 1504   | A) Iron-Mangar       | iese Ma        | sses (F1                 | 2) <b>(LRR</b>               | O, P, T) (outs                | ide MLRA 138,         | 152A in FL, 154)              |  |
| Sandy M  | ucky Mineral (S1) (L         | .RR O, S)   | Umbric Surfa         | ace (F13       | 3) (LRR F                | P, T, U)                     | Barrier                       | Islands Low Ch        | roma Matrix (TS7)             |  |
| Sandy G  | leyed Matrix (S4)            |             | Delta Ochric         | (F17) <b>(</b> | MLRA 15                  | 51)                          | (MLR                          | A 153B, 153D)         |                               |  |
| Sandy R  | edox (S5)                    |             | Reduced Ve           | rtic (F18      | B) (MLRA                 | 150A, 1                      | <b>50B)</b> Other (           | Explain in Rema       | arks)                         |  |
| Stripped   | Matrix (S6)                  |             | Piedmont Fl          | oodplair       | n Soils (F               | 19) <b>(ML</b> I             | RA 149A)                      |                       |                               |  |
| Dark Sur   | face (S7) <b>(LRR P, S</b>   | , T, U)     | Anomalous I          | Bright F       | loodplain                | Soils (F                     | 20)                           |                       |                               |  |
| Polyvalue  | e Below Surface (S8          | )           | (MLRA 14             | 9A, 153        | C, 153D)                 | )                            | <sup>3</sup> Indicat          | ors of hydrophy       | tic vegetation and            |  |
| (LRR S   | S, T, U)                     |             | Very Shallow         | v Dark S       | Surface (F               | -22)                         | wetla                         | and hydrology m       | ust be present,               |  |
|  |                              |             | (MLRA 13             | 8, 152A        | in FL, 1                 | 54)                          | unles                         | ss disturbed or p     | problematic.                  |  |
| Restrictive L  | ayer (if observed):          |             |                      |                |                          |                              |                               |                       |                               |  |
| Туре:  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
| Depth (in  | nches):                      |             |                      |                |                          |                              | Hydric Soil Prese             | ent? Yes              | No                            |  |
| Remarks:   |                              |             |                      |                |                          |                              |                               |                       |                               |  |
| Soil characte  | ristics observed mee         | et requirem | ients for depleted b | elow da        | ark surfac               | e, and d                     | epleted matrix indicate       | ors. Hydric soils     | are present.                  |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |
|  |                              |             |                      |                |                          |                              |                               |                       |                               |  |

| U.S. Arm<br>WETLAND DETERMINATION DATA<br>See ERDC/EL TR-10-20;                        | ulf Coastal Plain Region           | OMB Control #: 0710-0024, Exp: 11/30/2024           Region           Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a) |  |  |  |  |  |  |
|--|------------------------------------|---|--|--|--|--|--|--|
| Project/Site: Standard Chlorine  |                                    | City/County: New Castle,  | New Castle Co. Sampling Date: 9/1/23         |  |  |  |  |  |
| Applicant/Owner: United States Enviro  | onmental Protection Agency (E      | PA)   | State: DE Sampling Point: W-JRK-001 UPL 1    |  |  |  |  |  |
| Investigator(s): J. Keil, C. Barrett   | S                                  | ection, Township, Range: N/   | A  |  |  |  |  |  |
| Landform (hillside, terrace, etc.): Hillslope  | e Loca                             | al relief (concave, convex, nor   | ne): convex Slope (%): 20                    |  |  |  |  |  |
| Subregion (LRR or MLRA); LRR S. MLRA 149A Lat: 39.601432 Long: -75.63808 Datum: NAD 83 |                                    |   |  |  |  |  |  |  |
| Soil Map Unit Name: SaE: Sassafras sand  | dv loam. 10 to 15% slopes          | ŭ   | NWI classification: N/A                      |  |  |  |  |  |
| Are climatic / bydrologic conditions on the  | site typical for this time of year | ·? Yes X  | No (If no explain in Remarks )               |  |  |  |  |  |
| Are Vegetation Soil or Hydrologic conditions on the                                    | Irology significantly dist         | urbed? Are "Normal Circu  |  |  |  |  |  |  |
| Are Vegetation, Soil, or Hyd   |                                    | motio? (If needed evaluation  |  |  |  |  |  |  |
|  |                                    |   | in any answers in Remarks.)                  |  |  |  |  |  |
| SUMMARY OF FINDINGS – Attac  | ch site map showing sa             | ampling point location  | s, transects, important features, etc.       |  |  |  |  |  |
| Hydrophytic Vegetation Present?<br>Hydric Soil Present?<br>Wetland Hydrology Present?  | Yes X No<br>Yes No X<br>Yes No X   | Is the Sampled Area within a Wetland?   | Yes NoX                                      |  |  |  |  |  |
|  |                                    |   |  |  |  |  |  |  |
|  |                                    |   | conden (Indicators (minimum of two required) |  |  |  |  |  |
| Primary Indicators (minimum of one is rec  | wired: check all that apply)       | <u> 36</u>  | Surface Soil Cracks (B6)                     |  |  |  |  |  |
| Surface Water (A1)   | Aquatic Fauna (B13)                |   | Sparsely Vegetated Concave Surface (B8)      |  |  |  |  |  |
| High Water Table (A2)  | Marl Deposits (B15) (I             |   | Drainage Patterns (B10)                      |  |  |  |  |  |
| Saturation (A3)  | Hydrogen Sulfide Odo               | r (C1)  | Moss Trim Lines (B16)                        |  |  |  |  |  |
| Water Marks (B1)   | Oxidized Rhizosphere               | s on Living Roots (C3)  | Dry-Season Water Table (C2)                  |  |  |  |  |  |
| Sediment Deposits (B2)   | Presence of Reduced                | Iron (C4)   | Crayfish Burrows (C8)                        |  |  |  |  |  |
| Drift Deposits (B3)  | Recent Iron Reduction              | in Tilled Soils (C6)  | Saturation Visible on Aerial Imagery (C9)    |  |  |  |  |  |
| Algal Mat or Crust (B4)  | Thin Muck Surface (C               | 7)  | Geomorphic Position (D2)                     |  |  |  |  |  |
| Iron Deposits (B5)   | Other (Explain in Rem              | arks)   | Shallow Aquitard (D3)                        |  |  |  |  |  |
| Inundation Visible on Aerial Imagery (   | В()                                |   | FAC-Neutral Test (D5)                        |  |  |  |  |  |
| Field Observations:  |                                    |   |  |  |  |  |  |  |
| Field Observations:<br>Surface Water Present? Ves                                      | No Denth (inches                   | .).   |  |  |  |  |  |  |
| Water Table Present? Yes   | No Depth (inches                   | y)  |  |  |  |  |  |  |
| Saturation Present? Yes  | No Depth (inches                   | (); Wetland Hvo   | Irology Present? Yes No X                    |  |  |  |  |  |
| (includes capillary fringe)  |                                    | /   |  |  |  |  |  |  |

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

#### Remarks:

No hydrology indicators were observed.

(includes capillary fringe)

Sampling Point: W-JRK-001 UPL 1

|  | Absolute      | Dominant        | Indicator |  |
|--|---------------|-----------------|-----------|--|
| Tree Stratum (Plot size: 30 ft )                     | % Cover       | Species?        | Status    | Dominance Test worksheet:  |
| 1. Carya glabra                                      | 10            | No              | FACU      | Number of Dominant Species   |
| 2. Prunus serotina                                   | 20            | Yes             | FACU      | That Are OBL, FACW, or FAC: (A)  |
| 3. Acer rubrum                                       | 25            | Yes             | FAC       | Total Number of Dominant   |
| 4. Liriodendron tulipifera                           | 30            | Yes             | FACU      | Species Across All Strata: 6 (B)   |
| 5  |               |                 |           | Percent of Dominant Species  |
| 6.   |               |                 |           | That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)   |
| 7.   |               |                 |           | Prevalence Index worksheet:  |
| 8.   |               |                 |           | Total % Cover of: Multiply by:   |
|  | 85            | =Total Cover    |           | OBL species         0         x 1 =         0  |
| 50% of total cover: 43                               | 3 20%         | of total cover: | 17        | FACW species 110 x 2 = 220   |
| Sapling/Shrub Stratum (Plot size: 30 ft )            |               |                 |           | FAC species 40 x 3 = 120   |
| 1. Sassafras albidum                                 | 1             | No              | FACU      | FACU species 76 x 4 = 304  |
| 2. Clethra alnifolia                                 | 40            | Yes             | FACW      | UPL species 5 x 5 = 25   |
| 3. Carya glabra                                      | 5             | No              | FACU      | Column Totals: 231 (A) 669 (B)   |
| 4.   |               |                 |           | Prevalence Index = $B/A = 2.90$  |
| 5.   |               |                 |           | Hydrophytic Vegetation Indicators:   |
| 6.   |               |                 |           | 1 - Rapid Test for Hydrophytic Vegetation  |
| 7.   |               |                 |           | X 2 - Dominance Test is >50%   |
| 8.   |               |                 |           | 3 - Prevalence Index is ≤3.0 <sup>1</sup>  |
|  | 46            | =Total Cover    |           | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  |
| 50% of total cover: 23                               | 3 20%         | of total cover: | 10        | (,,, _,, _ |
| Herb Stratum (Plot size: 30 ft )                     |               |                 |           |  |
| 1. Clethra alnifolia                                 | 70            | Yes             | FACW      |  |
| 2. Athyrium filix-femina                             | 5             | <u>No</u>       | UPI       | present, unless disturbed or problematic.  |
| 3 Sassafras albidum                                  | 10            | No              | FACU      | Definitions of Four Vegetation Strata  |
| 4  |               |                 |           | <b>Tree</b> Woody planta avaluding vince 2 in (7.6 cm) or  |
| 5  |               |                 |           | more in diameter at breast height (DBH), regardless of   |
| 6  |               |                 |           | height.  |
| 7  |               |                 |           |  |
| 8  |               |                 |           | Sapling/Shrub – Woody plants, excluding vines, less  |
| 9  |               |                 |           | than 3 in. DBH and greater than 3.28 ft (1 m) tall.  |
| 10   |               |                 |           |  |
| 11   |               |                 |           | Herb – All herbaceous (non-woody) plants, regardless   |
| 10   |               |                 |           | of size, and woody plants less than 3.28 ft tall.  |
| 12.  | 95            | Total Cover     |           | Weedy Vine All weedy vines greater than 2.29 ft in   |
| E0% of total power:                                  | 2 200/        |                 | 17        | height.  |
| Weedy Vine Stretum (Plot eize: 20 ft                 | 20%           |                 | 17        |  |
| <u>woody vine stratum</u> (Plot size. <u>30 it</u> ) | 15            | Voo             | EAC       |  |
|  | 10            | 165             | FAC       |  |
| 2  |               |                 |           |  |
| 3  |               | ·               |           |  |
| 4.   |               |                 |           |  |
| 5  |               |                 |           | Hydrophytic  |
|  | 15            | =Total Cover    |           | Vegetation   |
| 50% of total cover: 8                                | 20%           | of total cover: | 3         | Present? Yes <u>X</u> No   |
| Remarks: (If observed, list morphological adaptation | s below.)     |                 |           |  |
| Vegetation observed meets the dominance test indic   | ator for hydr | ophytic vegeta  | tion.     |  |
|  |               |                 |           |  |

| Profile Desc  | ription: (Describe           | to the dept   | n needed to docu  | ument t                          | he indic                       | ator or c                            | onfirm th    | ne absence of                           | indicators.)                    |                             |  |
|---|------------------------------|---------------|-------------------|----------------------------------|--------------------------------|--------------------------------------|--------------|---|---------------------------------|-----------------------------|--|
| Depth   | Matrix                       |               | Redo              | x Featur                         | res<br>Trans 1                 | 1 2                                  | т.           |   | D.                              |                             |  |
| (incnes)  | Color (moist)                | %             | Color (moist)     | %                                | Туре                           | LOC                                  |              | exture                                  | Re                              | emarks                      |  |
| 0-1   | 10YR 3/3                     | 100           |                   |                                  | С                              | Μ                                    | Loam         | y/Clayey                                | Loam                            |                             |  |
| 1-12  | 10YR 4/6                     | 100           |                   |                                  | С                              | М                                    | Loamy/Clayey |   | l                               | ₋oam                        |  |
|   |                              |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
|   |                              |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
|   |                              |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
|   |                              |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
|   |                              |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
|   |                              |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
|   |                              |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
| <sup>1</sup> Type: C=Co   | oncentration, D=Depl         | etion, RM=F   | Reduced Matrix, M | IS=Mas                           | ked San                        | d Grains.                            |              | <sup>2</sup> Location: PL               | =Pore Lining, N                 | I=Matrix.                   |  |
| Hydric Soil I   | ndicators: (Applica          | ble to all Ll | RRs, unless othe  | rwise n                          | oted.)                         |                                      |              | Indicators for                          | r Problematic I                 | lydric Soils <sup>3</sup> : |  |
| Histosol  | (A1)                         |               | Thin Dark Su      | urface (S                        | 59) <b>(LRR</b>                | S, T, U)                             |              | 1 cm Muc                                | k (A9) <b>(LRR O)</b>           |                             |  |
| Histic Ep   | ds 1 cm Muck (S12)           |               |                   |                                  | 2 cm Muck (A10) <b>(LRR S)</b> |                                      |              |   |                                 |                             |  |
| Black Histic (A3) (MLRA 153B, 153D)   |                              |               |                   |                                  |                                |                                      |              | Coast Prairie Redox (A16)               |                                 |                             |  |
| Hydrogen Suilide (A4)     Loamy Mucky Mineral (F1)     Stratified Layors (A5) |                              |               |                   |                                  |                                | .RR 0)                               |              | Reduced                                 |                                 |                             |  |
| Organic   | Depleted Ma                  | trix (E3)     | x (i 2)           |                                  |                                | (outside                             | e MI RA 150A | 150B)                                   |                                 |                             |  |
| 5 cm Mucky Mineral (A7) (I RR P, T, U) Bedox Dark Surfac                      |                              |               |                   |                                  | (F6)                           |                                      |              | Piedmont                                | Floodplain Soil                 | s (F19) <b>(LRR P. T)</b>   |  |
| Muck Pre  | esence (A8) (LRR U)          | )             | Depleted Da       | rk Surfa                         | (F7)                           |                                      |              | Anomalous Bright Floodplain Soils (F20) |                                 |                             |  |
| 1 cm Mu   | ck (A9) (LRR P, T)           |               | Redox Depre       | essions                          | (F8)                           |                                      |              | (MLRA                                   | RA 153B)                        |                             |  |
| Depleted  | Below Dark Surface           | e (A11)       | Marl (F10) (L     | Marl (F10) (LRR U)               |                                |                                      |              |   | Red Parent Material (F21)       |                             |  |
| Thick Da  | rk Surface (A12)             |               | Depleted Oc       | Depleted Ochric (F11) (MLRA 151) |                                |                                      |              |   | Very Shallow Dark Surface (F22) |                             |  |
| Coast Pr  | airie Redox (A16) ( <b>M</b> | ILRA 150A)    | Iron-Mangan       | ese Ma                           | sses (F1                       | 2) <b>(LRR</b> (                     | O, P, T)     | (outsid                                 | de MLRA 138, 152A in FL, 154)   |                             |  |
| Sandy M   | lucky Mineral (S1) <b>(L</b> | RR O, S)      | Umbric Surfa      | ace (F13                         | B) (LRR F                      | , T, U) Barrier Islands Low Chroma M |              |   | ma Matrix (TS7)                 |                             |  |
| Sandy G   | leyed Matrix (S4)            |               | Delta Ochric      | (F17) <b>(</b>                   | MLRA 15                        | 51)                                  |              | (MLRA 153B, 153D)                       |                                 |                             |  |
| Sandy R   | edox (S5)                    |               | Reduced Ve        | rtic (F18                        | B) <b>(MLRA</b>                | 150A, 1                              | 50B)         | Other (Ex                               | plain in Remark                 | s)                          |  |
| Stripped  | Matrix (S6)                  |               | Piedmont Flo      | odplain                          | n Soils (F                     | 19) (MLF                             | RA 149A)     |   |                                 |                             |  |
| Dark Sur  | tace (S7) (LRR P, S          | , T, U)       | Anomalous E       | Bright Fl                        | loodplain                      | Soils (F2                            | 20)          | 31                                      | Charalana a ha d'a              |                             |  |
|   |                              | )             |                   | 9A, 153                          | C, 153D                        | )<br>                                |              | Indicator                               | s of nyaropnytic                | vegetation and              |  |
|   | 5, 1, 0)                     |               | (MI RA 13         | 2 152Δ                           | in Fl 1                        | -22)<br>54)                          |              | unless                                  | disturbed or pro                | blematic                    |  |
| Bestrictive I   | aver (if cheerved);          |               |                   | 0, 1324                          |                                | 54)                                  | 1            | unicoo                                  |                                 |                             |  |
| Type.   | ayer (il observed).          |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
| Denth (ir   | abaa);                       |               | ,                 |                                  |                                |                                      | Lively       | e Ceil Dressné                          | 2 Vaa                           | Ne Y                        |  |
| Depth (Ir   |                              |               |                   |                                  |                                |                                      | Hyari        | c Soll Present                          | r res                           |                             |  |
| Hydric soil in  | dicators are not pres        | ent           |                   |                                  |                                |                                      |              |   |                                 |                             |  |
|   | allow are not pros           |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
|   |                              |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |
|   |                              |               |                   |                                  |                                |                                      |              |   |                                 |                             |  |

| U.S. Army<br>WETLAND DETERMINATION DATA<br>See ERDC/EL TR-10-20; t                                | OMB Control #<br>Requirement<br>(Authority: A  | t: 0710-0024, Exp: 11/30/2024<br>t Control Symbol EXEMPT:<br>AR 335-15, paragraph 5-2a) |  |                              |  |  |
|---|--|---|--|------------------------------|--|--|
| Project/Site: Standard Chlorine   |  | City/County: New Castle, N  | lew Castle Co.                                     | Sampling Date: 9/1/23        |  |  |
| Applicant/Owner: United States Environ  | mental Protection Agency (E  | State: DE   | Sampling Point: W-JRK-001 UPL 2                    |                              |  |  |
| Investigator(s): J. Keil, C. Barrett  |  | ection. Township, Range: N/A  |  |                              |  |  |
| Landform (billside terrace etc.): Hillside  |  | l relief (concave, convex, none   | e): convex   | Slope (%): 10                |  |  |
| Subregion (LRR or MLRA): LRR S MLRA 1   |  | Long: -75.6   | 38971  | Datum: NAD 83                |  |  |
| Soil Map Unit Name: SaE: Sassafras sandy  | loam 10 to 15% slopes  | Long  | NWI classifica                                     | ation: N/A                   |  |  |
| Are climatic / hydrologic conditions on the sit   | te typical for this time of year   |   |  | evolain in Remarks )         |  |  |
| Are Vogetation Soil or Hydro  | logy significantly dist  | rbod? Are "Normal Circu   |  |                              |  |  |
| Are Vegetation, Soil, or Hydro  | blogy significantly disc   | arbed: Are Normal Circul  |  |                              |  |  |
| SUMMARY OF FINDINGS – Attach  | site map showing sa  | mpling point locations  | , transects, in                                    | nportant features, etc.      |  |  |
| Hydrophytic Vegetation Present?<br>Hydric Soil Present?<br>Wetland Hydrology Present?<br>Remarks: | Yes         No         X           Yes         No         X           Yes         No         X | Is the Sampled Area within a Wetland?   | Yes  | No <u>X</u>                  |  |  |
| This upland data point was taken in associa point/boundary within cleared ROW.                    | ition with community point PE  | EM 2 of Wetland 001. The poi  | int was taken north                                | n and upslope of the wetland |  |  |
| HYDROLOGY   |  |   |  |                              |  |  |
| Wetland Hydrology Indicators:   |  | Sec   | condary Indicators                                 | (minimum of two required)    |  |  |
| Primary Indicators (minimum of one is requ  | ired; check all that apply)  |   | Surface Soil Cracks (B6)                           |                              |  |  |
| Surface Water (A1)  | Aquatic Fauna (B13)  |   | Sparsely Vegetated Concave Surface (B8)            |                              |  |  |
| High Water Table (A2)   | Marl Deposits (B15) (L   | KK U)   | _ Drainage Patterns (B10)<br>Moss Trim Lines (B16) |                              |  |  |
| Water Marks (B1)  | Oxidized Rhizospheres  | con Living Roots (C3)   | Dry-Season Water Table (C2)                        |                              |  |  |
| Sediment Deposits (B2)  | Presence of Reduced I  | lron (C4)   | Crayfish Burrows (C8)                              |                              |  |  |
| Drift Deposits (B3)   | Recent Iron Reduction  | in Tilled Soils (C6)  | Saturation Visible on Aerial Imagery (C9)          |                              |  |  |
| Algal Mat or Crust (B4)   | Thin Muck Surface (C7  | 7)  | Geomorphic Position (D2)                           |                              |  |  |
| Iron Deposits (B5)  | Other (Explain in Rema   | arks)   | Shallow Aquitard (D3)                              |                              |  |  |
| Inundation Visible on Aerial Imagery (B   | 7)   |   | FAC-Neutral Test (D5)                              |                              |  |  |
| Water-Stained Leaves (B9)   |  |   | Sphagnum Moss                                      | (D8) <b>(LRR T, U)</b>       |  |  |
| Field Observations:   |  |   |  |                              |  |  |
| Surface Water Present? Yes  | No Depth (inches)  | ):  |  |                              |  |  |
| Water Table Present? Yes  | No Depth (inches)  | ):  | - I <b>D</b>                                       |                              |  |  |
| Saturation Present? Yes   | No Depth (Inches)  | Wetland Hyd   | rology Present?                                    |                              |  |  |
| Describe Recorded Data (stream gauge, m   | onitoring well, aerial photos,   | orevious inspections), if availa  | ble:   |                              |  |  |
| 2000.00 1000.000 2 ala (oli calli gaugo, ili  |  |   |  |                              |  |  |
| Remarks:  |  |   |  |                              |  |  |
| No hydrology indicators were observed.  |  |   |  |                              |  |  |
|   |  |   |  |                              |  |  |
|   |  |   |  |                              |  |  |
|   |  |   |  |                              |  |  |
|   |  |   |  |                              |  |  |
|   |  |   |  |                              |  |  |
|   |  |   |  |                              |  |  |
|   |  |   |  |                              |  |  |
|   |  |   |  |                              |  |  |

Γ

Sampling Point: W-JRK-001 UPL 2

|  | Absolute      | Dominant        | Indicator |  |
|--|---------------|-----------------|-----------|--|
| Tree Stratum (Plot size: 30tt )                      | % Cover       | Species?        | Status    | Dominance Test worksheet:  |
| 1. prunus serotina                                   |               | Yes             | FACU      | Number of Dominant Species   |
| 2. liriodendron tulipitera                           | 5             | Yes             | FACU      | That Are OBL, FACW, or FAC: <u>3</u> (A)                             |
| 3  |               |                 |           | Total Number of Dominant   |
| 4  |               |                 |           | Species Across All Strata: 8 (B)                                     |
| 5  |               |                 |           | Percent of Dominant Species  |
| 6  |               |                 |           | That Are OBL, FACW, or FAC: <u>37.5%</u> (A/B)                       |
| 7  |               |                 |           | Prevalence Index worksheet:  |
| 8  |               |                 |           | Total % Cover of: Multiply by:                                       |
| l  | :             | =Total Cover    |           | OBL species $0 	 x 	ext{ 1} = 0$                                     |
| 50% of total cover: 8                                | 3 20%         | of total cover: | 3         | FACW species $60 	 x 2 = 120$  |
| Sapling/Shrub Stratum (Plot size: 30tt )             |               |                 |           | FAC species 0 x 3 = 0  |
| 1. fraxinus pennsylvanica                            | 5             | Yes             | FACW      | FACU species $40$ x 4 = $160$  |
| 2. Malus hupehensis                                  | 2             | Yes             | UPL       | UPL species x 5 =10  |
| 3  |               |                 |           | Column Totals: <u>122</u> (A) <u>390</u> (B)                         |
| 4  |               |                 |           | Prevalence Index = B/A = 3.20  |
| 5  |               |                 |           | Hydrophytic Vegetation Indicators:                                   |
| 6  |               |                 |           | 1 - Rapid Test for Hydrophytic Vegetation                            |
| 7  |               |                 |           | 2 - Dominance Test is >50%   |
| 8  |               |                 |           | 3 - Prevalence Index is ≤3.0 <sup>1</sup>                            |
|  | 7;            | =Total Cover    |           | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)            |
| 50% of total cover:4                                 | 1 20%         | of total cover: | 2         |  |
| Herb Stratum (Plot size: 30 ft )                     |               |                 |           |  |
| 1. apocynum cannabinum                               | 10            | No              | FACU      | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be |
| 2. dichanthelium clandestinum                        | 10            | No              | FACW      | present, unless disturbed or problematic.                            |
| 3. rubus allegheniensis                              | 20            | Yes             | UPL       | Definitions of Four Vegetation Strata:                               |
| 4. solanum carolinense                               | 15            | Yes             | FACU      | Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or              |
| 5. boehmeria cylindrica                              | 15            | Yes             | FACW      | more in diameter at breast height (DBH), regardless of               |
| 6. cyperus strigosus                                 | 30            | Yes             | FACW      | height.  |
| 7  |               |                 |           | Sanling/Shrub - Woody plants excluding vines less                    |
| 8  |               |                 |           | than 3 in. DBH and greater than 3.28 ft (1 m) tall.                  |
| 9  |               |                 |           |  |
| 10   |               |                 |           | Harb All berbaceous (non-woody) plants regardless                    |
| 11   |               |                 |           | of size, and woody plants less than 3.28 ft tall.                    |
| 12   |               |                 |           |  |
| _  | 100           | =Total Cover    |           | Woody Vine – All woody vines greater than 3.28 ft in                 |
| 50% of total cover: 5                                | 0 20%         | of total cover: | 20        | height.  |
| Woody Vine Stratum (Plot size:)                      |               |                 |           |  |
| 1  |               |                 |           |  |
| 2.   |               |                 |           |  |
| 3.   |               |                 |           |  |
| 4.   |               |                 |           |  |
| 5.   |               |                 |           | Il showh at  |
|  |               | =Total Cover    |           | Hydropnytic<br>Vegetation  |
| 50% of total cover:                                  | 20%           | of total cover: |           | Present? Yes No X  |
| Remarke: (If observed, list morphological adaptation | na halow )    |                 |           |  |
| Vegetation observed does not meet an indicator for   | hvdrophytic v | vegetation.     |           |  |
|  | 196166        | ogoia           |           |  |
|  |               |                 |           |  |

SOIL

| Profile Description: (Describe to the dep          | h needed to docu                                       | ument th        | ne indica                                    | ator or c                            | onfirm th  | e absence o                                | f indicators.)                             |   |  |
|--|--|-----------------|--|--------------------------------------|--|--|--|---|--|
| Depth Matrix<br>(inches) Color (moist) %           | Color (moist)  | x Feature<br>%  | es<br>Type <sup>1</sup>                      |                                      | Te   | xture                                      | Remarks                                    |   |  |
|  |  | /0              | <u>.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u> |                                      |  |  |  |   |  |
| <u> </u>   |  |                 | C  | <u> </u>                             | Loamy  | //Clayey                                   | Loam                                       |   |  |
|  |  |                 |  |                                      |  |  |  |   |  |
|  |  |                 |  |                                      |  |  |  |   |  |
|  |  |                 |  |                                      |  |  |  |   |  |
|  |  |                 |  |                                      | 1  | ·  |  |   |  |
|  |  |                 |  |                                      |  |  |  |   |  |
|  |  |                 |  |                                      |  |  |  |   |  |
|  |  |                 |  |                                      |  |  |  |   |  |
| <sup>1</sup> Type: C-Concentration D-Depletion RM- | Reduced Matrix M                                       |                 | ed San                                       | d Grains                             |  | <sup>2</sup> Location: P                   | I-Pore Lining M-Matrix                     |   |  |
| Hydric Soil Indicators: (Applicable to all L       | RRs. unless othe                                       | erwise n        | oted.)                                       |                                      |  | Indicators for                             | or Problematic Hydric Soils <sup>3</sup> : |   |  |
| Histosol (A1)                                      | Thin Dark Su   | urface (S       | 69) <b>(LRR</b>                              | S, T, U)                             |  | 1 cm Mu                                    | ick (A9) <b>(LRR O)</b>                    |   |  |
| Histic Epipedon (A2)                               | Histic Epipedon (A2) Barrier Islands 1 cm Muck (S12)   |                 |  |                                      | 2 cm Mu  | ick (A10) (LRR S)                          |  |   |  |
| Black Histic (A3)                                  | (MLRA 153B, 153D)                                      |                 |  |                                      |  | Coast Prairie Redox (A16)                  |  |   |  |
| Hydrogen Sulfide (A4)                              | Loamy Mucky Mineral (F1) (LRR O)                       |                 |  |                                      | (outsi   | de MLRA 150A)                              |  |   |  |
| Stratified Layers (A5)                             | Stratified Layers (A5) Loamy Gleyed Matrix (F2)        |                 |  |                                      | Reduced Vertic (F18)                                 |  |  |   |  |
| Organic Bodies (A6) (LRR P, T, U)                  | Organic Bodies (A6) (LRR P, T, U) Depleted Matrix (F3) |                 |  |                                      | (outside MLRA 150A, 150B)                            |  |  |   |  |
| 5 cm Mucky Mineral (A7) (LRR P, T, U)              | Redox Dark   | Surface         | (F6)   |                                      |  | Piedmont Floodplain Soils (F19) (LRR P, T) |  |   |  |
| Muck Presence (A8) (LRR U)                         | Depleted Da  | rk Surfa        | ce (F7)                                      |                                      | Anomalous Bright Floodplain Soils (F20)              |  |  |   |  |
| 1 cm Muck (A9) (LRR P, T)                          | Redox Depre  | essions (       | (F8)   |                                      | (MLRA 153B)  |  |  |   |  |
| Depleted Below Dark Surface (A11)                  | Marl (F10) (L  |                 |  |                                      | Red Parent Material (F21)                            |  |  |   |  |
| Inick Dark Surface (A12)                           |  |                 |  | 4 151)<br>3) <i>(</i> 1 <b>D D</b> / | Very Shallow Dark Surface (F22)                      |  |  |   |  |
| Coast Prairie Redox (AT6) (MLRA 150A               | Inon-iviangan  |                 |  | 2) (LRR 1<br>2 T II)                 | U, P, I) (Outside MLRA 138, 152A in FL, 154)         |  |  |   |  |
| Sandy Gleved Matrix (S4)                           | Onibile Suite  | (F17) <b>/N</b> |  | , I, O)<br>(1)                       | (MI RA 153B 153D)                                    |  |  | , |  |
| Sandy Redox (S5)                                   | Reduced Ve   | rtic (F18       |  | 150A. 1                              | (MERA 1336, 1330)<br>508) Other (Evolain in Remarks) |  |  |   |  |
| Stripped Matrix (S6)                               | Piedmont Flo   | odolain         | Soils (F                                     | 19) (MLF                             | RA 149A)   |  |  |   |  |
| Dark Surface (S7) (LRR P. S. T. U)                 | Anomalous I  | Bright Flo      | oodplain                                     | Soils (F2                            | 20)  |  |  |   |  |
| Polyvalue Below Surface (S8)                       | (MLRA 14   | 9A, 153         | ,<br>C, 153D)                                | ì                                    | ,  | <sup>3</sup> Indicato                      | ors of hydrophytic vegetation and          | ł |  |
| (LRR S, T, U)                                      | Very Shallow   | v Dark S        | urface (F                                    | -22)                                 |  | wetlar                                     | nd hydrology must be present,              |   |  |
|  | (MLRA 13   | 8, 152A         | in FL, 1                                     | 54)                                  |  | unless                                     | s disturbed or problematic.                |   |  |
| Restrictive Layer (if observed):                   |  |                 |  |                                      |  |  |  |   |  |
| Туре:  |  |                 |  |                                      |  |  |  |   |  |
| Depth (inches):                                    |  |                 |  |                                      | Hydric   | : Soil Preser                              | nt? Yes No X                               | _ |  |
| Remarks:   |  |                 |  |                                      | •  |  |  |   |  |
| No hydric soil indicators were observed.           |  |                 |  |                                      |  |  |  |   |  |
|  |  |                 |  |                                      |  |  |  |   |  |
|  |  |                 |  |                                      |  |  |  |   |  |

| U.S. Arm<br>WETLAND DETERMINATION DATA<br>See ERDC/EL TR-10-20;                       | OMB Control #<br>Requirement<br>(Authority: A  | t: 0710-0024, Exp: 11/30/2024<br>t Control Symbol EXEMPT:<br>\R 335-15, paragraph 5-2a) |  |                           |  |  |  |
|---|--|---|--|---------------------------|--|--|--|
| Project/Site: Standard Chlorine   |  | City/County: New Castle, N  | lew Castle Co.   | Sampling Date: 9/6/23     |  |  |  |
| Applicant/Owner: United States Enviror  | plicant/Owner: United States Environmental Protection Agency (EPA) State: DE Sampling Point: W-JRK-0               |   |  |                           |  |  |  |
| Investigator(s): J. Keil, M. Curran   | Se   | ection, Township, Range: N/A  | <u> </u>   |                           |  |  |  |
| Landform (hillside, terrace, etc.): Hillslope   | Loca   | I relief (concave, convex, none   | e): convex   | Slope (%): 5              |  |  |  |
| Subregion (LRR or MLRA): LRR S, MLRA  | 149A Lat: 39.603077  | Long: -75.6   | 35812  | Datum: NAD 83             |  |  |  |
| Soil Map Unit Name: SaD - Sassafras sand  | dy loam, 10 to 15 percent slop   | bes   | NWI classifica   | ation: N/A                |  |  |  |
| Are climatic / hydrologic conditions on the si  | te typical for this time of year   | ? Yes X M   | No (If no,   | explain in Remarks.)      |  |  |  |
| Are Vegetation , Soil , or Hydr   | ology significantly distu  | urbed? Are "Normal Circu  | mstances" present                                      | t? Yes X No               |  |  |  |
| Are Vegetation . Soil . or Hvdr   | ology naturally problem  | natic? (If needed, explain  | anv answers in R                                       | emarks.)                  |  |  |  |
| SUMMARY OF FINDINGS – Attac   | h site map showing sa  | mpling point locations  | s, transects, in                                       | nportant features, etc.   |  |  |  |
| Hydrophytic Vegetation Present?<br>Hydric Soil Present?<br>Wetland Hydrology Present? | Yes         No         X           Yes         X         No         X           Yes         No         X         X | Is the Sampled Area within a Wetland?   | Yes  | No <u>X</u>               |  |  |  |
| Upland data point taken in association with   | PFO 3 of Wetland 001. Point  | t is located upslope and south  | west from PFO 3 o                                      | data point.               |  |  |  |
| HYDROLOGY   |  |   |  |                           |  |  |  |
| Wetland Hydrology Indicators:   |  | Sec   | condary Indicators                                     | (minimum of two required) |  |  |  |
| Primary Indicators (minimum of one is requ  | ired; check all that apply)  |   | Surface Soil Cracks (B6)                               |                           |  |  |  |
| Surface Water (A1)  | Aquatic Fauna (B13)  |   | Sparsely Vegetated Concave Surface (B8)                |                           |  |  |  |
| Saturation (A3)   | Hydrogen Sulfide Odor  | · (C1)  | Moss Trim Lines (B16)                                  |                           |  |  |  |
| Water Marks (B1)  | Oxidized Rhizospheres  | s on Living Roots (C3)  | Dry-Season Water Table (C2)                            |                           |  |  |  |
| Sediment Deposits (B2)  | Presence of Reduced I  | Iron (C4)   | Crayfish Burrows (C8)                                  |                           |  |  |  |
| Drift Deposits (B3)   | Recent Iron Reduction  | in Tilled Soils (C6)  | Saturation Visible on Aerial Imagery (C9)              |                           |  |  |  |
| Algal Mat or Crust (B4)   | Thin Muck Surface (C7  | ()  | _Geomorphic Position (D2)                              |                           |  |  |  |
| Iron Deposits (B5)  | Other (Explain in Rema   | arks)   | Shallow Aquitard (D3)                                  |                           |  |  |  |
| Water-Stained Leaves (B9)   | <i>)</i> ()  |   | FAC-Neutral Test (D5)<br>Sobagoum Moss (D8) (LRR T 11) |                           |  |  |  |
| Field Observations:   |  |   |  | (), (, -),                |  |  |  |
| Surface Water Present? Yes  | No Depth (inches)  | ):  |  |                           |  |  |  |
| Water Table Present? Yes  | No Depth (inches)  | ):  |  |                           |  |  |  |
| Saturation Present? Yes   | No Depth (inches)  | ): Wetland Hyd  | rology Present?  | Yes <u>No X</u>           |  |  |  |
| (includes capillary fringe)   |  |   |  |                           |  |  |  |
| Describe Recorded Data (stream gauge, m   | onitoring well, aerial photos, p   | previous inspections), if availa  | ble:   |                           |  |  |  |
| Remarks:<br>No indicators for wetland hydrology were o                                | bserved.   |   |  |                           |  |  |  |
|   |  |   |  |                           |  |  |  |

Sampling Point: W-JRK-001 UPL 3

| · · · ·  |                     | <u> </u>             | 1 12 /    | · · ·  |
|--|---------------------|----------------------|-----------|--|
| Tree Stratum (Plot size: 30 ft )                                 | Absolute<br>% Cover | Dominant<br>Species? | Indicator | Dominance Test worksheet:  |
| <u>Tree Stratum</u> (Flot size. <u>50 n</u> )                    | 50                  | Ves                  | FACIL     |  |
| Indention talphota     Indention talphota     Indention talphota | 10                  | No                   |           | Number of Dominant Species       That Are OBL_EACW_or FAC:       4   |
| 2 Drunus serating  | 15                  | No                   | FACU      |  |
| A Acer saccharinum   | 10                  | No                   | FACU      | Total Number of Dominant   |
| 5  |                     |                      | 1400      |  |
| 5<br>6   |                     |                      |           | Percent of Dominant Species<br>That Are OBL, FACW, or FAC: 44.4% (A/B)   |
| 7.   |                     |                      |           | Prevalence Index worksheet:  |
| 8.   |                     |                      |           | Total % Cover of: Multiply by:   |
|  | 85                  | =Total Cover         |           | $\overline{\text{OBL species}}  0 \qquad x \ 1 = 0$  |
| 50% of total cover: 43   | 3 20%               | of total cover:      | 17        | FACW species $35$ x 2 = $70$   |
| Sapling/Shrub Stratum (Plot size: 30 ft )                        |                     |                      |           | FAC species 40 x 3 = 120   |
| 1. Lindera benzoin   | 20                  | Yes                  | FACW      | FACU species 130 $x 4 = 520$   |
| 2  |                     |                      |           | $\frac{1100 \text{ cp} - 110}{1100 \text{ cp} - 110} = \frac{1100 \text{ cp} - 1100 \text{ cp} - 11000 \text{ cp} - 110000 \text{ cp} - 110000 \text{ cp} - 110000 \text{ cp} - 11000000\text{ cp} - 1100000000000000$   |
| 2.   |                     |                      |           | Column Totale: 235 (A) 860 (B)   |
| 3  |                     |                      |           | $\frac{1}{2} \frac{1}{2} \frac{1}$ |
| 4  |                     |                      |           | Prevalence index = D/A = 3.00  |
| 5  |                     |                      |           | Hydrophytic Vegetation Indicators:   |
| 6  |                     |                      |           | 1 - Rapid Test for Hydrophytic Vegetation  |
| 7  |                     |                      |           | 2 - Dominance Test is >50%   |
| 8  |                     |                      |           | 3 - Prevalence Index is $≤3.0^1$   |
|  | 20                  | =Total Cover         |           | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  |
| 50% of total cover:10  | ) 20%               | of total cover:      | 4         | I—   |
| Herb Stratum (Plot size: 30 ft )                                 |                     |                      |           |  |
| 1 Ruhus allegheniensis   | 15                  | Yes                  | UPI.      | 1. Protocol of builds and unstand budgelong must be  |
| 2 Cinna arundinacea  | 15                  | Ves                  | FACW      | 'Indicators of hydric soil and wetland hydrology must be   |
| 2. Ollina arunumacea   | 20                  | Voc                  |           | Definitions of Four Vagatation Strata  |
|  | <u></u>             | Vee                  |           | Definitions of Four Vegetation Strata.   |
| 4. Celastrus orbiculatus   | 15                  | res                  |           | <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or   |
| 5. Microstegium vimineum   | 10                  | NO                   | FAC       | height.  |
| 6. Lonicera japonica   | 20                  | Yes                  | FACU      | noight.  |
| 7. Athyrium filix-femina   | 5                   | No                   | UPL       | Sanling/Shrub – Woody plants, excluding vines, less  |
| 8  |                     |                      |           | than 3 in. DBH and greater than 3.28 ft (1 m) tall.  |
| 9  |                     |                      |           |  |
| 10.  |                     |                      |           |  |
| 11.  |                     |                      |           | Herb – All herbaceous (non-woody) plants, regardless   |
| 12.  |                     |                      |           |  |
|  | 100                 | =Total Cover         |           | Woody Vine – All woody vines greater than 3.28 ft in   |
| 50% of total cover: 50   | 20%                 | of total cover       | 20        | height.  |
| Woody Vine Stratum (Plot size: 30 ft )                           | 2070                |                      |           |  |
| Coloctrup orbigulatup  | 20                  | Vaa                  | EACU      |  |
|  | 20                  | <u>res</u>           |           |  |
| 2. I oxicodendron radicans                                       | 10                  | Yes                  | FAC       |  |
| 3  |                     |                      |           |  |
| 4  |                     |                      |           |  |
| 5  |                     |                      |           | Hydrophytic  |
|  | 30                  | =Total Cover         |           | Vegetation   |
| 50% of total cover:15  | 5 20%               | of total cover:      | 6         | Present? Yes No X  |
| Pemarks: (If observed, list morphological adaptation             | e helow )           |                      |           |  |
| Vegetation observed did not meet any indicators for l            | s below.)           | vegetation           |           |  |
| vogetation obcerved did net moet any maleatere fer i             | iyaropiiyao         | vogotation           |           |  |

SOIL

| Profile Desci                                       | ription: (Describe t                                 | o the dept   | h needed to doc     | ument ti       | he indica  | ator or co       | onfirm th                                    | e absence o                                | of indicators.)    |                 |  |
|---|--|--------------|---------------------|----------------|------------|------------------|--|--|--------------------|-----------------|--|
| Depth   | Matrix   |              | Redo                | x Featur       | res1       | . 2              | _  |  | _                  |                 |  |
| (inches)  | Color (moist)  | %            | Color (moist)       | %              | Type       | Loc              | 16   | xture                                      | Re                 | marks           |  |
| 0-10  | 10YR 4/3   | 100          |                     |                |            |                  |  |  | L                  | ₋oam            |  |
| 10-16   | 10YR 4/2   | 90           | 10YR 4/6            | 10             | С          | М                | Loam   | y/Clayey                                   | Cla                | ay loam         |  |
|   |  |              |                     |                |            |                  |  |  |                    |                 |  |
|   |  | <u> </u>     |                     |                |            |                  |  |  |                    |                 |  |
|   |  |              |                     |                |            |                  |  | <u> </u>                                   |                    |                 |  |
|   |  |              |                     |                |            |                  |  |  |                    |                 |  |
|   |  |              |                     |                |            |                  |  |  |                    |                 |  |
|   |  |              |                     |                |            |                  |  |  |                    |                 |  |
|   | ncentration D-Denl                                   | etion RM-    | Reduced Matrix N    |                | ked San    | d Grains         |  | <sup>2</sup> Location: F                   |                    |                 |  |
| Hydric Soil I                                       | ndicators: (Applica                                  | ble to all L | RRs. unless othe    | rwise n        | oted.)     | u Orains.        |  | Indicators f                               | or Problematic H   |                 |  |
| Histosol (  | A1)  |              | Thin Dark S         | urface (S      | 59) (LRR   | S. T. U)         |  | 1 cm Mi                                    | uck (A9) (LRR O)   | .,              |  |
| Histic Epi  | Histic Epipedon (A2) Barrier Islands 1 cm Muck (S12) |              |                     |                |            |                  | 2 cm Mi                                      | uck (A10) (LRR S                           | )                  |                 |  |
| Black His   | k Histic (A3) (MLRA 153B. 153D)                      |              |                     |                |            |                  | Coast Prairie Redox (A16)                    |  |                    |                 |  |
| Hydrogen  | bgen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR O)   |              |                     |                |            |                  | (outsi                                       | de MLRA 150A)                              | ,                  |                 |  |
| Stratified  | Stratified Layers (A5) Loamy Gleved Matrix (F2)      |              |                     |                | Reduce     | d Vertic (F18)   |  |  |                    |                 |  |
| Organic Bodies (A6) (LRR P, T, U) X Depleted Matrix |  |              | trix (F3)           |                |            |                  | (outsi                                       | de MLRA 150A,                              | 150B)              |                 |  |
| 5 cm Mucky Mineral (A7) (LRR P, T, U) Redox         |  |              | Redox Dark          | Surface        | (F6)       |                  |  | Piedmont Floodplain Soils (F19) (LRR P, T) |                    |                 |  |
| Muck Pre  | esence (A8) <b>(LRR U)</b>                           | )            | Depleted Da         | rk Surfa       | ce (F7)    |                  |  | Anomalous Bright Floodplain Soils (F20)    |                    |                 |  |
| 1 cm Muc  | ck (A9) <b>(LRR P, T)</b>                            |              | Redox Depre         | essions        | (F8)       |                  | (MLRA 153B)                                  |  |                    |                 |  |
| Depleted  | Below Dark Surface                                   | e (A11)      | Marl (F10) (I       | .RR U)         |            |                  |  | Red Parent Material (F21)                  |                    |                 |  |
| Thick Da  | rk Surface (A12)                                     |              | Depleted Oc         | hric (F1       | 1) (MLR/   | A 151)           |  | Very Shallow Dark Surface (F22)            |                    |                 |  |
| Coast Pra   | airie Redox (A16) ( <b>M</b>                         | LRA 150A)    | Iron-Mangar         | ese Ma         | sses (F1   | 2) <b>(LRR (</b> | ), P, T) (outside MLRA 138, 152A in FL, 154) |  |                    |                 |  |
| Sandy Mu  | ucky Mineral (S1) <b>(L</b>                          | RR O, S)     | Umbric Surfa        | ace (F13       | B) (LRR F  | P, T, U)         |  | Barrier I                                  | slands Low Chror   | na Matrix (TS7) |  |
| Sandy Gl  | eyed Matrix (S4)                                     |              | Delta Ochric        | (F17) <b>(</b> | MLRA 15    | 51)              |  | (MLR                                       | A 153B, 153D)      |                 |  |
| Sandy Re  | edox (S5)  |              | Reduced Ve          | rtic (F18      | B) (MLRA   | 150A, 1          | 50B)   | Other (E                                   | Explain in Remark  | s)              |  |
| Stripped  | Matrix (S6)  |              | Piedmont Fle        | oodplain       | n Soils (F | 19) <b>(MLR</b>  | RA 149A)                                     |  |                    |                 |  |
| Dark Surf   | face (S7) <b>(LRR P, S</b>                           | , T, U)      | Anomalous I         | Bright Fl      | oodplain   | Soils (F2        | 20)  |  |                    |                 |  |
| Polyvalue   | e Below Surface (S8)                                 | )            | (MLRA 14            | 9A, 153        | C, 153D)   | )                |  | <sup>3</sup> Indicate                      | ors of hydrophytic | vegetation and  |  |
| (LRR S  | 6, T, U)   |              | Very Shallov        | v Dark S       | Surface (F | -22)             |  | wetla                                      | nd hydrology mus   | t be present,   |  |
|   |  |              | (MLRA 13            | 8, 152A        | in FL, 1   | 54)              |  | unles                                      | s disturbed or pro | blematic.       |  |
| Restrictive L                                       | ayer (if observed):                                  |              |                     |                |            |                  |  |  |                    |                 |  |
| Туре:   |  |              |                     |                |            |                  |  |  |                    |                 |  |
| Depth (in   | ches):   |              |                     |                |            |                  | Hydri  | c Soil Prese                               | nt? Yes_           | X No            |  |
| Remarks:  |  |              |                     |                |            |                  |  |  |                    |                 |  |
| Soil character                                      | ristics observed mee                                 | et requireme | ents for a depleted | matrix i       | indicator. | Hydric s         | oils are p                                   | oresent.                                   |                    |                 |  |
|   |  |              |                     |                |            |                  |  |  |                    |                 |  |

| U.S. Army<br>WETLAND DETERMINATION DATA<br>See ERDC/EL TR-10-20; t  | OMB Control #: 07<br>Requirement Co<br>(Authority: AR 3 | 710-0024, Exp: 11/30/2024<br>ontrol Symbol EXEMPT:<br>335-15, paragraph 5-2a) |   |                         |  |  |  |  |  |
|---|---|---|---|-------------------------|--|--|--|--|--|
| Draiget/Site: Standard Chloring   |   | City/County: Now Costle N   | low Cootlo Co                             | Compling Data: 0/8/22   |  |  |  |  |  |
| Applicant/Ourser United States Environ  | City/County: New Castle,                                |   |   |                         |  |  |  |  |  |
| Applicant/Owner: Onited States Environ  | mental Protection Agency (E                             | PA)   | State:S                                   |                         |  |  |  |  |  |
| Investigator(s): J. Keil, M. Curran   | Se  | ection, Township, Range: <u>N/A</u>   |   |                         |  |  |  |  |  |
| Landform (hillside, terrace, etc.): Hillslope   | Loca  | Il relief (concave, convex, none  | e): Convex                                | Slope (%): 8            |  |  |  |  |  |
| Subregion (LRR or MLRA): LRR S, MLRA 1  | 149A Lat: 39.604966                                     | Long: -75.6   | 3044                                      | Datum: NAD 83           |  |  |  |  |  |
| Soil Map Unit Name: NM: Nanticoke and Mannington soils, very frequently flooded, tidal NWI classification: N/A  |   |   |   |                         |  |  |  |  |  |
| Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)   |   |   |   |                         |  |  |  |  |  |
| Are Vegetation, SoilX_, or Hydro  | ology significantly dist                                | urbed? Are "Normal Circu  | mstances" present?                        | Yes X No                |  |  |  |  |  |
| Are Vegetation, Soil, or Hydro  | ology naturally problem                                 | natic? (If needed, explain  | any answers in Rem                        | arks.)                  |  |  |  |  |  |
| SUMMARY OF FINDINGS – Attach  | n site map showing sa                                   | ampling point locations   | s, transects, imp                         | ortant features, etc.   |  |  |  |  |  |
| Hydrophytic Vegetation Present?<br>Hydric Soil Present?<br>Wetland Hydrology Present?   | Yes NoX<br>Yes No<br>Yes No_X                           | Is the Sampled Area within a Wetland?   | YesI                                      | No <u>X</u>             |  |  |  |  |  |
| Remarks:<br>This upland point was taken within an old overgrown boat ramp along a hillslope south of the wetland data point (PEM 3). Soil is disturbed due to the presence of fill material off of the roadside (boat launch area). |   |   |   |                         |  |  |  |  |  |
| HYDROLOGY   |   |   |   |                         |  |  |  |  |  |
| Wetland Hydrology Indicators:   |   | Sec   | condary Indicators (m                     | inimum of two required) |  |  |  |  |  |
| Primary Indicators (minimum of one is requ  | ired; check all that apply)                             |   | Surface Soil Cracks (B6)                  |                         |  |  |  |  |  |
| Surface Water (A1)  | Aquatic Fauna (B13)                                     |   | _ Sparsely Vegetated Concave Surface (B8) |                         |  |  |  |  |  |
| Saturation (A3)   | Hydrogen Sulfide Odo                                    | r (C1)  | Moss Trim Lines (B16)                     |                         |  |  |  |  |  |
| Water Marks (B1)  | Oxidized Rhizospheres                                   | s on Living Roots (C3)  | Dry-Season Water Table (C2)               |                         |  |  |  |  |  |
| Sediment Deposits (B2)  | Presence of Reduced                                     | Iron (C4)   | Crayfish Burrows (C8)                     |                         |  |  |  |  |  |
| Drift Deposits (B3)   | Recent Iron Reduction                                   | in Tilled Soils (C6)  | Saturation Visible on Aerial Imagery (C9) |                         |  |  |  |  |  |
| Algal Mat or Crust (B4)   | Thin Muck Surface (C7                                   | 7)  | Geomorphic Position (D2)                  |                         |  |  |  |  |  |
| Iron Deposits (B5)  | Other (Explain in Rema                                  | arks)   | Shallow Aquitard (D3)                     |                         |  |  |  |  |  |
| Inundation Visible on Aerial Imagery (B   | 7)  |   | FAC-Neutral Test (D5)                     |                         |  |  |  |  |  |
| Water-Stained Leaves (B9)   |   |   | Sphagnum Moss (D                          | 8) (LRR T, U)           |  |  |  |  |  |
| Field Observations:   |   |   |   |                         |  |  |  |  |  |
| Surface Water Present? Yes  | No X Depth (inches                                      | ):  |   |                         |  |  |  |  |  |
| Water Table Present? Yes  | No X Depth (inches                                      | ): Wotland Hvd  | rology Prosont?                           | Vas No V                |  |  |  |  |  |
| (includes capillary fringe)   | No X Deptil (inches                                     |   | ology Flesent?                            |                         |  |  |  |  |  |
| Describe Recorded Data (stream gauge, m   | onitoring well, aerial photos.                          | previous inspections), if availa  | ble:                                      |                         |  |  |  |  |  |
|   |   | ······  |   |                         |  |  |  |  |  |
| Remarks:  |   |   |   |                         |  |  |  |  |  |
| No indicators for wetland hydrology were ob   | oserved.  |   |   |                         |  |  |  |  |  |
|   |   |   |   |                         |  |  |  |  |  |
|   |   |   |   |                         |  |  |  |  |  |
|   |   |   |   |                         |  |  |  |  |  |
|   |   |   |   |                         |  |  |  |  |  |
|   |   |   |   |                         |  |  |  |  |  |
|   |   |   |   |                         |  |  |  |  |  |
|   |   |   |   |                         |  |  |  |  |  |
|   |   |   |   |                         |  |  |  |  |  |

Sampling Point: W-JRK-001 UPL 4

|  | Absolute      | Dominant        | Indicator |  |
|--|---------------|-----------------|-----------|--|
| <u>Tree Stratum</u> (Plot size: <u>30 ft</u> )       | % Cover       | Species?        | Status    | Dominance Test worksheet:  |
| 1  |               |                 |           | Number of Dominant Species   |
| 3  |               |                 |           |  |
| 4.   |               |                 |           | Species Across All Strata: 9 (B)                                     |
| 5.   |               |                 |           | Percent of Dominant Species  |
| 6.   |               |                 |           | That Are OBL, FACW, or FAC: 22.2% (A/B)                              |
| 7  |               |                 |           | Prevalence Index worksheet:  |
| 8  |               |                 |           | Total % Cover of: Multiply by:                                       |
|  | :             | =Total Cover    |           | OBL species 7 x 1 = 7  |
| 50% of total cover:                                  | 20%           | of total cover: |           | FACW species 15 x 2 = 30   |
| Sapling/Shrub Stratum (Plot size: 30 ft )            |               |                 |           | FAC species X 3 =20  |
| 1. Rhus typhina                                      | 5             | Yes             | UPL       | FACU species <u>61</u> x 4 = <u>244</u>                              |
| 2. Morus alba  | 2             | Yes             | FACU      | UPL species 15 x 5 = 75  |
| 3. Baptisia australis                                | 2             | Yes             | FACU      | Column Totals: 138 (A) 476 (B)                                       |
| 4. Phytolacca americana                              | 2             | Yes             | FACU      | Prevalence Index = $B/A = 3.45$                                      |
| 5.   |               |                 |           | Hydrophytic Vegetation Indicators:                                   |
| 6.   |               |                 |           | 1 - Rapid Test for Hydrophytic Vegetation                            |
| 7.   |               |                 |           | 2 - Dominance Test is >50%   |
| 8  |               |                 |           | 3 - Prevalence Index is < 3.01                                       |
|  | 11            | -Total Cover    |           | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)            |
| 50% of total covor:                                  | 20%           | of total covor: | 2         |  |
| Horb Stratum (Plot aize: 20 ft )                     | 2078          | or total cover. |           |  |
|  | 45            | Nia             | FACU      |  |
| 1. Plantago lanceolata                               | 15            |                 | FACU      | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be |
| 2. Dactylis glomerata                                | 30            | Yes             | FACU      | present, unless disturbed or problematic.                            |
| 3. <u>Setaria pumila</u>                             | 10            | No              | FAC       | Definitions of Four Vegetation Strata:                               |
| 4. Panicum virgatum                                  | 30            | Yes             | FAC       | Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or              |
| 5. Phragmites australis                              | 10            | No              | FACW      | more in diameter at breast height (DBH), regardless of               |
| 6. Artemisia vulgaris                                | 5             | No              | UPL       | neight.  |
| 7. Hibiscus moscheutos                               | 5             | No              | OBL       | Sanling/Shrub - Woody plants, excluding vines, less                  |
| 8  |               |                 |           | than 3 in. DBH and greater than 3.28 ft (1 m) tall.                  |
| 9.   |               |                 |           |  |
| 10.  |               |                 |           |  |
| 11.  |               |                 |           | <b>Herb</b> – All herbaceous (non-woody) plants, regardless          |
| 12.  |               |                 |           |  |
|  | 105 :         | =Total Cover    |           | <b>Woody Vine</b> – All woody vines greater than 3.28 ft in          |
| 50% of total cover: 53                               | 20%           | of total cover: | 21        | height.  |
| Woody Vine Stratum (Plot size: 30 ft )               |               |                 |           |  |
| 1 Lonicera ianonica                                  | 10            | Ves             | FACU      |  |
|  | 2             | No              |           |  |
|  |               | <u> </u>        |           |  |
| 3. Vitis riparia                                     | <u> </u>      | res             | FACW      |  |
| 4. Ampelopsis brevipedunculata                       | 5             | Yes             | UPL       |  |
| 5  |               |                 |           | Hydrophytic  |
|  | 22 :          | = I otal Cover  |           | Vegetation   |
| 50% of total cover:1                                 | 20%           | of total cover: | 5         | Present? Yes <u>No X</u>   |
| Remarks: (If observed, list morphological adaptation | s below.)     |                 |           |  |
| Vegetation observed does not meet any indicators fo  | r hydrophytio | c vegetation.   |           |  |

SOIL

| Profile Descr           | ription: (Describe to          | the depth n   | eeded to docu                    | ument t         | he indica        | tor or co       | onfirm th   | ne absence of ir                           | dicators        | s.)          |                          |
|-------------------------|--------------------------------|---------------|----------------------------------|-----------------|------------------|-----------------|---|--|-----------------|--------------|--------------------------|
| Depth                   | Matrix                         |               | Redo                             | x Featur        | es               | . 2             | -   |  |                 | -            |                          |
| (inches)                | Color (moist)                  | % C           | olor (moist)                     | %               | Туре             | Loc             | Te  | exture                                     |                 | Rema         | arks                     |
| 0-3                     | 10YR 4/3                       | 100           |                                  |                 | C                | М               | Loam  | y/Clayey                                   |                 | Loa          | m                        |
|                         |                                |               |                                  |                 |                  |                 |   |  |                 |              |                          |
|                         |                                |               |                                  |                 |                  |                 |   | ·  |                 |              |                          |
|                         |                                |               |                                  |                 |                  |                 |   |  |                 |              |                          |
|                         |                                |               |                                  |                 |                  |                 |   |  |                 |              |                          |
|                         |                                |               |                                  |                 |                  |                 |   |  |                 |              |                          |
|                         |                                |               | ,                                |                 |                  |                 |   |  |                 |              |                          |
|                         |                                |               |                                  |                 |                  |                 |   |  |                 |              |                          |
|                         |                                |               |                                  |                 |                  |                 |   |  |                 |              |                          |
| <sup>1</sup> Type: C=Co | ncentration. D=Depleti         | on. RM=Red    | duced Matrix. N                  | /IS=Mas         | ked Sand         | Grains.         |   | <sup>2</sup> Location: PL=                 | Pore Lini       | na. M=M      | latrix.                  |
| Hydric Soil Ir          | ndicators: (Applicable         | to all LRR    | s, unless othe                   | erwise n        | oted.)           |                 |   | Indicators for                             | Problem         | atic Hyd     | ric Soils <sup>3</sup> : |
| Histosol (              | A1)                            |               | Thin Dark Su                     | urface (S       | 59) <b>(LRR</b>  | S, T, U)        |   | 1 cm Muck                                  | (A9) <b>(LR</b> | R O)         |                          |
| Histic Epi              | pedon (A2)                     |               | Barrier Islands 1 cm Muck (S12)  |                 |                  |                 |   | 2 cm Muck (A10) <b>(LRR S)</b>             |                 |              |                          |
| Black His               | tic (A3)                       |               | (MLRA 153B, 153D)                |                 |                  |                 | Coast Prair   | ie Redox                                   | (A16)           |              |                          |
| Hydrogen                | Sulfide (A4)                   |               | Loamy Mucky Mineral (F1) (LRR O) |                 |                  | (outside        | MLRA 1  | 50A)                                       |                 |              |                          |
| Stratified              | Layers (A5)                    |               | Loamy Gleyed Matrix (F2)         |                 |                  | Reduced V       | ertic (F18  | 3)   |                 |              |                          |
| Organic E               | Bodies (A6) (LRR P, T,         | U)            | Depleted Matrix (F3)             |                 |                  |                 | (outside  | MLRA 1                                     | 50A, 150        | B)           |                          |
| 5 cm Muc                | ky Mineral (A7) <b>(LRR</b>    | P, T, U)      | Redox Dark                       | Surface         | (F6)             |                 |   | Piedmont Floodplain Soils (F19) (LRR P, T) |                 |              |                          |
| Muck Pre                | sence (A8) <b>(LRR U)</b>      |               | Depleted Da                      | rk Surfa        | ce (F7)          |                 |   | Anomalous Bright Floodplain Soils (F20)    |                 |              |                          |
| 1 cm Muc                | ck (A9) <b>(LRR P, T)</b>      |               | Redox Depre                      | essions         | (F8)             |                 |   | (MLRA 153B)                                |                 |              |                          |
| Depleted                | Below Dark Surface (A          | .11)          | Marl (F10) <b>(L</b>             | _RR U)          |                  |                 |   | Red Parent Material (F21)                  |                 |              |                          |
| Thick Dar               | rk Surface (A12)               |               | _ Depleted Oc                    | hric (F1        | 1) <b>(MLR</b> A | 151)            |   | Very Shallow Dark Surface (F22)            |                 |              |                          |
| Coast Pra               | airie Redox (A16) ( <b>MLF</b> | RA 150A)      | Iron-Mangan                      | iese Ma         | sses (F12        | 2) (LRR (       | Э, Р, Т)  | (outside MLRA 138, 152A in FL, 154)        |                 |              |                          |
| Sandy Mu                | ucky Mineral (S1) <b>(LRF</b>  | 1 O, S)       | Umbric Surfa                     | ace (F13        | B) (LRR F        | , T, U)         |   | Barrier Isla                               | nds Low         | Chroma       | Matrix (TS7)             |
| Sandy Gl                | eyed Matrix (S4)               |               | Delta Ochric                     | (F17) <b>(I</b> | MLRA 15          | 1)              |   | (MLRA 153B, 153D)                          |                 |              |                          |
| Sandy Re                | edox (S5)                      |               | _Reduced Ve                      | rtic (F18       | 3) (MLRA         | 150A, 1         | 50B)  | Other (Expl                                | ain in Re       | marks)       |                          |
| Stripped I              | Matrix (S6)                    | —             | Piedmont Flo                     | oodplain        | Soils (F         | 19) <b>(MLR</b> | (A 149A)  |  |                 |              |                          |
| Dark Surf               | ace (S7) (LRR P, S, T          | , U) <u> </u> | Anomalous I                      | Bright Fl       | oodplain         | Soils (F2       | 20)   | 3  |                 |              |                          |
| Polyvalue               | Below Surface (S8)             |               | (MLRA 149A, 153C, 153D)          |                 |                  |                 | <sup>3</sup> Indicators of hydrophytic vegetation and |  |                 | getation and |                          |
| (LRR S                  | 5, T, U)                       |               | _ very Shallov                   | V Dark S        |                  | 22)             |   | wetland                                    | nyarology       | / must be    | e present,               |
| <b>.</b>                |                                |               | (IVILKA 13                       | o, 152A         | . III FL, 19     | 94)             | <u> </u>  | uniess d                                   | Sluiped         | 9ומסוק וכ    | mallC.                   |
| Restrictive L           | ayer (if observed):            |               |                                  |                 |                  |                 |   |  |                 |              |                          |
| Type:                   | Gravel                         |               |                                  |                 |                  |                 |   |  |                 |              |                          |
| Depth (in               | ches):                         | 3             |                                  |                 |                  |                 | Hydri   | c Soil Present?                            | Y               | es           | No                       |
| Remarks:                |                                |               |                                  |                 |                  |                 |   |  |                 |              |                          |

No soil indicators were found. There was a refusal layer of gravel at 3 inches deep.

| U.S. Army Corps of Engineers<br>WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf C<br>See ERDC/EL TR-10-20; the proponent agency is CE   | OMB Control #<br>Requirement<br>(Authority: A | : 0710-0024, Exp: 1<br>Control Symbol EX<br>R 335-15, paragrap | 1/30/2024<br>(EMPT:<br>h 5-2a) |               |
|--|---|--|--------------------------------|---------------|
| Project/Site: Standard Chlorine Cit  | ty/County: New Castle, N                      | ew Castle Co.  | Sampling Date:                 | 9/11/23       |
| Applicant/Owner: United States Environmental Protection Agency (EPA)   | · · · <u> </u>                                | State: DE  | Sampling Point:                | W-JRK-002 PEM |
| Investigator(s): J. Keil, M. Curran Section  | , Township, Range: N/A                        |  | _                              |               |
| Landform (hillside, terrace, etc.): Depression Local relie   | ef (concave, convex, none                     | e): Concave  | Slope (%):                     | 8             |
| Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 39.601811   | Long: -75.63                                  | 33221  | Datum:                         | NAD 83        |
| Soil Map Unit Name: SaD: Sassafras sandy loam, 10 to 15 percent slopes   |   | NWI classifica   | tion: None                     |               |
| Are climatic / hydrologic conditions on the site typical for this time of year?  | Yes X N                                       | No (If no, e   | explain in Remark              | s.)           |
| Are Vegetation , Soil , or Hydrology significantly disturbed   | I? Are "Normal Circur                         | nstances" present  | ? Yes X                        | No            |
| Are Vegetation , Soil , or Hydrology naturally problematic   | ? (If needed, explain                         | any answers in Re  | emarks.)                       | · <u> </u>    |
| SUMMARY OF FINDINGS – Attach site map showing sample   | ling point locations                          | , transects, in  | nportant featu                 | ires, etc.    |
| Hydrophytic Vegetation Present?       Yes       X       No       Is to the second | the Sampled Area<br>thin a Wetland?           | Yes X  | No                             |               |
| Remarks:<br>This palustrine emergent wetland (PEM) is a depressional wetland that surrou<br>This wetland is dominated by invasives.  | unds the banks of stream                      | S-JRK-011 on the   | e east side of the s           | study area.   |
| HYDROLOGY  |   |  |                                |               |
| Wetland Hydrology Indicators:  | Sec   | condary Indicators   | (minimum of two                | required)     |
| Primary Indicators (minimum of one is required; check all that apply)  |   | Surface Soil Crac  | ks (B6)                        |               |
| Surface Water (A1) Aquatic Fauna (B13)<br>High Water Table (A2) Marl Deposits (B15) (I RR I  | n x   | Sparsely Vegetate  | ed Concave Surra               | се (в8)       |
| X Saturation (A3) Hydrogen Sulfide Odor (C1)   |   | Moss Trim Lines  | (B16)                          |               |
| Water Marks (B1) Oxidized Rhizospheres on L  | _iving Roots (C3)                             | Dry-Season Wate  | er Table (C2)                  |               |
| Sediment Deposits (B2) Presence of Reduced Iron (  | C4)   | Crayfish Burrows   | (C8)                           |               |
| Drift Deposits (B3) Recent Iron Reduction in Til   | lled Soils (C6)                               | Saturation Visible   | on Aerial Imager               | y (C9)        |
| Algal Mat or Crust (B4) Thin Muck Surface (C7)   | X   | Geomorphic Posi  | tion (D2)                      |               |
| Iron Deposits (B5) Other (Explain in Remarks)  |   | Shallow Aquitard   | (D3)                           |               |
| Inundation Visible on Aerial Imagery (B7)  |   | FAC-Neutral Test   |                                |               |
| Field Observations   |   | Spriaghum Moss   | (D0) (ERK 1, 0)                |               |
| Surface Water Present? Yes No X Depth (inches):  |   |  |                                |               |
| Water Table Present? Yes No X Depth (inches):  |   |  |                                |               |
| Saturation Present? Yes X No Depth (inches):   | 0 Wetland Hydr                                | ology Present?   | Yes X                          | No            |
| (includes capillary fringe)  |   |  |                                |               |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previo   | ous inspections), if availa                   | ble:   |                                |               |
|  |   |  |                                |               |
| Remarks.   |   |  |                                |               |
| Several primary and secondary indicators of wetland hydrology were observe   | d. Wetland hydrology is p                     | present.   |                                |               |
|  |   |  |                                |               |

Sampling Point: W-JRK-002 PEM

| T 0: / (D) / | Absolute                   | Dominant        | Indicator |  |
|--|----------------------------|-----------------|-----------|--|
| <u>Tree Stratum</u> (Plot size: <u>30 ft</u> )   | % Cover                    | Species?        | Status    | Dominance Test worksheet:  |
| 1.     Acer saccharinum       2.   | 10                         | Yes             | FAC       | Number of Dominant Species<br>That Are OBL, FACW, or FAC: <u>5</u> (A)   |
| 3<br>4   |                            |                 |           | Total Number of Dominant<br>Species Across All Strata: 8 (B)             |
| 5<br>6.  |                            |                 |           | Percent of Dominant Species<br>That Are OBL, FACW, or FAC: 62.5% (A/B)   |
| 7.   |                            |                 |           | Prevalence Index worksheet:  |
| 8.   |                            |                 |           | Total % Cover of: Multiply by:   |
|  | 10                         | =Total Cover    |           | OBL species 0 x 1 = 0  |
| 50% of total cover: 5  | 20%                        | of total cover: | 2         | FACW species 65 x 2 = 130  |
| Sapling/Shrub Stratum (Plot size: 30 ft )  |                            |                 |           | FAC species 90 x 3 = 270   |
| 1. Lonicera maackii  | 5                          | Yes             | UPL       | FACU species <u>15</u> x 4 = <u>60</u>                                   |
| 2. Lindera benzoin   | 10                         | Yes             | FACW      | UPL species 30 x 5 = 150   |
| 3  |                            |                 |           | Column Totals: 200 (A) 610 (B)   |
| 4  |                            |                 |           | Prevalence Index = B/A = 3.05  |
| 5  |                            |                 |           | Hydrophytic Vegetation Indicators:                                       |
| 6  |                            |                 |           | 1 - Rapid Test for Hydrophytic Vegetation                                |
| 7.   |                            |                 |           | X 2 - Dominance Test is >50%   |
| 8.   |                            |                 |           | 3 - Prevalence Index is ≤3.0 <sup>1</sup>                                |
|  | 15                         | =Total Cover    |           | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                |
| 50% of total cover: 8  | 20%                        | of total cover: | 3         |  |
| Herb Stratum (Plot size: 30 ft )   |                            |                 |           |  |
| 1. Microstegium vimineum   | 70                         | Yes             | FAC       | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be     |
| 2. Phragmites australis  | 50                         | Yes             | FACW      | present, unless disturbed or problematic.                                |
| 3. Cinna arundinacea   | 5                          | No              | FACW      | Definitions of Four Vegetation Strata:                                   |
| 4. Ampelopsis brevipedunculata   | 25                         | No              | UPL       | <b>Tree</b> – Woody plants, excluding vines $3$ in $(7.6 \text{ cm})$ or |
| 5.   |                            |                 |           | more in diameter at breast height (DBH), regardless of                   |
| 6.   |                            |                 |           | height.  |
| 7.   |                            |                 |           |  |
| 8  |                            |                 |           | Sapling/Shrub – Woody plants, excluding vines, less                      |
| 9  |                            |                 |           | than 3 in. DBH and greater than 3.28 ft (1 m) tall.                      |
| 10   |                            |                 |           |  |
| 11   |                            |                 |           | Herb – All herbaceous (non-woody) plants, regardless                     |
| 12   |                            |                 |           | of size, and woody plants less than 3.28 ft tall.                        |
| 12.  | 150                        | -Total Cover    |           | Woody Vine – All woody vines greater than 3.28 ft in                     |
| 50% of total covor: 75   | 20%                        |                 | 30        | height.  |
| Woody Vine Stratum (Plot size: 30 ft )   | 20%                        |                 |           |  |
| 1 Tovicodendron radicans   | 10                         | Vec             | FAC       |  |
| 2 Coloctrus orbiculatus  | 5                          | Vos             |           |  |
| 2. Dubus ideous  | 10                         | Yee             |           |  |
|  | 10                         | res             | FACU      |  |
|  |                            |                 |           |  |
| o  |                            | Tatal Cause     |           | Hydrophytic  |
|  | 25                         | = 1 otal Cover  | _         | Vegetation   |
| 50% of total cover: 13   | <u> </u>                   | of total cover: | 5         | Present? Yes <u>X</u> No   |
| Remarks: (If observed, list morphological adaptation<br>Vegetation observed meets the dominance test indic   | s below.)<br>ator for hydr | ophytic vegeta  | tion.     |  |
| Profile Desc            | ription: (Describe           | to the dep  | th needed to doc                        | ument t                         | he indica                | ator or c        | onfirm the a                            | bsence of ind                              | icators.)                 |                           |  |
|-------------------------|------------------------------|-------------|---|---------------------------------|--------------------------|------------------|---|--|---------------------------|---------------------------|--|
| Deptn<br>(inches)       | Color (moist)                |             | Color (moist)                           | x Featur                        | res<br>Type <sup>1</sup> | $1 \text{ oc}^2$ | Toytu                                   | •  | Por                       | narke                     |  |
| (inches)                |                              | 70          |   | 70                              | Туре                     | LUC              | Textu                                   | <u> </u>                                   | I CI                      |                           |  |
| 0-2                     | 10YR 4/1                     | 100         |   |                                 | <u> </u>                 | Μ                | Loamy/Cl                                | ayey                                       | Silty                     | loam                      |  |
| 2-16                    | 10YR 5/2                     | 60          | 10YR 4/6                                | 5                               | <u> </u>                 | Μ                | Mucky Loa                               | m/Clay (                                   | Co matrix of 1            | 0YR 4/1 at 35%            |  |
|                         |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
|                         |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
|                         |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
|                         |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
|                         |                              | <u> </u>    |   |                                 |                          |                  |   |  |                           |                           |  |
|                         |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
| <sup>1</sup> Type: C=Co | oncentration, D=Depl         | etion, RM   | =Reduced Matrix, N                      | /IS=Mas                         | ked San                  | d Grains         | . <sup>2</sup> Lo                       | ocation: PL=Po                             | ore Lining, M=            | Matrix.                   |  |
| Hydric Soil I           | ndicators: (Applica          | ble to all  | LRRs, unless othe                       | erwise r                        | noted.)                  |                  | Inc                                     | licators for Pr                            | oblematic Hy              | dric Soils <sup>3</sup> : |  |
| Histosol                | (A1)                         |             | Thin Dark Su                            | urface (S                       | S9) <b>(LRR</b>          | S, T, U)         |   | 1 cm Muck (A                               | 49) <b>(LRR O)</b>        |                           |  |
| Histic Ep               | vipedon (A2)                 |             | Barrier Islan                           | Barrier Islands 1 cm Muck (S12) |                          |                  |   | 2 cm Muck (A10) (LRR S)                    |                           |                           |  |
| Black His               | stic (A3)                    |             | (MLRA 15                                | (MLRA 153B, 153D)               |                          |                  |   | Coast Prairie Redox (A16)                  |                           |                           |  |
| Hydroger                | n Sulfide (A4)               |             | Loamy Muck                              | ky Miner                        | al (F1) <b>(L</b>        | .RR O)           |   | (outside MLRA 150A)                        |                           |                           |  |
| Stratified              | l Layers (A5)                |             | Loamy Gleye                             | _oamy Gleyed Matrix (F2)        |                          |                  |   |  | Reduced Vertic (F18)      |                           |  |
| Organic                 | Bodies (A6) (LRR P,          | , T, U)     | X Depleted Ma                           | atrix (F3)                      | )                        |                  |   | _<br>(outside M                            | LRA 150A, 1               | 50B)                      |  |
| 5 cm Mu                 | cky Mineral (A7) (LR         | (R P, T, U) | Redox Dark Surface (F6)                 |                                 |                          |                  |   | Piedmont Floodplain Soils (F19) (LRR P, T) |                           |                           |  |
| Muck Pre                | esence (A8) (LRR U)          | )           | Depleted Dark Surface (F7)              |                                 |                          |                  |   | Anomalous Bright Floodplain Soils (F20)    |                           |                           |  |
| 1 cm Mu                 | ck (A9) (LRR P, T)           |             | Redox Depressions (F8)                  |                                 |                          |                  |   | (MLRA 153B)                                |                           |                           |  |
| Depleted                | Below Dark Surface           | ∋ (A11)     | Marl (F10) (I                           | Marl (F10) <b>(LRR U)</b>       |                          |                  |   |  | Red Parent Material (F21) |                           |  |
| Thick Da                | rk Surface (A12)             | <b>、</b> ,  | Depleted Ochric (F11) (MLRA 151)        |                                 |                          |                  |   | Very Shallow Dark Surface (F22)            |                           |                           |  |
| Coast Pr                | airie Redox (A16) ( <b>N</b> | ILRA 150/   | ) Iron-Manganese Masses (F12) (LRR O, F |                                 |                          |                  | O, P, T)                                | , T) (outside MLRA 138, 152A in FL, 154)   |                           |                           |  |
| Sandy M                 | lucky Mineral (S1) (L        | .RR O, S)   | Umbric Surfa                            | 3) (LRR F                       | P, T, U)                 | ,                | Barrier Islands Low Chroma Matrix (TS7) |  |                           |                           |  |
| Sandy G                 | leved Matrix (S4)            |             | Delta Ochric (F17) (MLRA 151)           |                                 |                          |                  |   | (MLRA 153                                  | B. 153D)                  | ( - )                     |  |
| Sandv R                 | edox (S5)                    |             | Reduced Vertic (F18) (MLRA 150A, 150B)  |                                 |                          |                  | 50B)                                    | Other (Explai                              | n in Remarks              | )                         |  |
| Stripped                | Matrix (S6)                  |             | Piedmont Fl                             | oodolair                        | n Soils (F               | 19) <b>(ML</b> I | ,<br>RA 149A)                           | _ 、 .                                      |                           |                           |  |
| Dark Sur                | face (S7) (LRR P. S          | . T. U)     | Anomalous                               | Briaht F                        | loodplain                | Soils (F         | 20)                                     |  |                           |                           |  |
| Polvvalu                | e Below Surface (S8          | )<br>)      | (MLRA 14                                | 9A. 153                         | C. 153D                  |                  | - /                                     | <sup>3</sup> Indicators of                 | hvdrophytic v             | egetation and             |  |
| (LRR {                  | S. T. U)                     | ,           | Verv Shallow Dark Surface (E22)         |                                 |                          |                  | wetland hydrology must be present.      |  |                           | be present.               |  |
| (                       | -, -, -,                     |             | (MLRA 13                                | (MLRA 138, 152A in FL, 154)     |                          |                  |   | unless disturbed or problematic.           |                           |                           |  |
| Restrictive L           | _ayer (if observed):         |             |   |                                 |                          |                  |   |  |                           |                           |  |
| Туре:                   |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
| Depth (ir               | nches):                      |             |   |                                 |                          |                  | Hydric So                               | oil Present?                               | Yes                       | No                        |  |
| Remarks:                |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
| Soil characte           | rsitics observed mee         | et requirem | ents for a depleted                     | I matrix                        | indicator.               | Hydric           | soils are pres                          | ent.                                       |                           |                           |  |
|                         |                              | ·           |   |                                 |                          |                  | ·                                       |  |                           |                           |  |
|                         |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
|                         |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
|                         |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |
| 1                       |                              |             |   |                                 |                          |                  |   |  |                           |                           |  |

| WETLAND DETERMINA<br>See ERDC/EL   | U.S. Army C<br>TION DATA SH<br>TR-10-20; the | OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a) |  |   |                          |  |  |  |
|--|--|---|--|---|--------------------------|--|--|--|
| Project/Site: Standard Chlor   | ine  |   | Citv/Countv: New Castle, N                                   | lew Castle Co.                                | Sampling Date: 9/11/23   |  |  |  |
| Applicant/Owner: United  | States Environme                             | <br>=PA)  | State: DF  | Sampling Point: W-JRK-002 UPL                 |                          |  |  |  |
| Investigator(s):   Keil M Cu   | rran   | <u>(1) (1) (1) (1) (1) (1) (1) (1) (1) (1) </u>   | ection Townshin Range: N/A                                   |   |                          |  |  |  |
|  |  |   |  |   |                          |  |  |  |
| Subragion (I DD or MI DA);   |  | Lot: 20.601994  | Longe 75 C   |   | Slope (78) 15            |  |  |  |
|  | RK 5, WILKA 149/                             | A Lat. <u>39.601664</u>   | Long75.6   |   |                          |  |  |  |
| Soli Map Unit Name: SaD: Sa  | assafras sandy loa                           | am, 10 to 15 percent slop   | Des  |   | on: None                 |  |  |  |
| Are climatic / hydrologic condi  | tions on the site ty                         | pical for this time of year   | r? Yes <u>X</u>  | No (If no, ex                                 | plain in Remarks.)       |  |  |  |
| Are Vegetation, Soil   | , or Hydrolog                                | ysignificantly dist   | urbed? Are "Normal Circu                                     | mstances" present?                            | Yes X No                 |  |  |  |
| Are Vegetation, Soil   | , or Hydrolog                                | ynaturally problem  | matic? (If needed, explain                                   | any answers in Rer                            | marks.)                  |  |  |  |
| SUMMARY OF FINDING   | GS – Attach si                               | ite map showing sa  | ampling point locations                                      | s, transects, imp                             | portant features, etc.   |  |  |  |
| Hydrophytic Vegetation Pres  | ent? Ye                                      | es No X   | Is the Sampled Area  |   |                          |  |  |  |
| Hydric Soil Present?   | Ye   | es No X   | within a Wetland?  | Yes   | No_X_                    |  |  |  |
| Wetland Hydrology Present?   | Ye   | es No X   |  |   |                          |  |  |  |
| This upland point was taken in association with wetland W-JRK-002 and is located upslope and north of the wetland point and boundary. Upland point is located in forested area with sparse herbaceous cover. |  |   |  |   |                          |  |  |  |
| HYDROLOGY  |  |   |  |   |                          |  |  |  |
| Wetland Hydrology Indicate   | ors:   |   | Sec  | condary Indicators (r                         | minimum of two required) |  |  |  |
| Primary Indicators (minimum  | of one is required                           | l; check all that apply)  |  | Surface Soil Crack                            | s (B6)                   |  |  |  |
| Surface Water (A1)   | _  | Aquatic Fauna (B13)   |  | Sparsely Vegetated Concave Surface (B8)       |                          |  |  |  |
| High Water Table (A2)  | _  | Marl Deposits (B15) (L  | LRR U) Drainage Patterns (B10)                               |   |                          |  |  |  |
| Saturation (A3)  | —  | Hydrogen Sulfide Odo  | Sulfide Odor (C1) Moss Trim Lines (B16)                      |   |                          |  |  |  |
| Sediment Deposits (B2)   | —  | OXIDIZED RTIZOSPHETE  | $\frac{1}{1000} (C4)$  | Living Roots (C3) Dry-Season Water Table (C2) |                          |  |  |  |
| Drift Deposits (B3)  | _  | Recent Iron Reduction   | on in Tilled Soils (C6) Saturation Visible on Aerial Imagery |   |                          |  |  |  |
| Algal Mat or Crust (B4)  | —  | Thin Muck Surface (C  | 7)   | Geomorphic Position (D2)                      |                          |  |  |  |
| Iron Deposits (B5)   |  | Other (Explain in Rem   | arks) Shallow Aquitard (D3)                                  |   |                          |  |  |  |
| Inundation Visible on Ae   | rial Imagery (B7)                            |   |  | FAC-Neutral Test (D5)                         |                          |  |  |  |
| Water-Stained Leaves (E  | 39)  |   |  | Sphagnum Moss ([                              | 08) <b>(LRR T, U)</b>    |  |  |  |
| Field Observations:  |  |   |  |   |                          |  |  |  |
| Surface Water Present?   | Yes N  | lo Depth (inches  | s):  |   |                          |  |  |  |
| Water Table Present?   | Yes N  | lo Depth (inches  | s):  |   |                          |  |  |  |
| Saturation Present?  | Yes N  | lo Depth (inches  | S): Wetland Hyd  | rology Present?                               | Yes <u>No X</u>          |  |  |  |
| (includes capillary fringe)  |  | oring well, parial photos   | provious inspections), if avails                             | blor  |                          |  |  |  |
| Describe Recorded Data (Sir  | ean gauge, monit                             | oning well, aenai pholos,   | previous inspections), il availa                             | ible.   |                          |  |  |  |
| Demorke  |  |   |  |   |                          |  |  |  |
| No indicators of wetland hydr  | rology were observ                           | /ed   |  |   |                          |  |  |  |
|  |  |   |  |   |                          |  |  |  |
|  |  |   |  |   |                          |  |  |  |
|  |  |   |  |   |                          |  |  |  |
|  |  |   |  |   |                          |  |  |  |
|  |  |   |  |   |                          |  |  |  |
|  |  |   |  |   |                          |  |  |  |
|  |  |   |  |   |                          |  |  |  |
|  |  |   |  |   |                          |  |  |  |

I

Sampling Point: W-JRK-002 UPL

|   | Absolute    | Dominant        | Indicator |  |
|---|-------------|-----------------|-----------|--|
| Tree Stratum (Plot size: 30 ft )                    | % Cover     | Species?        | Status    | Dominance Test worksheet:  |
| 1. Juglans nigra                                    | 30          | Yes             | UPL       | Number of Dominant Species   |
| 2. Malus hupehensis                                 | 20          | Yes             | UPL       | That Are OBL, FACW, or FAC: 0 (A)                                    |
| 3. Celtis occidentalis                              | 5           | No              | FACU      | Total Number of Dominant   |
| 4   |             |                 |           | Species Across All Strata: 7 (B)                                     |
| 5   |             |                 |           |  |
| o   |             |                 |           | Percent of Dominant Species  |
| 0   |             | . <u></u>       |           | Prevelence Index workshoet   |
| /   |             |                 |           | Prevalence index worksneet:  |
| 8   |             |                 |           | I otal % Cover of: Multiply by:                                      |
|   | 55          | =Total Cover    |           | OBL species x 1 =  |
| 50% of total cover: 28                              | 3 20%       | of total cover: | 11        | FACW species 0 x 2 = 0   |
| Sapling/Shrub Stratum (Plot size: 30 ft )           |             |                 |           | FAC species <u>5</u> x 3 = <u>15</u>                                 |
| 1. Lonicera maackii                                 | 40          | Yes             | UPL       | FACU species65 x 4 =260  |
| 2.  |             |                 |           | UPL species 90 x 5 = 450   |
| 3.  |             |                 |           | Column Totals: 160 (A) 725 (B)                                       |
| 4.  |             |                 |           | Prevalence Index = $B/A = 4.53$                                      |
| 5   |             |                 |           | Hydrophytic Vegetation Indicators:                                   |
| 6   |             |                 |           | 1 - Rapid Test for Hydrophytic Vegetation                            |
| 7   |             |                 |           | Deminer and Test in F00/   |
| 7.  |             |                 |           |  |
| 8   |             |                 |           | 3 - Prevalence Index is ≤3.0'  |
|   | 40          | =Total Cover    |           | Problematic Hydrophytic Vegetation' (Explain)                        |
| 50% of total cover: 20                              | ) 20%       | of total cover: | 8         |  |
| Herb Stratum (Plot size: 30 ft )                    |             |                 |           |  |
| 1. Potentilla indica                                | 15          | Yes             | FACU      | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be |
| 2. Geum canadense                                   | 5           | No              | FAC       | present, unless disturbed or problematic.                            |
| 3. Lonicera japonica                                | 20          | Yes             | FACU      | Definitions of Four Vegetation Strata:                               |
| 4 Rubus phoenicolasius                              | 5           | No              | FACU      | Trop Woody plants evoluting vines 2 in (7.6 cm) or                   |
| 5 Parthenocissus quinquefolia                       |             | No              | FACU      | more in diameter at breast height (DBH), regardless of               |
|   |             |                 | 17.00     | height.  |
| 0   |             |                 |           |  |
| /   |             |                 |           | Sapling/Shrub – Woody plants, excluding vines, less                  |
| 8   |             |                 |           | than 3 in. DBH and greater than 3.28 ft (1 m) tall.                  |
| 9   |             |                 |           |  |
| 10  |             |                 |           | Herb – All berbaceous (non-woody) plants, regardless                 |
| 11  |             |                 |           | of size, and woody plants less than 3.28 ft tall.                    |
| 12.   |             |                 |           |  |
|   | 50          | =Total Cover    |           | Woody Vine – All woody vines greater than 3.28 ft in                 |
| 50% of total cover: 25                              | 5 20%       | of total cover: | 10        | height.  |
| Woody Vine Stratum (Plot size: 30 ft )              |             |                 |           |  |
| 1 Rubus phoenicolasius                              | 10          | Yes             | FACU      |  |
|   | 5           | Voc             | EACU      |  |
|   |             | 165             | FACU      |  |
| 3   |             |                 |           |  |
| 4   |             |                 |           |  |
| 5   |             |                 |           | Hydrophytic  |
|   | 15          | =Total Cover    |           | Vegetation   |
| 50% of total cover: 8                               | 20%         | of total cover: | 3         | Present?         Yes         No         X                            |
| Remarks: (If observed list morphological adaptation | s below )   |                 |           | 1  |
| Vegetation observed did not meet any indicators for | hvdrophvtic | vegetation.     |           |  |
|   | ,           |                 |           |  |

| Depth       Matrix       Redox Features         (inches)       Color (moist)       %       Type1       Loc2       Texture         0-3       10YR 4/2       100       C       M       Loamy/Clayey         3-12       10YR 4/3       100       C       M       Loamy/Clayey         3-12       10YR 4/3       100       C       M       Loamy/Clayey  | Remarks         Loam         Silty loam     |  |  |
|--|---|--|--|
| (inches)       Color (moist)       %       Color (moist)       %       Type       Loc <sup>-</sup> Texture         0-3       10YR 4/2       100       C       M       Loamy/Clayey         3-12       10YR 4/3       100       C       M       Loamy/Clayey         3-12       10YR 4/3       100       C       M       Loamy/Clayey   | Loam<br>Loam<br>Silty Ioam                  |  |  |
| 0-3       10YR 4/2       100       C       M       Loamy/Clayey         3-12       10YR 4/3       100       C       M       Loamy/Clayey         3-12       10YR 4/3       100       C       M       Loamy/Clayey  | Loam<br>Silty Ioam                          |  |  |
| 3-12       10YR 4/3       100       C       M       Loamy/Clayey   | Silty loam                                  |  |  |
| <sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location:         Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators         Histosol (A1)       Thin Dark Surface (S9) (LRR S, T, U)       1 cm M         Histic Epipedon (A2)       Barrier Islands 1 cm Muck (S12)       2 cm M         Black Histic (A3)       (MLRA 153B, 153D)       Coast         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1) (LRR O)       (out         Stratified Layers (A5)       Depleted Matrix (F2)       Reduce      |   |  |  |
| <sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location:         Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators         Histosol (A1)       Thin Dark Surface (S9) (LRR S, T, U)       1 cm M         Histic Epipedon (A2)       Barrier Islands 1 cm Muck (S12)       2 cm M         Black Histic (A3)       (MLRA 153B, 153D)       Coast         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1) (LRR O)       (out         Stratified Layers (A5)       Loamy Gleyed Matrix (F2)       Reduce  |   |  |  |
| <sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location:         Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators         Histosol (A1)       Thin Dark Surface (S9) (LRR S, T, U)       1 cm M         Histic Epipedon (A2)       Barrier Islands 1 cm Muck (S12)       2 cm M         Black Histic (A3)       (MLRA 153B, 153D)       Coast         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1) (LRR O)       (out         Stratified Layers (A5)       Loamy Gleyed Matrix (F2)       Reduce  |   |  |  |
| <sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location:         Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators         Histosol (A1)       Thin Dark Surface (S9) (LRR S, T, U)       1 cm M         Histic Epipedon (A2)       Barrier Islands 1 cm Muck (S12)       2 cm M         Black Histic (A3)       (MLRA 153B, 153D)       Coast         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1) (LRR O)       (out         Stratified Layers (A5)       Depleted Matrix (F2)       Reduce      |   |  |  |
| <sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location:         Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators:         Histosol (A1)       Thin Dark Surface (S9) (LRR S, T, U)       1 cm M         Histic Epipedon (A2)       Barrier Islands 1 cm Muck (S12)       2 cm M         Black Histic (A3)       (MLRA 153B, 153D)       Coast         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1) (LRR O)       (out         Stratified Layers (A5)       Loamy Gleyed Matrix (F2)       Reduce |   |  |  |
| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators:         Histosol (A1)       Thin Dark Surface (S9) (LRR S, T, U)       1 cm N         Histic Epipedon (A2)       Barrier Islands 1 cm Muck (S12)       2 cm N         Black Histic (A3)       (MLRA 153B, 153D)       Coast         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1) (LRR O)       (out         Stratified Layers (A5)       Loamy Gleyed Matrix (F2)       Reduct   | PL=Pore Lining, M=Matrix.                   |  |  |
| Histosol (A1)       Thin Dark Surface (S9) (LRR S, T, U)       1 cm I         Histic Epipedon (A2)       Barrier Islands 1 cm Muck (S12)       2 cm I         Black Histic (A3)       (MLRA 153B, 153D)       Coast         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1) (LRR O)       (out         Stratified Layers (A5)       Loamy Gleyed Matrix (F2)       Reduce   | for Problematic Hydric Soils <sup>3</sup> : |  |  |
| Histic Epipedon (A2)       Barrier Islands 1 cm Muck (S12)       2 cm I         Black Histic (A3)       (MLRA 153B, 153D)       Coast         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1) (LRR O)       (out         Stratified Layers (A5)       Loamy Gleyed Matrix (F2)       Reduct   | Muck (A9) <b>(LRR O)</b>                    |  |  |
| Black Histic (A3)       (MLRA 153B, 153D)       Coast         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1) (LRR O)       (out         Stratified Layers (A5)       Loamy Gleyed Matrix (F2)       Reduc         Coast (A6)       Dealated Matrix (F2)       (out   | 2 cm Muck (A10) (LRR S)                     |  |  |
| Hydrogen Sulfide (A4)     Loamy Mucky Mineral (F1) (LRR O)     (out       Stratified Layers (A5)     Loamy Gleyed Matrix (F2)     Reduct   | Coast Prairie Redox (A16)                   |  |  |
| Stratified Layers (A5)Loamy Gleyed Matrix (F2)Reduc  | side MLRA 150A)                             |  |  |
|  | ed Vertic (F18)                             |  |  |
| U Organic Bodies (Ab) (LRR P, I, U) Depleted Matrix (F3) (Out  | side MLRA 150A, 150B)                       |  |  |
| 5 cm Mucky Mineral (A7) (LRR P, T, U) Redox Dark Surface (F6) Piedm  | ont Floodplain Soils (F19) (LRR P, T)       |  |  |
| Muck Presence (A8) (LRR U) Depleted Dark Surface (F7) Anoma  | Anomalous Bright Floodplain Soils (F20)     |  |  |
| 1 cm Muck (A9) (LRR P, T) Redox Depressions (F8) (ML   | RA 153B)                                    |  |  |
| Depleted Below Dark Surface (A11) Marl (F10) (LRR U) Red P   | arent Material (F21)                        |  |  |
| Thick Dark Surface (A12) Depleted Ochric (F11) (MLRA 151) Very S   | Very Shallow Dark Surface (F22)             |  |  |
| Coast Prairie Redox (A16) (MLRA 150A) Iron-Manganese Masses (F12) (LRR O, P, T) (out   | P, T) (outside MLRA 138, 152A in FL, 154)   |  |  |
| Sandy Mucky Mineral (S1) (LRR O, S) Umbric Surface (F13) (LRR P, T, U) Barrie  | r Islands Low Chroma Matrix (TS7)           |  |  |
| Sandy Gleved Matrix (S4) Delta Ochric (F17) (MLRA 151) (ML   | (MLRA 153B, 153D)                           |  |  |
| Sandy Redox (S5) Reduced Vertic (F18) (MLRA 150A, 150B) Other  | (Explain in Remarks)                        |  |  |
| Stripped Matrix (S6) Piedmont Floodplain Soils (F19) (MLRA 149A)   |   |  |  |
| Dark Surface (S7) (LRR P. S. T. U) Anomalous Bright Floodplain Soils (F20)   |   |  |  |
| Polyvalue Below Surface (S8) (MLRA 149A, 153C, 153D) <sup>3</sup> Indica   | ators of hydrophytic vegetation and         |  |  |
| (LRR S. T. U) Very Shallow Dark Surface (F22) wet  | and hydrology must be present.              |  |  |
| (MLRA 138, 152A in FL, 154) unle   | ess disturbed or problematic.               |  |  |
| Restrictive Layer (if observed):   |   |  |  |
| Туре:  |   |  |  |
| Depth (inches): Hydric Soil Pres   |   |  |  |

No indicators for hydric soil were observed.

| U.S. Army Corps of Engineers<br>WETLAND DETERMINATION DATA SHEET – Atlantic and G<br>See ERDC/EL TR-10-20; the proponent agency is               | Ulf Coastal Plain Region<br>S CECW-CO-R<br>OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a) |  |  |  |  |
|--|--|--|--|--|--|
| Project/Site: Standard Chlorine  | City/County: New Castle, New Castle Co. Sampling Date: 9/12/23   |  |  |  |  |
| Applicant/Owner: United States Environmental Protection Agency (E  | PA) State: DE Sampling Point: W-JRK-003 PEM  |  |  |  |  |
| Investigator(s): J. Keil, M. Curran S  | ection, Township, Range: N/A   |  |  |  |  |
| Landform (hillside, terrace, etc.): Depression Loca  | l relief (concave, convex, none): concave Slope (%): 1   |  |  |  |  |
| Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 39.602165   | Long: -75.634411 Datum: NAD 83   |  |  |  |  |
| Soil Map Unit Name: SaD: Sassafras sandy loam, 10 to 15 percent slop   | es NWI classification: None  |  |  |  |  |
| Are climatic / hydrologic conditions on the site typical for this time of year   | ? Yes X No (If no, explain in Remarks.)  |  |  |  |  |
| Are Vegetation , Soil X , or Hydrology significantly dist  | urbed? Are "Normal Circumstances" present? Yes X No  |  |  |  |  |
| Are Vegetation , Soil , or Hydrology naturally probler   | natic? (If needed, explain any answers in Remarks.)  |  |  |  |  |
| SUMMARY OF FINDINGS – Attach site man showing s  | umpling point locations transacts important features atc   |  |  |  |  |
| SUMMART OF FINDINGS – Attach site map showing sa   | impling point locations, transects, important leatures, etc.   |  |  |  |  |
| Hydrophytic Vegetation Present? Yes X No   | Is the Sampled Area  |  |  |  |  |
| Hydric Soil Present? Yes X No  | within a Wetland? Yes X No   |  |  |  |  |
| Wetland Hydrology Present? Yes X No  |  |  |  |  |  |
| HYDROLOGY  |  |  |  |  |  |
|  | Coopedary Indicators (minimum of two required)   |  |  |  |  |
| Primary Indicators (minimum of one is required: check all that apply)  | Surface Soil Cracks (B6)   |  |  |  |  |
| Surface Water (A1) Aquatic Fauna (B13)   | Sparsely Vegetated Concave Surface (B8)  |  |  |  |  |
| High Water Table (A2) Marl Deposits (B15) (L   | RR U) Drainage Patterns (B10)  |  |  |  |  |
| Saturation (A3) Hydrogen Sulfide Odo   | r (C1) Moss Trim Lines (B16)   |  |  |  |  |
| Water Marks (B1) Oxidized Rhizosphere  | s on Living Roots (C3) Dry-Season Water Table (C2)   |  |  |  |  |
| Sediment Deposits (B2) Presence of Reduced   | Iron (C4) Crayfish Burrows (C8)  |  |  |  |  |
| Drift Deposits (B3) Recent Iron Reduction  | in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)   |  |  |  |  |
| Algal Mat or Crust (B4) Thin Muck Surface (C   | 7) X Geomorphic Position (D2)  |  |  |  |  |
| Iron Deposits (B5) Other (Explain in Rem   | arks) Shallow Aquitard (D3)  |  |  |  |  |
| Inundation Visible on Aerial Imagery (B7)  | X FAC-Neutral Test (D5)  |  |  |  |  |
| Water-Stained Leaves (B9)  | Sphagnum Moss (D8) (LRR T, U)  |  |  |  |  |
| Field Observations:  |  |  |  |  |  |
| Surface Water Present? Yes No X Depth (inches  | ):   |  |  |  |  |
| Water Table Present? Yes No X Depth (inches):  |  |  |  |  |  |
| Saturation Present?         Yes         No         X         Depth (inches):         Wetland Hydrology Present?         Yes         X         No |  |  |  |  |  |
| (includes capillary fringe)  |  |  |  |  |  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos,  | previous inspections), if available:   |  |  |  |  |
|  |  |  |  |  |  |
| Remarks:   |  |  |  |  |  |

Several secondary indicators for wetland hydrology were observed, including geomorphic position and the FAC-neutral test. Wetland hydrology is present.

Sampling Point: W-JRK-003 PEM

|  | Absolute     | Dominant         | Indicator     |  |
|--|--------------|------------------|---------------|--|
| Tree Stratum (Plot size: <u>30 ft</u> )              | % Cover      | Species?         | Status        | Dominance Test worksheet:  |
| 1.<br>2.   |              |                  |               | Number of Dominant Species           That Are OBL, FACW, or FAC:         3 (A)   |
| 3.<br>4.   |              |                  |               | Total Number of Dominant<br>Species Across All Strata: 3 (B)   |
| 5.   |              |                  |               | Percent of Dominant Species  |
| 6  |              |                  |               | That Are OBL, FACW, or FAC: 100.0% (A/B)   |
| 8  |              |                  |               | Total % Cover of: Multiply by:   |
| 0.   |              | -Total Cover     |               | $\frac{1}{10000000000000000000000000000000000$   |
| 50% of total cover                                   | 20%          | of total cover   |               | EACW species 55 $x^2 = 110$  |
| Sapling/Shrub Stratum (Plot size: 30 ft )            | 2070         |                  |               | $FAC species \qquad 0 \qquad x 3 = 0$  |
| <u>oaphing on ab oratam</u> (Flot 3/26)              |              |                  |               | $\frac{1}{1} = \frac{1}{1} = \frac{1}$ |
| 2  |              |                  |               | $\frac{1}{1} \text{Pl species} = \frac{5}{5} \text{ x } 5 = -\frac{25}{5}$   |
| 2  |              |                  |               | Column Totals: 100 (A) 175 (B)   |
| 4.   |              |                  |               | Prevalence Index = $B/A = 1.75$  |
| 5  |              |                  |               | Hydrophytic Vegetation Indicators:   |
| 6  |              |                  |               | 1 - Rapid Test for Hydrophytic Vegetation  |
| 7  |              |                  |               | X 2 - Dominance Test is >50%   |
| 8  |              |                  |               | $\frac{1}{2}$ = Borninanios Fost is >0075<br>X = 3 = Brevalence Index is <3.0 <sup>1</sup>   |
| · · · · · · · · · · · · · · · · · · ·                |              | -Total Cover     |               | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  |
| 50% of total cover                                   | 20%          | of total cover   |               |  |
| Horb Stratum (Plot size: 20 ft )                     | 20%          | or total cover.  |               |  |
| <u>Herb Stratum</u> (Plot size. <u>30 lt</u> )       | 50           | Vee              |               |  |
| Phragmites australis                                 |              | Yes              |               | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be   |
|  |              | Yes              |               | present, unless disturbed or problematic.  |
|  |              | <u>res</u>       |               | Definitions of Four Vegetation Strata:   |
| 4. Persicaria pensylvanica                           |              | <u>No</u>        | FACW          | <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or   |
| 5. Setaria viridis                                   | 5            | NO               | UPL           | height.  |
| 6  |              |                  |               |  |
| 7  |              |                  |               | Sapling/Shrub – Woody plants, excluding vines, less  |
| 8.   |              |                  |               | than 3 in. DBH and greater than 3.28 ft (1 m) tall.  |
| 9  |              |                  |               |  |
| 10   |              |                  |               | Herb – All herbaceous (non-woody) plants, regardless   |
| 12.  |              |                  |               | of size, and woody plants less than 3.28 ft tall.  |
|  | 100          | =Total Cover     |               | Woody Vine – All woody vines greater than 3.28 ft in   |
| 50% of total cover: 5                                | 0 20%        | of total cover:  | 20            | noight.  |
| Woody Vine Stratum (Plot size: 30 ft )               |              |                  |               |  |
| ··   |              |                  |               |  |
| 2  |              |                  |               |  |
| 3  | ·            |                  |               |  |
| 4  | ·            |                  |               |  |
| 5  |              | Tatal Oscar      |               | Hydrophytic  |
|  |              | = l otal Cover   |               | Vegetation   |
| 50% of total cover:                                  | 20%          | or total cover:  |               |  |
| Remarks: (If observed, list morphological adaptation | ns below.)   | a la alta da da  | dered to the  |  |
| Vegetation observed meets dominance test and pre-    | valence inde | x indicators for | · hydrophytic | vegetation.  |
|  |              |                  |               |  |
|  |              |                  |               |  |

| Profile Description: (Describe to the dep                | th needed to docu  | ument the in          | dicator or o                    | confirm the abs      | ence of indicators.)                              |  |  |  |
|--|--|-----------------------|---------------------------------|----------------------|---|--|--|--|
| Depth Matrix   | Redo   | x Features            |                                 |                      |   |  |  |  |
| (inches) Color (moist) %                                 | Color (moist)  | <u>%</u> Тур          | e <sup>1</sup> Loc <sup>2</sup> | Texture              | Remarks   |  |  |  |
| 0-6 10YR 5/2 90  | 10YR 5/6   | <u>10</u> C           | <u>м</u>                        | Mucky Loam/          | Clay Silty clay loam                              |  |  |  |
|  |  |                       |                                 |                      |   |  |  |  |
|  |  |                       |                                 |                      |   |  |  |  |
|  |  |                       |                                 |                      |   |  |  |  |
|  |  |                       |                                 |                      |   |  |  |  |
|  |  |                       |                                 |                      |   |  |  |  |
|  |  |                       |                                 |                      |   |  |  |  |
|  |  |                       |                                 |                      |   |  |  |  |
|  |  |                       |                                 |                      |   |  |  |  |
| <sup>1</sup> Type: C=Concentration, D=Depletion, RM=     | Reduced Matrix, N  | /IS=Masked S          | and Grains                      | s. <sup>2</sup> Loca | tion: PL=Pore Lining, M=Matrix.                   |  |  |  |
| Hydric Soil Indicators: (Applicable to all               | LRRs, unless othe  | erwise noted          | .)                              | Indic                | ators for Problematic Hydric Soils <sup>3</sup> : |  |  |  |
| Histosol (A1)  | Thin Dark Su   | urface (S9) <b>(L</b> | RR S, T, U                      | )1                   | cm Muck (A9) (LRR O)                              |  |  |  |
| Histic Epipedon (A2)                                     | Barrier Islan  | ds 1 cm Mucl          | (S12)                           | 2                    | 2 cm Muck (A10) <b>(LRR S)</b>                    |  |  |  |
| Black Histic (A3)  | Black Histic (A3) (MLRA 153B, 153D)                                  |                       |                                 |                      |   |  |  |  |
| Hydrogen Sulfide (A4)                                    | Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR O)               |                       |                                 |                      |   |  |  |  |
| Stratified Layers (A5) Loamy Gleyed Matrix (F2)          |  |                       |                                 | R                    | Reduced Vertic (F18)                              |  |  |  |
| Organic Bodies (A6) (LRR P, T, U) X Depleted Matrix (F3) |  |                       |                                 |                      | (outside MLRA 150A, 150B)                         |  |  |  |
| 5 cm Mucky Mineral (A7) (LRR P, T, U)                    | 5 cm Mucky Mineral (A7) <b>(LRR P. T. U)</b> Redox Dark Surface (F6) |                       |                                 |                      | Piedmont Floodplain Soils (F19) (LRR P, T)        |  |  |  |
| Muck Presence (A8) (LRR U)                               | Depleted Da  | rk Surface (F         | 7)                              | A                    | nomalous Bright Floodplain Soils (F20)            |  |  |  |
| 1 cm Muck (A9) (LRR P, T)                                | X Redox Depre  | essions (F8)          | ,                               |                      | (MLRA 153B)                                       |  |  |  |
| Depleted Below Dark Surface (A11)                        | <br>Marl (F10) <b>(I</b>   | _RR U)                |                                 | R                    | Red Parent Material (F21)                         |  |  |  |
| Thick Dark Surface (A12)                                 | Depleted Oc  | hric (F11) <b>(M</b>  | LRA 151)                        | v                    | Very Shallow Dark Surface (F22)                   |  |  |  |
| Coast Prairie Redox (A16) (MLRA 150A                     | )<br>Iron-Mangan   | ese Masses            | (F12) <b>(LRR</b>               | O, P, T)             | (outside MLRA 138, 152A in FL, 154)               |  |  |  |
| Sandy Mucky Mineral (S1) (LRR O, S)                      | Umbric Surfa   | ace (F13) <b>(LF</b>  | R P. T. U)                      | B                    | arrier Islands Low Chroma Matrix (TS7)            |  |  |  |
| Sandy Gleved Matrix (S4)                                 | Delta Ochric   | (F17) (MLR/           | (151)                           |                      | (MLRA 153B, 153D)                                 |  |  |  |
| Sandy Redox (S5)   | Reduced Ve   | rtic (F18) (ML        | .RA 150A,                       | 150B) C              | Other (Explain in Remarks)                        |  |  |  |
| Stripped Matrix (S6)                                     | Piedmont Flo   | oodplain Soils        | s (F19) <b>(ML</b>              | RA 149A)             | , , , , , , , , , , , , , , , , , , ,             |  |  |  |
| Dark Surface (S7) (LRR P. S. T. U)                       | Anomalous I  | Briaht Floodp         | ain Soils (F                    | - 20)                |   |  |  |  |
| Polyvalue Below Surface (S8)                             | (MLRA 14   | 9A. 153C. 15          | 3D)                             | 3 <sub>1</sub>       | ndicators of hydrophytic vegetation and           |  |  |  |
| (LRR S. T. U)  | Verv Shallov   | v Dark Surfac         | e (F22)                         |                      | wetland hydrology must be present.                |  |  |  |
| (,,,,  | (MLRA 13   | 8, 152A in Fl         | _, 154)                         |                      | unless disturbed or problematic.                  |  |  |  |
| Restrictive Layer (if observed):                         | -  |                       | •                               |                      | -   |  |  |  |
| Type: Compaction and gravel                              |  |                       |                                 |                      |   |  |  |  |
| Depth (inches): 6  |  |                       |                                 | Hydric Soil          | Present? Yes No                                   |  |  |  |
| Remarks:   |  |                       |                                 |                      |   |  |  |  |

Soil characteristics observed meets requirements for depleted matrix and redox depressions indicators. Hydric soils are present.

| U.S. Army Corps of Engineers<br>WETLAND DETERMINATION DATA SHEET – Atlantic and Gul<br>See ERDC/EL TR-10-20; the proponent agency is ( | OMB Control #: 0710-0024, Exp: 11/30/<br>Requirement Control Symbol EXEMP<br>CECW-CO-R           CECW-CO-R   | /2024<br>PT:<br>2a) |
|--|--|---------------------|
| Project/Site: Standard Chlorine  | City/County: New Castle, New Castle Co. Sampling Date: 9/1   | 2/2023              |
| Applicant/Owner: United States Environmental Protection Agency (EP   | A) State: DE Sampling Point: w.u   | RK-003 UPL          |
| Investigator(s): J. Keil, M. Curran Sec  | tion, Township, Range: N/A   |                     |
| Landform (hillside, terrace, etc.): Plane Local r  | elief (concave, convex, none): none Slope (%):   | 1                   |
| Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 39.602167   | Long: -75.634347 Datum: NA   | D 83                |
| Soil Map Unit Name: SaD: Sassafras sandy loam, 10 to 15 percent slopes   | NWI classification: N/A  |                     |
| Are climatic / hydrologic conditions on the site typical for this time of year?  | Yes X No (If no, explain in Remarks.)  |                     |
| Are Vegetation , Soil X , or Hydrology significantly distur  | ped? Are "Normal Circumstances" present? Yes X No  | 0                   |
| Are Vegetation , Soil , or Hydrology naturally problema  | tic? (If needed, explain any answers in Remarks.)  |                     |
| SUMMARY OF FINDINGS – Attach site map showing san  | poling point locations, transects, important features  | s. etc.             |
|  |  | .,                  |
| Hydrophytic Vegetation Present? Yes No X   | Is the Sampled Area  |                     |
| Hydric Soil Present? Yes No X  | within a Wetland? Yes <u>No X</u>  |                     |
| This upland point was taken in association with W-JRK-003. The point wa<br>disturbed due to the presence of fill material.             | s taken upslope and east of the wetland boundary and data point. So  | oil is              |
| HYDROLOGY  |  |                     |
| Primary Indicators (minimum of one is required; check all that apply)  | Surface Soil Cracks (B6)         Surface Soil Cracks (B6)         Sparsely Vegetated Concave Surface (I         RU)       Drainage Patterns (B10)         C1)       Moss Trim Lines (B16)         on Living Roots (C3)       Dry-Season Water Table (C2)         on (C4)       Crayfish Burrows (C8)         a Tilled Soils (C6)       Saturation Visible on Aerial Imagery (C4)         Geomorphic Position (D2)       Shallow Aquitard (D3)         FAC-Neutral Test (D5)       Sphagnum Moss (D8) (LRR T, U)         Wetland Hydrology Present?       Yes No         evious inspections), if available:       Yes | 9)                  |
| Remarks:<br>No indicators for wetland hydrology were observed.   |  |                     |

Sampling Point: W-JRK-003 UPL

| Tree Stratum (Plot size: 30 ft )                     | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | Dominance Test worksheet   |
|--|---------------------|----------------------|---------------------|--|
| 1.   | 70 00101            | 000000               |                     | Number of Dominant Species   |
| 2.   |                     |                      |                     | That Are OBL, FACW, or FAC:(A)                                       |
| 3<br>4   |                     |                      |                     | Total Number of Dominant<br>Species Across All Strata: <u>2</u> (B)  |
| 5  |                     |                      |                     | Percent of Dominant Species  |
| 6  |                     |                      |                     | That Are OBL, FACW, or FAC: 50.0% (A/B)                              |
| 7  |                     |                      |                     | Total % Cover of: Multiply by:                                       |
|  |                     | =Total Cover         |                     | $\frac{1}{\text{OBL species}}  0 \qquad \text{x1} = 0$               |
| 50% of total cover:                                  | 20%                 | of total cover:      |                     | FACW species 5 $x^2 = 10$  |
| Sapling/Shrub Stratum (Plot size: 30 ft )            |                     |                      |                     | FAC species $30 \times 3 = 90$                                       |
| 1. <u> </u>  |                     |                      |                     | FACU species 45 x 4 = 180  |
| 2.   |                     |                      |                     | UPL species 5 x 5 = 25   |
| 3.   |                     |                      |                     | Column Totals: 85 (A) 305 (B)  |
| 4.   |                     |                      |                     | Prevalence Index = $B/A = 3.59$                                      |
| 5.   |                     |                      |                     | Hydrophytic Vegetation Indicators:                                   |
| 6.   |                     |                      |                     | 1 - Rapid Test for Hydrophytic Vegetation                            |
| 7.   |                     |                      |                     | 2 - Dominance Test is >50%   |
| 8.   |                     |                      |                     | 3 - Prevalence Index is ≤3.0 <sup>1</sup>                            |
|  |                     | =Total Cover         |                     | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)            |
| 50% of total cover:                                  | 20%                 | of total cover:      |                     | <b>—</b>   |
| Herb Stratum (Plot size: 30 ft )                     |                     |                      |                     |  |
| 1. Panicum virgatum                                  | 30                  | Yes                  | FAC                 | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be |
| 2. Lespedeza cuneata                                 | 30                  | Yes                  | FACU                | present, unless disturbed or problematic.                            |
| 3. Setaria viridis                                   | 5                   | No                   | UPL                 | Definitions of Four Vegetation Strata:                               |
| 4. Poa compressa                                     | 10                  | No                   | FACU                | Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or              |
| 5. Tridens flavus                                    | 5                   | No                   | FACU                | more in diameter at breast height (DBH), regardless of               |
| 6. Phragmites australis                              | 5                   | No                   | FACW                | height.  |
| 7  |                     |                      |                     | Sanling/Shrub - Woody plants, excluding vines, less                  |
| 8  |                     |                      |                     | than 3 in. DBH and greater than 3.28 ft (1 m) tall.                  |
| 9  |                     |                      |                     |  |
| 10   |                     |                      |                     | Herb – All herbaceous (non-woody) plants, regardless                 |
| 11   |                     | . <u> </u>           |                     | of size, and woody plants less than 3.28 ft tall.                    |
| 12   |                     |                      |                     |  |
|  | 85                  | =Total Cover         |                     | <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height   |
| 50% of total cover: <u>4</u>                         | 320%                | of total cover:      | 17                  | neight.  |
| Woody Vine Stratum (Plot size: 30 ft )               |                     |                      |                     |  |
| 1  |                     |                      |                     |  |
| 2  |                     |                      |                     |  |
| 3  |                     |                      |                     |  |
| 4  |                     |                      |                     |  |
| 5  |                     |                      |                     | Hydrophytic  |
|  |                     | =Total Cover         |                     | Vegetation   |
| 50% of total cover:                                  | 20%                 | of total cover:      |                     | Present? Yes <u>No X</u>   |
| Remarks: (If observed, list morphological adaptation | ns below.)          |                      |                     |  |
| Vegetation observed did not meet any indicators for  | hydrophytic         | vegetation.          |                     |  |

SOIL

| Denth                             | Iption: (Describe)<br>Matrix | to the dept  | n needed to doci<br>Redo                    | ument t<br>v Featur | ne Indica          | ator or co       | onfirm the              | absence of in                           | idicators.)         |                          |
|-----------------------------------|------------------------------|--------------|---|---------------------|--------------------|------------------|-------------------------|---|---------------------|--------------------------|
| (inches)                          | Color (moist)                | %            | Color (moist)                               | <u>%</u>            | Type <sup>1</sup>  | Loc <sup>2</sup> | Text                    | ure                                     | Rema                | rks                      |
| 0-3                               | 10YR 4/2                     | 100          |   |                     | С                  | М                | Loamy/Clayey Silty loan |   | am                  |                          |
|                                   |                              |              |   |                     |                    |                  |                         |   |                     |                          |
|                                   |                              |              |   |                     |                    |                  |                         |   |                     |                          |
|                                   |                              |              |   |                     |                    |                  |                         |   |                     |                          |
|                                   |                              |              |   |                     |                    |                  |                         |   |                     |                          |
|                                   |                              |              |   |                     |                    |                  |                         |   |                     |                          |
|                                   |                              |              |   |                     |                    |                  |                         |   |                     |                          |
| Type: C=Cor                       |                              | letion, RM=I | Reduced Matrix, N                           | /S=Mas              | ked San            | d Grains.        | 2                       | ocation: PI =                           | Pore Lining, M=M    |                          |
| Hydric Soil In                    | dicators: (Applica           | ble to all L | RRs, unless othe                            | erwise r            | noted.)            |                  | In                      | dicators for                            | Problematic Hydi    | ric Soils <sup>3</sup> : |
| Histosol (A1)                     |                              |              | Thin Dark Surface (S9) (LRR S, T, U)        |                     |                    |                  |                         | 1 cm Muck (A9) (LRR O)                  |                     |                          |
| Histic Epipedon (A2)              |                              |              | Barrier Islands 1 cm Muck (S12)             |                     |                    |                  |                         | 2 cm Muck (A10) (LRR S)                 |                     |                          |
| Black Histic (A3)                 |                              |              | (MLRA 153B, 153D)                           |                     |                    |                  |                         | Coast Prairie Redox (A16)               |                     |                          |
| Hydrogen Sulfide (A4)             |                              |              | Loamy Muck                                  | xy Miner            | ral (F1) <b>(L</b> | RR O)            | _                       | (outside                                | MLRA 150A)          |                          |
| Stratified Layers (A5)            |                              |              | Loamy Gleye                                 | ed Matri            | ix (F2)            |                  |                         | Reduced V                               | ′ertic (F18)        |                          |
| Organic Bodies (A6) (LRR P, T, U) |                              |              | Depleted Matrix (F3)                        |                     |                    |                  |                         | <br>(outside                            | MLRA 150A, 150      | В)                       |
| 5 cm Muc                          | ky Mineral (A7) <b>(LR</b>   | R P, T, U)   | Redox Dark Surface (F6)                     |                     |                    |                  |                         | Piedmont F                              | Floodplain Soils (F | 19) <b>(LRR P, T)</b>    |
| Muck Pres                         | sence (A8) (LRR U            | )            | Depleted Dark Surface (F7)                  |                     |                    |                  |                         | Anomalous Bright Floodplain Soils (F20) |                     |                          |
| 1 cm Muc                          | k (A9) <b>(LRR P, T)</b>     |              | Redox Depressions (F8)                      |                     |                    |                  |                         | (MLRA 153B)                             |                     |                          |
| Depleted                          | Below Dark Surface           | ∋ (A11)      | Marl (F10) <b>(LRR U)</b>                   |                     |                    |                  |                         | Red Parent Material (F21)               |                     |                          |
| Thick Dar                         | k Surface (A12)              |              | Depleted Ochric (F11) (MLRA 151)            |                     |                    |                  |                         | Very Shallow Dark Surface (F22)         |                     |                          |
| Coast Pra                         | irie Redox (A16) ( <b>N</b>  | ILRA 150A)   | Iron-Manganese Masses (F12) (LRR O, P, T)   |                     |                    |                  |                         | (outside MLRA 138, 152A in FL, 154)     |                     |                          |
| Sandy Mu                          | icky Mineral (S1) (L         | .RR O, S)    | Umbric Surface (F13) (LRR P, T, U)          |                     |                    |                  |                         | Barrier Islands Low Chroma Matrix (TS7) |                     |                          |
| Sandy Gle                         | eyed Matrix (S4)             | -            | Delta Ochric (F17) (MLRA 151)               |                     |                    |                  |                         | (MLRA 153B, 153D)                       |                     |                          |
| Sandy Re                          | dox (S5)                     |              | Reduced Vertic (F18) (MLRA 150A, 150B)      |                     |                    |                  | 50B)                    | Other (Exp                              | lain in Remarks)    |                          |
| Stripped N                        | Matrix (S6)                  |              | Piedmont Floodplain Soils (F19) (MLRA 149A) |                     |                    |                  | A 149A)                 | _                                       | ,                   |                          |
| Dark Surfa                        | ace (S7) (LRR P. S           | . T. U)      | Anomalous Bright Floodplain Soils (F20)     |                     |                    |                  | 20)                     |   |                     |                          |
| Polyvalue Below Surface (S8)      |                              |              | (MLRA 149A, 153C, 153D)                     |                     |                    |                  | - /                     | <sup>3</sup> Indicators                 | of hydrophytic vec  | etation and              |
| (LRR S. T. U)                     |                              |              | Very Shallow Dark Surface (F22)             |                     |                    |                  |                         | wetland                                 | hvdrology must be   | present.                 |
| (                                 | , -, -,                      |              | (MLRA 13                                    | 8, 152A             | in FL, 1           | 54)              |                         | unless d                                | isturbed or probler | matic.                   |
| Restrictive La                    | ayer (if observed):          |              |   |                     |                    |                  |                         |   |                     |                          |
| Туре:                             | Fill ma                      | terial       |   |                     |                    |                  |                         |   |                     |                          |
| Depth (inches): 3                 |                              |              |   |                     |                    |                  | Hydric S                | Soil Present?                           | Yes                 | No                       |

No indicators for hydric soils were observed.

| U.S. Army<br>WETLAND DETERMINATION DATA S<br>See ERDC/EL TR-10-20; th                                | Corps of Engineers<br>SHEET – Atlantic and Gune proponent agency is | ulf Coastal Plain Region                                      | OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a) |  |  |  |
|--|---|---|---|--|--|--|
| Project/Site: Standard Chlorine  |   | City/County: New Castle, N                                    | Iew Castle Co. Sampling Date: 9/12/23   |  |  |  |
| Applicant/Owner: United States Environr  | nental Protection Agency (E   | PA)   | State: DE Sampling Point: W-JRK-004   |  |  |  |
| Investigator(s): J. Keil, M. Curran  | Se  | ection, Township, Range: N/A                                  | A   |  |  |  |
| Landform (hillside, terrace, etc.): Depressio  | n Loca  | I relief (concave, convex, none                               | a): Concave Slope (%): 1  |  |  |  |
| Subregion (LRR or MLRA): LRR S MLRA 1  | 49A Lat: 39 602229  | Long: -75 6   | 34831 Datum: NAD 83   |  |  |  |
| Soil Map Unit Name: SaD: Sassafras sandy   | loam 10 to 15 percent slope   | 2011g   | NWI classification: None  |  |  |  |
| Are alimatia / hydrologia conditions on the ait  | tunical for this time of year                                       |   |   |  |  |  |
| Are container inversion Collection of the site   |   | res <u>r</u>  |   |  |  |  |
|  | significantly dist  |   | mstances present? Fes X NO  |  |  |  |
| Are Vegetation, Soil, or Hydro   | logy naturally problem  | natic? (If needed, explain                                    | any answers in Remarks.)  |  |  |  |
| SUMMARY OF FINDINGS – Attach   | site map showing sa   | mpling point locations  | s, transects, important features, etc   |  |  |  |
| Hydrophytic Vegetation Present?<br>Hydric Soil Present?<br>Wetland Hydrology Present?                | Yes X No<br>Yes X No<br>Yes X No                                    | Is the Sampled Area within a Wetland?                         | Yes <u>X</u> No   |  |  |  |
| Remarks:<br>Wetland is a palustrine emergent (PEM) we<br>003. This wetland also extends north and so | tland depression located just<br>uth of the facilities northern     | t west of the access road and fence. Soil is disturbed due to | across the access road from wetland W-JRK-<br>the presence of fill material.  |  |  |  |
| HYDROLOGY  |   |   |   |  |  |  |
| Wetland Hydrology Indicators:  |   | Sec   | condary Indicators (minimum of two required)  |  |  |  |
| Primary Indicators (minimum of one is requi  | red; check all that apply)  |   | Surface Soil Cracks (B6)  |  |  |  |
| Surface Water (A1)   | Aquatic Fauna (B13)   |   | Sparsely Vegetated Concave Surface (B8)   |  |  |  |
| High Water Table (A2)  | Marl Deposits (B15) (L  | RR U)   | Drainage Patterns (B10)   |  |  |  |
| Water Marks (B1)   | Oxidized Rhizospheres   | con Living Roots (C3)   | <br>Dry-Season Water Table (C2)   |  |  |  |
| Sediment Deposits (B2)   | Presence of Reduced I   | Iron (C4)   | Cravfish Burrows (C8)   |  |  |  |
| Drift Deposits (B3)  | Recent Iron Reduction   | in Tilled Soils (C6)  | Saturation Visible on Aerial Imagery (C9)   |  |  |  |
| Algal Mat or Crust (B4)  | Thin Muck Surface (C7   | 7) X  | X Geomorphic Position (D2)  |  |  |  |
| Iron Deposits (B5)   | Other (Explain in Rema  | arks)   | Shallow Aquitard (D3)   |  |  |  |
| Inundation Visible on Aerial Imagery (B  | 7)  | Х   | FAC-Neutral Test (D5)   |  |  |  |
| Water-Stained Leaves (B9)  |   |   | Sphagnum Moss (D8) (LRR T, U)   |  |  |  |
| Field Observations:  |   |   |   |  |  |  |
| Surface Water Present? Yes   | No X Depth (inches)   | ):  |   |  |  |  |
| Water Table Present? Yes   | No X Depth (inches)   | ):  |   |  |  |  |
| Saturation Present? Yes  | No X Depth (inches)   | ): Wetland Hydr   | rology Present? Yes X No  |  |  |  |
| (Includes capillary fringe)  | nitoring wall parial photon   |   | blo   |  |  |  |
| Describe Recorded Data (stream gauge, mo   | nitioning well, aerial photos, j                                    | previous inspections), il avalla                              | ble.  |  |  |  |
|  |   |   |   |  |  |  |
| Remarks:<br>Several hydrology indicators were observed   | including geomorphic positio  | on and the FAC-neutral test.                                  |   |  |  |  |
|  |   |   |   |  |  |  |

Sampling Point: W-JRK-004 PEM

|  | Absolute    | Dominant         | Indicator   |  |
|--|-------------|------------------|-------------|--|
| <u>Tree Stratum</u> (Plot size: <u>30 ft</u> )       | % Cover     | Species?         | Status      | Dominance Test worksheet:  |
| 2.   |             |                  |             | Number of Dominant Species           That Are OBL, FACW, or FAC:         2         (A) |
| 3  |             |                  |             | Total Number of Dominant<br>Species Across All Strata: 2 (B)                           |
| 5.   |             |                  |             | Percent of Dominant Species  |
| 7.   |             |                  |             | Prevalence Index worksheet:  |
| 8.   |             |                  |             | Total % Cover of: Multiply by:   |
|  |             | =Total Cover     |             | OBL species         40         x 1 =         40  |
| 50% of total cover:                                  | 20%         | of total cover:  |             | FACW species 80 x 2 = 160  |
| Sapling/Shrub Stratum (Plot size: 30 ft )            |             |                  |             | FAC species 0 x 3 = 0  |
| 1  |             |                  |             | FACU species x 4 =   |
| 2.   |             |                  |             | UPL species 0 x 5 = 0  |
| 3.   |             |                  |             | Column Totals: 120 (A) 200 (B)   |
| 4.   |             |                  |             | Prevalence Index = B/A = 1.67  |
| 5.   |             |                  |             | Hydrophytic Vegetation Indicators:   |
| 6.   |             |                  |             | 1 - Rapid Test for Hydrophytic Vegetation  |
| 7.   |             |                  |             | X 2 - Dominance Test is >50%   |
| 8.   |             |                  |             | X 3 - Prevalence Index is $\leq 3.0^1$   |
|  |             | =Total Cover     |             | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                              |
| 50% of total cover:                                  | 20%         | of total cover:  |             |  |
| Herb Stratum (Plot size: 30 ft )                     |             |                  |             |  |
| 1. Phragmites australis                              | 80          | Yes              | FACW        | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be                   |
| 2. Juncus effusus                                    | 40          | Yes              | OBL         | present, unless disturbed or problematic.  |
| 3.   |             |                  |             | Definitions of Four Vegetation Strata:   |
| 4.   |             |                  |             | <b>Tree</b> – Woody plants, excluding vines 3 in (7.6 cm) or                           |
| 5.   |             |                  |             | more in diameter at breast height (DBH), regardless of                                 |
| 6.   |             |                  |             | height.  |
| 7.   |             |                  |             |  |
| 8.   |             |                  |             | <b>Sapling/Shrub</b> – Woody plants, excluding vines, less                             |
| 9.   |             |                  |             | than 3 m. DBH and greater than 3.26 m (1 m) tail.                                      |
| 10.  |             |                  |             |  |
| 11.  |             |                  |             | Herb – All herbaceous (non-woody) plants, regardless                                   |
| 12.  |             |                  |             | or size, and woody plants less than 3.26 it tall.                                      |
|  | 120         | =Total Cover     |             | Woody Vine – All woody vines greater than 3.28 ft in                                   |
| 50% of total cover: 6                                | 20%         | of total cover:  | 24          | height.  |
| Woody Vine Stratum (Plot size: 30 ft )               |             |                  |             |  |
| 1. <u> </u>  |             |                  |             |  |
| 2.   |             |                  |             |  |
| 3.   |             |                  |             |  |
| 4.   |             |                  |             |  |
| 5.   |             |                  |             |  |
|  |             | =Total Cover     |             | Hydrophytic<br>Vegetation  |
| 50% of total cover:                                  | 20%         | of total cover:  |             | Present? Yes X No  |
| Remarks: (If observed, list morphological adaptation | s below.)   |                  |             | ·  |
| Vegetation observed meets dominance test and pre-    | alence inde | x indicators for | hydrophytic | vegetation.  |
|  |             |                  |             |  |
|  |             |                  |             |  |

| Profile Desci  | ription: (Describe f         | o the depth   | n needed to doc         | ument t    | he indica          | ator or co                | onfirm th            | e absence of ind             | icators.)           |                          |
|----------------|------------------------------|---------------|-------------------------|------------|--------------------|---------------------------|----------------------|------------------------------|---------------------|--------------------------|
| Depth          | Matrix                       |               | Redo                    | x Featur   | es                 |                           |                      |                              |                     |                          |
| (inches)       | Color (moist)                | %             | Color (moist)           | %          | Type <sup>1</sup>  | Loc <sup>2</sup>          | Te                   | xture                        | Remar               | ĸs                       |
| 0-4            | 10YR 4/2                     | 100           |                         |            |                    |                           | Loamy                | //Clayey                     | Loam                | ı <u> </u>               |
| 4-7            | 10Y 5/2                      | 90            | 10YR 5/6                | 10         | C                  | М                         | Loamy                | //Clayey                     | Loam                | Ι                        |
|                |                              |               |                         |            |                    |                           |                      |                              |                     |                          |
|                |                              |               |                         |            |                    |                           |                      |                              |                     |                          |
|                |                              |               |                         |            |                    |                           |                      |                              |                     |                          |
|                |                              |               |                         |            |                    |                           |                      |                              |                     |                          |
|                |                              | <u> </u>      |                         |            |                    |                           |                      |                              |                     |                          |
|                |                              |               |                         |            |                    |                           | 1                    |                              |                     |                          |
| 'Type: C=Co    | ncentration, D=Depl          | etion, RM=F   | Reduced Matrix, N       | MS=Mas     | ked Sand           | d Grains.                 |                      | <sup>2</sup> Location: PL=Pc | ore Lining, M=Ma    | trix.                    |
| Hydric Soil Ir | ndicators: (Applica          | ble to all Li | RRs, unless oth         | erwise n   | oted.)             |                           |                      | Indicators for Pr            | oblematic Hydri     | c Soils':                |
| Histosol (     | A1)                          |               | Thin Dark S             | urface (S  | 59) <b>(LRR</b>    | S, T, U)                  |                      | 1 cm Muck (A                 | ( <b>LRR O)</b>     |                          |
| Histic Epi     | pedon (A2)                   |               | Barrier Islan           | ds 1 cm    | Muck (S            | 12)                       |                      | 2 cm Muck (A                 | (10) <b>(LRR S)</b> |                          |
| Black His      | tic (A3)                     |               | (MLRA 15                | 53B, 153   | D)                 | Coast Prairie Redox (A16) |                      |                              |                     |                          |
| Hydroger       | n Sulfide (A4)               |               | Loamy Mucl              | ky Miner   | al (F1) <b>(L</b>  | .RR O)                    | (outside MLRA 150A)  |                              |                     |                          |
| Stratified     | Layers (A5)                  |               | Loamy Gley              | ed Matri   | x (F2)             |                           | Reduced Vertic (F18) |                              |                     |                          |
| Organic E      | Bodies (A6) (LRR P,          | T, U)         | Depleted Ma             | atrix (F3) | 1                  |                           |                      | (outside M                   | LRA 150A, 150B      | 5)                       |
| 5 cm Muc       | ky Mineral (A7) <b>(LR</b>   | R P, T, U)    | Redox Dark              | Surface    | (F6)               |                           |                      | Piedmont Flo                 | odplain Soils (F1   | 9) <b>(LRR P, T)</b>     |
| Muck Pre       | sence (A8) (LRR U)           | -             | Depleted Da             | ark Surfa  | ce (F7)            |                           |                      | Anomalous B                  | right Floodplain    | Soils (F20)              |
| 1 cm Muc       | ck (A9) (LRR P, T)           |               | X Redox Depr            | essions    | (F8)               |                           | •                    | (MLRA 153                    | B)                  |                          |
| <br>Depleted   | Below Dark Surface           | (A11)         | <br>Marl (F10) <b>(</b> | LRR U)     | ( )                |                           |                      | Red Parent M                 | /<br>laterial (F21) |                          |
| Thick Day      | k Surface (A12)              | ()            | Depleted Or             | chric (F1  | 1) (MLRA           | A 151)                    |                      | Verv Shallow                 | Dark Surface (E     | 22)                      |
| Coast Pra      | airie Redox (A16) ( <b>M</b> | I RA 150A)    | Iron-Mangar             | nese Ma    | sses (F1)          | 2) (I RR (                | ר א ר                | (outside M                   | I RA 138 152A i     | –– <i>)</i><br>n Fl 154) |
| Sandy Mi       | ucky Mineral (S1) <b>(I</b>  | RROS)         | Hon Mangar              | ace (F13   | 8) <i>(</i> I RR F | ) (EINIX<br>) T II)       | <b>,,,,,</b> ,,,     | Barrier Island               | Is Low Chroma M     | latrix (TS7)             |
| Sandy G        | ovod Motrix (S4)             | uu 0, 0,      | Onblic Our              | (E17) /    |                    | , i, oj<br>1)             |                      | Damenisiana                  |                     |                          |
| Sandy Br       | dox (S5)                     |               | Delta Ochild            | rtic (E19  |                    | 150A 14                   | 50B)                 | (MERA 153B, 153D)            |                     |                          |
| Stripped       | (33)                         |               | Reduced Ve              |            |                    | 10) <b>(MI D</b>          |                      |                              |                     |                          |
| Suippeul       |                              | <b>T</b> 11)  |                         |            | oodalaia           |                           |                      |                              |                     |                          |
|                | ace (S7) (LRR P, S           | , 1, 0)       |                         |            |                    | 50IIS (F2                 | 20)                  | 3 adiantana af               |                     |                          |
|                | Below Surface (S8)           | )             |                         | 19A, 153   | C, 153D)           |                           |                      | indicators of                | nyaropnytic vege    | station and              |
|                | , I, U)                      |               | very Shallov            | w Dark S   | urrace (F          | -22)                      |                      | wetland hy                   | arology must be     | present,                 |
|                |                              |               | (MLRA 13                | 88, 152A   | in FL, 1           | 54)                       |                      | unless dist                  | urbed or problem    | latic.                   |
| Restrictive L  | ayer (if observed):          |               |                         |            |                    |                           |                      |                              |                     |                          |
| Type:          | compacti                     | on / fill     |                         |            |                    |                           |                      |                              |                     |                          |
| Depth (in      | ches):                       | 7             |                         |            |                    |                           | Hydric               | Soil Present?                | Yes X               | No                       |
| Remarks:       |                              |               |                         |            |                    |                           |                      |                              |                     |                          |

Soil characteristics observed meet the requirements of a redox depressions indicator. Hydric soils are present. Auger refusal at 7 inches due to fill/ compaction.

| U.S. Army Corps of Engineers<br>WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region<br>See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R  | OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a)  |
|---|--|
| Project/Site: Standard Chlorine Citv/County: New Castle, N  | ew Castle Co. Sampling Date: 9/12/23   |
| Applicant/Owner: United States Environmental Protection Agency (EPA)  | State: DE Sampling Point: W-JRK-004 UPL  |
| Investigator(s): J. Keil, M. Curran Section, Township, Range: N/A   |  |
| Landform (hillside terrace etc.): Plane   | Slope (%): 1   |
| Subregion (I RR or MI RA): LRR S MI RA 1494 Lat: 39 602216  | 24693 Datum: NAD 83  |
| Soil Man Linit Name: SaD: Sassafras sandy loam 10 to 15 percent slopes  | NWI classification: N/A  |
| Are alimatic / hydrologic conditions on the site typical for this time of year?   |  |
| Are climatic / hydrologic conditions on the site typical for this time of year? Fes $\underline{X}$ is the site typical for this time of year?  |  |
| Are vegetation, Soil _X_, or Hydrologysignificantly disturbed? Are Normal Circum  | nstances present? Yes X No   |
| Are Vegetation, Soil, or Hydrologynaturally problematic? (If needed, explain  | any answers in Remarks.)   |
| SUMMARY OF FINDINGS – Attach site map showing sampling point locations  | , transects, important features, etc.  |
| Hydrophytic Vegetation Present?     Yes     X     No     Is the Sampled Area       Hydric Soil Present?     Yes     No     X       Wotlond Hydrology Dresent?     Yes     No     X  | Yes NoX  |
| Remarks:<br>The upland point was taken in association with wetland W-JRK-004. The point was taken east of the be<br>disturbed due to presence of fill material.   | oundary across the access road. Soil is  |
| HYDROLOGY   |  |
| Wetland Hydrology Indicators:       Sec         Primary Indicators (minimum of one is required; check all that apply)   | Surface Soil Cracks (B6)<br>Sparsely Vegetated Concave Surface (B8)<br>Drainage Patterns (B10)<br>Moss Trim Lines (B16)<br>Dry-Season Water Table (C2)<br>Crayfish Burrows (C8)<br>Saturation Visible on Aerial Imagery (C9)<br>Geomorphic Position (D2)<br>Shallow Aquitard (D3)<br>FAC-Neutral Test (D5)<br>Sphagnum Moss (D8) <b>(LRR T, U)</b> |
| Field Observations:   |  |
| Surface Water Present?       Yes       No       X       Depth (inches):       Water         Water Table Present?       Yes       No       X       Depth (inches):       Water         Saturation Present?       Yes       No       X       Depth (inches):       Wetland Hydr         (includes capillary fringe)       Ves       No       X       Depth (inches):       Wetland Hydr         Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available       Ves       Ves       Ves | ology Present? Yes No X  |
| Remarks:<br>Only one secondary indicator for wetland hydrology was observed. Therefore, wetland hydrology is not  | present.   |

Sampling Point: W-JRK-004 UPL

|                                   | Absolute | Dominant        | Indicator |  |
|-----------------------------------|----------|-----------------|-----------|--|
| Tree Stratum (Plot size:)         | % Cover  | Species?        | Status    | Dominance Test worksheet:  |
| 1.       2.                       |          |                 |           | Number of Dominant Species<br>That Are OBL, FACW, or FAC: (A)  |
| 3                                 |          |                 |           | Total Number of Dominant<br>Species Across All Strata: 2 (B)   |
| 5.                                | ·        |                 |           | Percent of Dominant Species  |
| 7.                                |          |                 |           | Prevalence Index worksheet:  |
| 8.                                |          |                 |           | Total % Cover of: Multiply by:   |
|                                   |          | =Total Cover    |           | OBL species 0 $x 1 = 0$  |
| 50% of total cover:               | 20%      | of total cover: |           | FACW species 55 x 2 = 110  |
| Sapling/Shrub Stratum (Plot size: | )        |                 |           | FAC species 40 x 3 = 120   |
| 1.                                |          |                 |           | FACU species $15 \times 4 = 60$  |
| 2.                                |          |                 |           | UPL species $0 	 x 5 = 0$  |
| 3.                                |          |                 |           | Column Totals: 110 (A) 290 (B)   |
| 4.                                |          |                 |           | Prevalence Index = $B/A = 2.64$  |
| 5.                                |          |                 |           | Hydrophytic Vegetation Indicators:   |
| 6.                                |          |                 |           | 1 - Rapid Test for Hydrophytic Vegetation  |
| 7.                                |          |                 |           | X 2 - Dominance Test is >50%   |
| 8.                                |          |                 |           | 3 - Prevalence Index is ≤3.0 <sup>1</sup>  |
|                                   |          | =Total Cover    |           | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  |
| 50% of total cover:               | 20%      | of total cover: |           |  |
| Herb Stratum (Plot size: 30 ft )  |          |                 |           |  |
| 1. Panicum virgatum               | 40       | Yes             | FAC       | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be   |
| 2. Agrostis gigantea              | 25       | Yes             | FACW      | present, unless disturbed or problematic.  |
| 3. Apocynum cannabinum            | 10       | No              | FACU      | Definitions of Four Vegetation Strata:   |
| 4. Echinochloa crus-galli         | 10       | No              | FACW      | Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or  |
| 5. Cyperus strigosus              | 10       | No              | FACW      | more in diameter at breast height (DBH), regardless of   |
| 6. Lespedeza cuneata              | 5        | No              | FACU      | height.  |
| 7. Phragmites australis           | 10       | No              | FACW      |  |
| 8.                                |          |                 |           | <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in DBH and greater than 3 28 ft (1 m) tall |
| 9.                                |          |                 |           |  |
| 10.                               |          |                 |           |  |
| 11                                |          |                 |           | of size, and woody plants less than 3.28 ft tall.  |
|                                   | 110      | =Total Cover    |           | Woody Vine – All woody vines greater than 3.28 ft in   |
| 50% of total cover: 5             | 5 20%    | of total cover: | 22        | height.  |
| Woody Vine Stratum (Plot size:    |          |                 |           |  |
| <u> </u>                          |          |                 |           |  |
| 2.                                |          |                 |           |  |
| 3                                 |          |                 |           |  |
| 4                                 |          |                 |           |  |
| 5                                 |          |                 |           |  |
| 17.                               |          |                 |           | Hydrophytic  |
| ···                               |          | = Lotal Cover   |           |  |
| 50% of total cover:               | 20%      | of total Cover  | <u> </u>  | Vegetation<br>Present? Yes X No  |
| 50% of total cover:               | 20%      | of total cover: |           | Present? Yes X No  |

| epth          | Matrix                      | atrix Redox Features |                                      |                                      |                   |                     |                           |                              |                                       |  |
|---------------|-----------------------------|----------------------|--------------------------------------|--------------------------------------|-------------------|---------------------|---------------------------|------------------------------|---------------------------------------|--|
| nches)        | Color (moist)               | %                    | Color (moist)                        | %                                    | Type <sup>1</sup> | Loc <sup>2</sup>    | Те                        | xture                        | Remarks                               |  |
| 0-6           | 10YR 4/3                    | 95                   | 10YR 5/6                             | 5                                    | С                 | M                   | Loam                      | y/Clayey                     | Silty loam                            |  |
|               |                             | ·                    |                                      |                                      |                   |                     |                           |                              |                                       |  |
| ype: C=Co     | ncentration, D=Dep          | letion, RM           | =Reduced Matrix, I                   | MS=Mas                               | ked Sand          | Grains.             |                           | <sup>2</sup> Location: PL=Po | re Lining, M=Matrix.                  |  |
| ydric Soil lı | ndicators: (Applica         | ble to all           | LRRs, unless oth                     | erwise r                             | noted.)           |                     |                           | Indicators for Pro           | oblematic Hydric Soils <sup>3</sup> : |  |
| Histosol (    | (A1)                        |                      | Thin Dark Surface (S9) (LRR S, T, U) |                                      |                   |                     | 1 cm Muck (A              | .9) <b>(LRR O)</b>           |                                       |  |
| Histic Epi    | pedon (A2)                  |                      | Barrier Islar                        | Barrier Islands 1 cm Muck (S12) 2 cm |                   |                     |                           | 2 cm Muck (A                 | .10) <b>(LRR S)</b>                   |  |
| Black His     | tic (A3)                    |                      | (MLRA 153B, 153D)                    |                                      |                   |                     | Coast Prairie Redox (A16) |                              |                                       |  |
| Hydroger      | Sulfide (A4)                |                      | Loamy Mucky Mineral (F1) (LRR O)     |                                      |                   | (outside MLRA 150A) |                           |                              |                                       |  |
| Stratified    | Layers (A5)                 |                      | Loamy Gley                           | Loamy Gleyed Matrix (F2)             |                   |                     |                           | Reduced Vertic (F18)         |                                       |  |
| Organic E     | Bodies (A6) (LRR P,         | T, U)                | Depleted M                           | atrix (F3)                           | )                 |                     |                           | (outside M                   | LRA 150A, 150B)                       |  |
| 5 cm Mud      | cky Mineral (A7) <b>(LF</b> | (R P, T, U)          | Redox Dark                           | Surface                              | e (F6)            |                     |                           | Piedmont Flo                 | odplain Soils (F19) <b>(LRR P,</b>    |  |
| Muck Pre      | sence (A8) (LRR U           | )                    | Depleted Da                          | ark Surfa                            | ace (F7)          |                     |                           | Anomalous B                  | right Floodplain Soils (F20)          |  |
| 1 cm Muc      | ck (A9) (LRR P, T)          |                      | Redox Depr                           | essions                              | (F8)              |                     |                           | (MLRA 153                    | B)                                    |  |
| Depleted      | Below Dark Surface          | e (A11)              | Marl (F10) (                         | LRR U)                               |                   |                     |                           | Red Parent M                 | laterial (F21)                        |  |
| _ Thick Dai   | rk Surface (A12)            |                      | Depleted O                           | chric (F1                            | 1) (MLRA          | (151)               |                           | Very Shallow                 | Dark Surface (F22)                    |  |
| Coast Pra     | airie Redox (A16) (N        | ILRA 1504            | A) Iron-Manga                        | nese Ma                              |                   | 2) (LRR (           | ), P, I)                  | (outside Mi                  | LRA 138, 152A in FL, 154)             |  |
| _Sandy M      | ucky Mineral (S1) (L        | .RR 0, 5)            |                                      |                                      | 3) (LRR F         | , I, U)             |                           | Barrier Island               | s Low Chroma Matrix (1S7)             |  |
| _Sandy GI     | eyed Matrix (S4)            |                      | Delta Ochrid                         | C(F17)(                              |                   | 1)<br>4504 44       |                           | (MLRA 153                    | B, 153D)                              |  |
| Sandy Re      | edox (S5)                   |                      | Reduced Ve                           |                                      |                   | 150A, 1:            |                           | Other (Explain               | n in Remarks)                         |  |
| Stripped      | Matrix (56)                 | <b>-</b> 10          |                                      | oodpiair                             | n Solis (F        | 9) (MLR             | A 149A)                   |                              |                                       |  |
| Dark Sun      | ace (S7) (LRR P, S          | , I, U)<br>`         | Anomaious                            |                                      |                   | 5011S (F2           | 0)                        | 3                            |                                       |  |
|               | Below Surface (S8           | )                    | (MLRA 14                             | 19A, 153                             | ic, 153D)         | 20)                 |                           | Indicators of                | hydrophytic vegetation and            |  |
| (LRR S        | s, 1, U)                    |                      | (MLRA 1                              | w Dark S<br>38. 152A                 | in FL. 1          | 22)<br>5 <b>4)</b>  |                           | unless dist                  | urbed or problematic.                 |  |
| estrictive I  | aver (if observed).         |                      | , · · ·                              | ,                                    | _,                | ,                   |                           |                              |                                       |  |
| Туре:         | Compact                     | ion / fill           |                                      |                                      |                   |                     |                           |                              |                                       |  |
| -             |                             |                      |                                      |                                      |                   |                     |                           |                              |                                       |  |

Remarks:

No indicators for hydric soils were observed. Hydric soils are not present.

| U.S. Army Corps of Eng<br>WETLAND DETERMINATION DATA SHEET – Atlanti<br>See ERDC/EL TR-10-20; the proponent a  | l <b>ineers</b><br>c and Gulf Coastal Plain Region<br>Igency is CECW-CO-R          | OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a) |
|--|--|---|
| Project/Site: Standard Chlorine  | City/County: New Castle,   | New Castle Co. Sampling Date: 9/12/23   |
| Applicant/Owner: United States Environmental Protection  | Agency (EPA)   | State: DE Sampling Point: W-JRK-005 PEM   |
| Investigator(s): J. Keil, M. Curran  | Section, Township, Range: N  | /A  |
| Landform (hillside terrace etc.): Depression   |  | ne): concave Slone (%): 1   |
| Subregion (LRP or MLRA): LRP S MLRA 140A Lat: 30 603   |  | 635124 Datum: NAD 83  |
| Sold Man Linit Name: RoP: Poyhold silt loam 2 to 5 percent of  | 200 Eong70.  | NWL classification: None  |
| And aligned in the line of the set of the se |  |   |
| Are climatic / hydrologic conditions on the site typical for this tir  | ne of year? Yes X  | No (If no, explain in Remarks.)   |
| Are Vegetation, SoilX_, or Hydrologysignific   | antly disturbed? Are "Normal Circ  | umstances" present? Yes X No  |
| Are Vegetation, Soil, or Hydrology natura  | Ily problematic? (If needed, explai  | in any answers in Remarks.)   |
| SUMMARY OF FINDINGS – Attach site map sho  | wing sampling point location   | is, transects, important features, etc.   |
| Hydrophytic Vegetation Present?       Yes       X       No         Hydric Soil Present?       Yes       X       No         Wetland Hydrology Present?       Yes       X       No   | Is the Sampled Area<br>within a Wetland?   | Yes X No  |
| Remarks:<br>This weltland is a palustrine emergent (PEM) depressional we<br>wetland is north of wetland W-JRK-004 and is dominated by J  | tland located north of the northern mos<br>uncus and Agrostis. Soil is disturbed o | st facility fence and west of the access road. The due to presence of fill material.                                      |
| HYDROLOGY  |  |   |
| Wetland Hydrology Indicators:  | <u>S</u> (   | econdary Indicators (minimum of two required)   |
| Primary Indicators (minimum of one is required; check all that   | apply)   | Surface Soil Cracks (B6)  |
| Surface Water (A1) Aquatic Fau   | na (B13)   | Sparsely Vegetated Concave Surface (B8)   |
| High Water Table (A2) Marl Deposit   | s (B15) (LRR U)  | Drainage Patterns (B10)   |
| Saturation (A3)Hydrogen Si   | Inde Odor (C1)   | Moss Trim Lines (B16)   |
| Sediment Deposits (B2) Presence of   | Reduced Iron (C4)  | Cravfish Burrows (C8)   |
| Drift Deposits (B3) Recent Iron  | Reduction in Tilled Soils (C6)   | Saturation Visible on Aerial Imagery (C9)   |
| Algal Mat or Crust (B4) Thin Muck S  | urface (C7)  | Geomorphic Position (D2)  |
| Iron Deposits (B5) Other (Expla  | in in Remarks)   | Shallow Aquitard (D3)   |
| Inundation Visible on Aerial Imagery (B7)  | >  | < FAC-Neutral Test (D5)   |
| Water-Stained Leaves (B9)  | _  | Sphagnum Moss (D8) (LRR T, U)   |
| Field Observations:  |  |   |
| Surface Water Present? Yes No X Dep  | th (inches):   |   |
| Water Table Present? Yes No X Dep  | th (inches):   |   |
| Saturation Present? Yes No X Dep   | th (inches): Wetland Hy  | drology Present? Yes X No   |
| (includes capillary fringe)  |  |   |
| Describe Recorded Data (stream gauge, monitoring well, aeria   | al photos, previous inspections), if avail   | ladie:  |
| Demodur  |  |   |
| Remarks:<br>Two secondary indicators of wetland hydrology were observed  | including geomorphic position and the  | e FAC-neutral test. Wetland hydrology is present.   |
|  |  |   |
|  |  |   |
|  |  |   |
|  |  |   |

Sampling Point: W-JRK-005 PEM

|  | Absolute     | Dominant         | Indicator   |  |
|--|--------------|------------------|-------------|--|
| Tree Stratum (Plot size:)                            | % Cover      | Species?         | Status      | Dominance Test worksheet:  |
| 1<br>2   |              |                  |             | Number of Dominant Species<br>That Are OBL, FACW, or FAC: (A)        |
| 3<br>4.  |              |                  |             | Total Number of Dominant<br>Species Across All Strata: 2 (B)         |
| 5.   |              |                  |             | Percent of Dominant Species  |
| 7.   |              |                  |             | Prevalence Index worksheet:  |
| 8.   |              |                  |             | Total % Cover of: Multiply by:                                       |
|  | ,            | =Total Cover     |             | OBL species         20         x 1 =         20                      |
| 50% of total cover:                                  | 20%          | of total cover:  |             | FACW species 60 x 2 = 120  |
| Sapling/Shrub Stratum (Plot size: )                  |              |                  |             | FAC species 45 x 3 = 135   |
| 1.   |              |                  |             | FACU species 5 x 4 = 20  |
| 2.   |              |                  |             | UPL species 0 x 5 = 0  |
| 3.   |              |                  |             | Column Totals: 130 (A) 295 (B)                                       |
| 4.   |              |                  |             | Prevalence Index = $B/A = 2.27$                                      |
| 5.   |              |                  |             | Hydrophytic Vegetation Indicators:                                   |
| 6.   |              |                  |             | 1 - Rapid Test for Hydrophytic Vegetation                            |
| 7.   |              |                  |             | X 2 - Dominance Test is >50%   |
| 8.   |              |                  |             | X 3 - Prevalence Index is $\leq 3.0^1$                               |
|  | :            | =Total Cover     |             | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)            |
| 50% of total cover:                                  | 20%          | of total cover:  |             |  |
| Herb Stratum (Plot size:30 ft)                       |              |                  |             |  |
| 1. Agrostis gigantea                                 | 60           | Yes              | FACW        | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be |
| 2. Setaria pumila                                    | 5            | No               | FAC         | present, unless disturbed or problematic.                            |
| 3. Juncus tenuis                                     | 30           | Yes              | FAC         | Definitions of Four Vegetation Strata:                               |
| 4. Juncus effusus                                    | 20           | No               | OBL         | Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or              |
| 5. Panicum virgatum                                  | 10           | No               | FAC         | more in diameter at breast height (DBH), regardless of               |
| 6. Lespedeza cuneata                                 | 5            | No               | FACU        | height.  |
| 7.   |              |                  |             | On Bar Ohmuh - Weady slopts, evoluting visco loss                    |
| 8.   |              |                  |             | than 3 in. DBH and greater than 3.28 ft (1 m) tall.                  |
| 9.   |              |                  |             |  |
| 10   |              |                  |             | Harb All borbaccous (non-woody) plants regardless                    |
| 11<br>12.  |              |                  |             | of size, and woody plants less than 3.28 ft tall.                    |
|  | 130          | =Total Cover     |             | Woody Vine – All woody vines greater than 3.28 ft in                 |
| 50% of total cover: 65                               | 5 20%        | of total cover:  | 26          | height.  |
| Woody Vine Stratum (Plot size: )                     |              |                  |             |  |
| 1.   |              |                  |             |  |
| 2.   |              |                  |             |  |
| 3.   |              |                  |             |  |
| 4.   |              |                  |             |  |
| 5.   |              |                  |             |  |
|  | ,            | =Total Cover     |             | Hydrophytic<br>Vogetation  |
| 50% of total cover:                                  | 20%          | of total cover:  |             | Present? Yes X No  |
| Remarks: (If observed, list morphological adaptation | s below.)    |                  |             |  |
| Vegetation observed meets dominance test and prev    | alence index | x indicators for | hydrophytic | vegetation.  |
|  |              |                  |             |  |

| Profile Description: (De            | scribe to the dep       | oth needed to doc                | ument the            | indica  | tor or co       | onfirm the a    | osence of ind                   | icators.)          |                           |
|-------------------------------------|-------------------------|----------------------------------|----------------------|---------|-----------------|-----------------|---------------------------------|--------------------|---------------------------|
| Depth Color (n                      | Matrix                  | Redu                             | x Features           |         |                 | Taytur          | •                               | Dom                |                           |
|                                     | 101St) <u>%</u>         | Color (moist)                    | 70                   | гуре    | LOC             | Textur          | e                               | Ren                | Iarks                     |
| 0-6 2.5Y 5                          | 5/2 85                  | 10YR 4/6                         | 15                   | С       | Μ               | Loamy/Cl        | ayey                            | Lo                 | am                        |
|                                     |                         |                                  |                      |         |                 |                 |                                 |                    |                           |
|                                     |                         |                                  |                      |         |                 |                 |                                 |                    |                           |
|                                     |                         |                                  |                      |         |                 |                 |                                 |                    |                           |
|                                     |                         |                                  | ·                    |         |                 | 1               |                                 |                    |                           |
|                                     |                         |                                  |                      |         |                 |                 |                                 |                    |                           |
|                                     |                         |                                  |                      |         |                 |                 |                                 |                    |                           |
|                                     |                         |                                  |                      |         |                 |                 |                                 |                    |                           |
|                                     |                         |                                  |                      |         |                 |                 |                                 |                    |                           |
| <sup>1</sup> Type: C=Concentration, | D=Depletion, RM         | =Reduced Matrix,                 | MS=Maske             | d Sand  | Grains.         | <sup>2</sup> Lo | cation: PL=Pc                   | ore Lining, M=     | Matrix.                   |
| Hydric Soil Indicators: (           | Applicable to all       | LRRs, unless oth                 | erwise not           | ed.)    |                 | Ind             | icators for Pr                  | oblematic Hy       | dric Soils <sup>3</sup> : |
| Histosol (A1)                       |                         | Thin Dark S                      | urface (S9)          | (LRR    | S, T, U)        |                 | 1 cm Muck (A                    | 9) <b>(LRR O)</b>  |                           |
| Histic Epipedon (A2)                |                         | Barrier Islar                    | ids 1 cm M           | uck (S  | 12)             |                 | 2 cm Muck (A                    | 10) <b>(LRR S)</b> |                           |
| Black Histic (A3)                   |                         | (MLRA 153B, 153D)                |                      |         |                 |                 | Coast Prairie Redox (A16)       |                    |                           |
| Hydrogen Sulfide (A4                | )                       | Loamy Mucky Mineral (F1) (LRR O) |                      |         |                 |                 | (outside MLRA 150A)             |                    |                           |
| Stratified Layers (A5)              |                         | Loamy Gley                       | ed Matrix (I         | F2)     |                 |                 | Reduced Ver                     | tic (F18)          |                           |
| Organic Bodies (A6)                 | (LRR P, T, U)           | X Depleted M                     | atrix (F3)           |         |                 |                 | (outside M                      | LRA 150A, 15       | 0B)                       |
| 5 cm Mucky Mineral                  | A7) <b>(LRR P, T, U</b> | ) Redox Dark                     | Surface (F           | 6)      |                 |                 | Piedmont Flo                    | odplain Soils (    | F19) <b>(LRR P, T)</b>    |
| Muck Presence (A8)                  | (LRR U)                 | Depleted Da                      | ark Surface          | (F7)    |                 |                 | Anomalous B                     | right Floodpla     | in Soils (F20)            |
| 1 cm Muck (A9) (LRF                 | R P, T)                 | X Redox Depr                     | essions (F8          | 3)      |                 |                 | (MLRA 153                       | В)                 |                           |
| Depleted Below Dark                 | Surface (A11)           | Marl (F10) <b>(</b>              | LRR U)               |         |                 |                 | Red Parent M                    | laterial (F21)     |                           |
| Thick Dark Surface (                | A12)                    | Depleted O                       | chric (F11)          | (MLRA   | 151)            |                 | Very Shallow Dark Surface (F22) |                    |                           |
| Coast Prairie Redox                 | A16) (MLRA 150          | A) Iron-Manga                    | nese Masse           | es (F12 | 2) (LRR C       | Э, Р, Т)        | (outside M                      | LRA 138, 152       | A in FL, 154)             |
| Sandy Mucky Minera                  | (S1) (LRR O, S)         | Umbric Sur                       | ace (F13) <b>(</b>   | LRR F   | , T, U)         |                 | Barrier Island                  | s Low Chroma       | a Matrix (TS7)            |
| Sandy Gleyed Matrix                 | (S4)                    | Delta Ochri                      | c (F17) <b>(ML</b>   | .RA 15  | 1)              |                 | (MLRA 153                       | B, 153D)           |                           |
| Sandy Redox (S5)                    |                         | Reduced Ve                       | ertic (F18) <b>(</b> | MLRA    | 150A, 15        | 50B)            | Other (Explain                  | n in Remarks)      |                           |
| Stripped Matrix (S6)                |                         | Piedmont F                       | loodplain S          | oils (F | 19) <b>(MLR</b> | A 149A)         | _                               |                    |                           |
| Dark Surface (S7) (L                | RR P, S, T, U)          | Anomalous                        | Bright Floo          | dplain  | Soils (F2       | 20)             |                                 |                    |                           |
| Polyvalue Below Surf                | ace (S8)                | (MLRA 14                         | 49A, 153C,           | 153D)   |                 |                 | <sup>3</sup> Indicators of      | hydrophytic v      | egetation and             |
| (LRR S, T, U)                       |                         | Very Shallo                      | w Dark Surl          | face (F | 22)             |                 | wetland hy                      | drology must l     | pe present,               |
|                                     |                         | (MLRA 1                          | 38, 152A in          | FL, 1   | 54)             |                 | unless dist                     | urbed or probl     | ematic.                   |
| Restrictive Layer (if obs           | erved):                 |                                  |                      |         |                 |                 |                                 |                    |                           |
| Туре: С                             | ompaction / fill        |                                  |                      |         |                 |                 |                                 |                    |                           |
| Denth (in the c)                    | 6                       |                                  |                      |         |                 |                 | II Decount?                     | N.                 | Na                        |

Soil characteristics observed meet requirements for depleted matrix and redox depressions indicators. Hydric soils are present.

| U.S. Army Corps of<br>WETLAND DETERMINATION DATA SHEET – An<br>See ERDC/EL TR-10-20; the propone                               | Engineers<br>Iantic and Gulf Coastal Plain Region<br>ent agency is CECW-CO-R         | OMB Control #: 0710-0024, Exp: 11/30/2024<br>Requirement Control Symbol EXEMPT:<br>(Authority: AR 335-15, paragraph 5-2a) |  |  |  |
|--|--|---|--|--|--|
| Project/Site: Standard Chlorine  | City/County: New Castle  | New Castle Co. Sampling Date: 9/12/23   |  |  |  |
| Applicant/Owner: United States Environmental Protect   | ction Agency (EPA)   | State: DE Sampling Point: W-JRK-005 UPL   |  |  |  |
| Investigator(s): J. Keil, M. Curran  | Section, Township, Range: N  | I/A   |  |  |  |
| Landform (hillside terrace etc.): Plane  | l ocal relief (concave, convex, no   | nne): none Slone (%): 1   |  |  |  |
| Subregion (I RR or MI RA): LRR S MI RA 149A Lat: 3   | 9 603196   | 635112 Datum: NAD 83  |  |  |  |
| Soil Map Unit Name: ReB: Reybold silt loam, 2 to 5 perce   | ant slopes   | NWI classification: N/A   |  |  |  |
| Are climatic / hydrologic conditions on the site typical for t   |  |   |  |  |  |
| Are Vegetation Soil X or Undrology   | implificantly disturbed?   | Numetoneona" procent? Vec V No  |  |  |  |
|  | aturally aschlamatic? Ale Normal City  |   |  |  |  |
| Are vegetation, Soil, or Hydrologyh  | aturally problematic? (If needed, expla  | an any answers in Remarks.)   |  |  |  |
| SUMMARY OF FINDINGS – Attach site map  | showing sampling point location  | ns, transects, important features, etc.   |  |  |  |
| Hydrophytic Vegetation Present?YesHydric Soil Present?YesWetland Hydrology Present?Yes   | No     X     Is the Sampled Area       No     X     within a Wetland?       No     X | Yes NoX   |  |  |  |
| Remarks:<br>Upland point taken in association with wetland W-JRK-00<br>boundary, west of access access road. Soil disturbed du | 05. Data point was taken south and upslope<br>e to presence of fill material.        | e from the wetland data point and wetland   |  |  |  |
| HYDROLOGY  |  |   |  |  |  |
| Wetland Hydrology Indicators:  |  | Surface Soil Cracks (R6)  |  |  |  |
| Surface Water (A1) Aquatic   | : Fauna (B13)  | Sparsely Vegetated Concave Surface (B8)   |  |  |  |
| High Water Table (A2) Marl De  | eposits (B15) (LRR U)  | Drainage Patterns (B10)   |  |  |  |
| Saturation (A3)  | en Sulfide Odor (C1)   | Moss Trim Lines (B16)   |  |  |  |
| Water Marks (B1) Oxidize   | d Rhizospheres on Living Roots (C3)  | Dry-Season Water Table (C2)   |  |  |  |
| Sediment Deposits (B2) Presen  | ce of Reduced Iron (C4)  | Crayfish Burrows (C8)   |  |  |  |
| Drift Deposits (B3) Recent   | Iron Reduction in Tilled Soils (C6)  | Saturation Visible on Aerial Imagery (C9)   |  |  |  |
| Algal Mat of Crust (B4) Thin Mi  | Explain in Remarks)  | Geomorphic Position (D2)<br>Shallow Aquitard (D3)   |  |  |  |
| Inundation Visible on Aerial Imagery (B7)  |  | FAC-Neutral Test (D5)   |  |  |  |
| Water-Stained Leaves (B9)  | -  | Sphagnum Moss (D8) (LRR T, U)   |  |  |  |
| Field Observations:  |  | _   |  |  |  |
| Surface Water Present? Yes No X  | Depth (inches):  |   |  |  |  |
| Water Table Present? Yes No X  | Depth (inches):  |   |  |  |  |
| Saturation Present? Yes No X   | Depth (inches): Wetland Hy   | vdrology Present? Yes <u>No X</u>   |  |  |  |
| (includes capillary fringe)  |  | ilek le.  |  |  |  |
| Describe Recorded Data (stream gauge, monitoring well  | , aeriai pnotos, previous inspections), ir ava                                       | liadie:   |  |  |  |
|  |  |   |  |  |  |
| Remarks:<br>No indicators for wetland hydrology were observed. Wetl  | and hydrology is not present   |   |  |  |  |
| The indicators for welland hydrology were observed. Well   | and hydrology is not present.  |   |  |  |  |
|  |  |   |  |  |  |
|  |  |   |  |  |  |
|  |  |   |  |  |  |
|  |  |   |  |  |  |
|  |  |   |  |  |  |
|  |  |   |  |  |  |
|  |  |   |  |  |  |

Sampling Point: W-JRK-005 UPL

| Tree Stratum (Plot size: 30 ft )                     | Absolute<br>% Cover | Dominant        | Indicator<br>Status | Dominance Test worksheet  |
|--|---------------------|-----------------|---------------------|---|
| 1.   | /0 00001            | 0000000         | Olalus              | Number of Dominant Spacing  |
| 2.   |                     |                 |                     | That Are OBL, FACW, or FAC: (A)   |
| 3  |                     |                 |                     | Total Number of Dominant<br>Species Across All Strata: 1 (B)  |
| 5.   |                     |                 |                     | Percent of Dominant Species   |
| 6.   |                     |                 |                     | That Are OBL, FACW, or FAC: 0.0% (A/B)  |
| 7  |                     |                 |                     | Prevalence Index worksheet:   |
| 8  |                     |                 |                     | Total % Cover of: Multiply by:  |
|  |                     | =Total Cover    |                     | OBL species 0 x 1 = 0   |
| 50% of total cover:                                  | 20%                 | of total cover: |                     | FACW species 10 $x 2 = 20$  |
| Sapling/Shrub Stratum (Plot size: 30 ft )            |                     |                 |                     | FAC species $20$ x 3 = $60$   |
| 1  |                     |                 |                     | FACU species $80 \times 4 = 320$  |
| 2.   |                     |                 |                     | $\begin{array}{c} \text{OPL species} & 0 & \text{X}5 = & 0 \\ \text{Column Tatalax} & 110 & (A) & 100 & (B) \\ \end{array}$ |
| 3  |                     |                 |                     | Column Totals: <u>110</u> (A) <u>400</u> (B)<br>Provolonce Index = $B/A = -2.64$  |
| с —  |                     |                 | . <u> </u>          | Hudrophytic Vecetation Indicators:  |
| 5  |                     |                 |                     | 1 - Ranid Test for Hydronhytic Vegetation   |
| 7  |                     |                 |                     | 2 - Dominance Test is \50%  |
| γ<br>Ω   |                     |                 | ·                   | 3 - Prevalence Index is <3 01   |
| 0  |                     | -Total Cover    |                     | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)   |
| 50% of total cover:                                  | 20%                 | of total cover: |                     |   |
| Herb Stratum (Plot size: 30 ft )                     |                     | 01 10101 00101  |                     |   |
| 1. Lespedeza cuneata                                 | 80                  | Yes             | FACU                | The disestory of hydric coil and wotland hydrology must be  |
| 2. Setaria pumila                                    | 5                   | No              | FAC                 | present. unless disturbed or problematic.   |
| 3. Agrostis gigantea                                 | 10                  | No              | FACW                | Definitions of Four Vegetation Strata:  |
| 4. Panicum virgatum                                  | 15                  | No              | FAC                 | Tree – Woody plants, excluding vines, 3 in, (7.6 cm) or   |
| 5.   |                     |                 |                     | more in diameter at breast height (DBH), regardless of  |
| 6.   |                     |                 |                     | height.   |
| 7.   |                     |                 |                     |   |
| 8.   |                     |                 |                     | <b>Sapling/Shrub</b> – Woody plants, excluding vines, less<br>than 3 in DBH and greater than 3 28 ft (1 m) tall             |
| 9.   |                     |                 |                     |   |
| 10.  |                     |                 |                     |   |
| 11.  |                     |                 |                     | <b>Herb</b> – All herbaceous (non-woody) plants, regardless<br>of size, and woody plants less than 3.28 ft tall             |
| 12.  |                     |                 |                     |   |
|  | 110 :               | =Total Cover    |                     | Woody Vine - All woody vines greater than 3.28 ft in  |
| 50% of total cover: 5                                | 5 20%               | of total cover: | 22                  | height.   |
| Woody Vine Stratum (Plot size: 30 ft )               |                     |                 |                     |   |
| 1  |                     |                 |                     |   |
| 2  |                     |                 |                     |   |
| 3  |                     |                 |                     |   |
| 4  |                     |                 |                     |   |
| 5.   |                     |                 |                     | Hydrophytic   |
|  | :                   | =Total Cover    |                     | Vegetation  |
| 50% of total cover:                                  | 20%                 | of total cover: |                     | Present? Yes No X   |
| Remarks: (If observed, list morphological adaptation | ns below.)          |                 |                     |   |
| Vegetation observed does not meet any indicators for | or hydrophytic      | c vegetation.   |                     |   |
| -  |                     | -               |                     |   |

| epth                         | Matrix                       |            | Redo                                   | x Featur           | es                |                  |                     |  |                                  |   |
|------------------------------|------------------------------|------------|--|--------------------|-------------------|------------------|---------------------|--|----------------------------------|---|
| nches)                       | Color (moist)                | %          | Color (moist)                          | %                  | Type <sup>1</sup> | Loc <sup>2</sup> | Те                  | xture  | R                                | emarks                                    |
| 0-8                          | 10YR 4/3                     | 95         | 10YR 4/1                               | 5                  | C                 | <u>M</u>         | Loam                | y/Clayey                                     | l                                | Loam                                      |
|                              |                              | ·          |  |                    |                   | ·                |                     |  |                                  |   |
| Гуре: C=Cor<br>ydric Soil In | ncentration, D=Depl          | etion, RM  | =Reduced Matrix, I<br>LRRs, unless oth | MS=Mas<br>erwise n | ked Sand          | d Grains.        |                     | <sup>2</sup> Location: PL:<br>Indicators for | =Pore Lining, N<br>Problematic I | /I=Matrix.<br>Hydric Soils <sup>3</sup> : |
| Histosol (                   | A1)                          |            | Thin Dark S                            | urface (S          | 69) <b>(LRR</b>   | S, T, U)         |                     | 1 cm Muc                                     | k (A9) <b>(LRR O)</b>            | )   |
| Histic Epi                   | pedon (A2)                   |            | Barrier Islar                          | ds 1 cm            | Muck (S           | 12)              |                     | 2 cm Muc                                     | k (A10) <b>(LRR S</b>            | 5)  |
| Black Hist                   | tic (A3)                     |            | (MLRA 153B, 153D) Coast Prair          |                    |                   |                  | irie Redox (A16     | 6)   |                                  |   |
| Hydrogen                     | Sulfide (A4)                 |            | Loamy Mucky Mineral (F1) (LRR O)       |                    |                   |                  | (outside MLRA 150A) |  |                                  |   |
| Stratified                   | Layers (A5)                  |            | Loamy Gleyed Matrix (F2)               |                    |                   |                  | Reduced             | Vertic (F18)                                 |                                  |   |
| Organic B                    | Bodies (A6) (LRR P,          | T, U)      | Depleted M                             | atrix (F3)         |                   |                  |                     | (outside                                     | e MLRA 150A,                     | 150B)                                     |
| 5 cm Muc                     | ky Mineral (A7) <b>(LR</b>   | R P, T, U) | Redox Dark                             | Surface            | (F6)              |                  |                     | Piedmont                                     | Floodplain Soil                  | s (F19) <b>(LRR P,</b> <sup>-</sup>       |
| Muck Pres                    | sence (A8) <b>(LRR U)</b>    | 1          | Depleted Da                            | ark Surfa          | ce (F7)           |                  |                     | Anomalou                                     | s Bright Floodp                  | olain Soils (F20)                         |
| 1 cm Muc                     | k (A9) <b>(LRR P, T)</b>     |            | Redox Depr                             | essions            | (F8)              |                  |                     | (MLRA  | 153B)                            |   |
| Depleted                     | Below Dark Surface           | (A11)      | Marl (F10) <b>(</b>                    | LRR U)             |                   |                  |                     | Red Parer                                    | nt Material (F21                 | )   |
| Thick Dar                    | k Surface (A12)              |            | Depleted O                             | chric (F1          | 1) (MLR/          | A 151)           |                     | Very Shallow Dark Surface (F22)              |                                  |   |
| Coast Pra                    | airie Redox (A16) ( <b>M</b> | LRA 150    | A) Iron-Manga                          | nese Mas           | sses (F1          | 2) (LRR C        | ), P, T)            | (outside                                     | MLRA 138, 1                      | 52A in FL, 154)                           |
| Sandy Mu                     | ucky Mineral (S1) <b>(L</b>  | RR O, S)   | Umbric Surf                            | ace (F13           | B) (LRR F         | P, T, U)         | -                   | Barrier Isl                                  | ands Low Chro                    | ma Matrix (TS7)                           |
| Sandy Gle                    | eyed Matrix (S4)             | -          | Delta Ochrid                           | ; (F17) <b>(</b>   | MLRA 15           | 1)               |                     | (MLRA  | 153B, 153D)                      |   |
| <br>Sandy Re                 | edox (S5)                    |            | Reduced Ve                             | ertic (F18         | ) (MLRA           | ,<br>150A, 15    | 50B)                | Other (Ex                                    | plain in Remark                  | (S)                                       |
| Stripped N                   | Matrix (S6)                  |            | Piedmont F                             | oodplain           | Soils (F          | 19) <b>(MLR</b>  | A 149A)             | 、  |                                  |   |
| Dark Surf                    | ace (S7) (LRR P. S           | T. U)      | Anomalous                              | Briaht Fl          | oodplain          | Soils (F2        | .0)                 |  |                                  |   |
| Polvvalue                    | Below Surface (S8)           | )          | (MLRA 14                               | 19A. 153           | C. 153D)          |                  | - /                 | <sup>3</sup> Indicators                      | s of hydrophytic                 | vegetation and                            |
| (LRR S                       | . T. U)                      | ,          | Verv Shallo                            | w Dark S           | urface (F         | 22)              |                     | wetland                                      | l hvdroloav mus                  | st be present.                            |
| ,                            | · · · ·                      |            | (MLRA 1:                               | 88, 152A           | in FL, 1          | 54)              |                     | unless                                       | disturbed or pro                 | oblematic.                                |
| estrictive La                | ayer (if observed):          |            |  |                    |                   |                  |                     |  |                                  |   |
| Туре:                        | Compacti                     | on / fill  |  |                    |                   |                  |                     |  |                                  |   |
|                              | ah a a ).                    | 0          |  |                    |                   |                  | أتعاميها            | - Soil Brocont                               | 2 Vaa                            | N. V                                      |

No indicators for hydric soils were observed. Auger refusal at 8 inches due to compaction / fill material.

| See ERDC/EL TR-10-20;   | OMB Control #<br>Requirement<br>(Authority: A  | :: 0710-0024, Exp: 11/30/2024<br>: Control Symbol EXEMPT:<br>R 335-15, paragraph 5-2a) |  |  |
|---|--|--|--|--|
| Project/Site: Standard Chlorine   | City/  | County: New Castle, N  | lew Castle Co.   | Sampling Date: 9/28/23   |
| Applicant/Owner: United States Environ  | nmental Protection Agency (EPA)  |  | State: DE  | Sampling Point: UPL-JRK-00   |
| Investigator(s): J. Keil, M. Curran   | Section, 7   | Fownship, Range: N/A   | <u>ــــــــــــــــــــــــــــــــــــ</u>  |  |
| Landform (hillside, terrace, etc.): Depress   | ion Local relief (   | concave, convex, none  | e): Concave  | Slope (%): 1   |
| Subregion (LRR or MLRA): LRR S. MLRA  | 149A Lat: 39.603077  | Lona: -75.6  | 35812  | Datum: NAD 83  |
| Soil Map Unit Name: SaE: Sassafras sand   | y loam, 15 to 25 percent slopes  | 0  | NWI classifica   | tion: None   |
| Are climatic / hydrologic conditions on the s   | ite typical for this time of year?   | Yes X  | No (lf no i  | explain in Remarks )   |
| Are Vegetation Soil or Hydro  | plogy significantly disturbed?   | Are "Normal Circu  | mstances" present  | 2 Yes X No   |
| Are Vegetation, Soli, or Hyd  |  |  |  | emorka)  |
|   |  | (il needed, explain  |  | emarks.)   |
| SUMMARY OF FINDINGS – Attac   | h site map showing samplin   | ig point locations   | s, transects, in   | nportant features, etc.  |
| Hydrophytic Vegetation Present?<br>Hydric Soil Present?<br>Wetland Hydrology Present?   | Yes     X     No     Is the within the withint the within the within the within the within the withint the wit | e Sampled Area<br>in a Wetland?  | Yes  | No <u>X</u>  |
| This upland point is located in a depressio   | n dominated by prhagmites but was c  | determined not a wetlar  | nd due to the lack   | of hydric soils.   |
|   |  |  |  |  |
| HYDROLOGY   |  |  |  |  |
| HYDROLOGY<br>Wetland Hydrology Indicators:<br>Primary Indicators (minimum of one is req<br>Surface Water (A1)   | uired; check all that apply) Aquatic Fauna (B13)   | Sec  | condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat  | (minimum of two required)<br>ks (B6)<br>ed Concave Surface (B8)  |
| HYDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one is req         Surface Water (A1)         High Water Table (A2)  | uired; check all that apply)<br>Aquatic Fauna (B13)<br>Marl Deposits (B15) <b>(LRR U)</b>  |  | condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns   | (minimum of two required)<br>ks (B6)<br>ed Concave Surface (B8)<br>s (B10)   |
| HYDROLOGY           Wetland Hydrology Indicators:           Primary Indicators (minimum of one is req           Surface Water (A1)           High Water Table (A2)           Saturation (A3)  | uired; check all that apply)<br>Aquatic Fauna (B13)<br>Marl Deposits (B15) <b>(LRR U)</b><br>Hydrogen Sulfide Odor (C1)  |  | condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns<br>Moss Trim Lines  | (minimum of two required)<br>cks (B6)<br>ed Concave Surface (B8)<br>s (B10)<br>(B16)   |
| HYDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one is req         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1)   | uired; check all that apply)<br>Aquatic Fauna (B13)<br>Marl Deposits (B15) <b>(LRR U)</b><br>Hydrogen Sulfide Odor (C1)<br>Oxidized Rhizospheres on Livi   | ing Roots (C3)   | Condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns<br>Moss Trim Lines<br>Dry-Season Wate   | (minimum of two required)<br>cks (B6)<br>ed Concave Surface (B8)<br>s (B10)<br>(B16)<br>er Table (C2)  |
| HYDROLOGY<br>Wetland Hydrology Indicators:<br>Primary Indicators (minimum of one is req<br>Surface Water (A1)<br>High Water Table (A2)<br>Saturation (A3)<br>Water Marks (B1)<br>Sediment Deposits (B2)<br>Drift Deposite (B3)  | <u>uired; check all that apply)</u><br>Aquatic Fauna (B13)<br>Marl Deposits (B15) <b>(LRR U)</b><br>Hydrogen Sulfide Odor (C1)<br>Oxidized Rhizospheres on Livi<br>Presence of Reduced Iron (C4  | ing Roots (C3)   | Condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns<br>Moss Trim Lines<br>Dry-Season Wate<br>Crayfish Burrows   | (minimum of two required)<br>kks (B6)<br>ed Concave Surface (B8)<br>s (B10)<br>(B16)<br>er Table (C2)<br>(C8)<br>ocn Aprial Imagony (C9)   |
| HYDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one is req         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1)         Sediment Deposits (B2)         Drift Deposits (B3)         Algal Mat or Crust (B4)  | <u>uired; check all that apply)</u><br>Aquatic Fauna (B13)<br>Marl Deposits (B15) <b>(LRR U)</b><br>Hydrogen Sulfide Odor (C1)<br>Oxidized Rhizospheres on Livi<br>Presence of Reduced Iron (C4<br>Recent Iron Reduction in Tilled<br>Thin Muck Surface (C7)   | ing Roots (C3)   | Condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns<br>Moss Trim Lines<br>Dry-Season Wate<br>Crayfish Burrows<br>Saturation Visible<br>Geomorphic Posi  | (minimum of two required)<br>eks (B6)<br>ed Concave Surface (B8)<br>s (B10)<br>(B16)<br>er Table (C2)<br>(C8)<br>e on Aerial Imagery (C9)<br>tion (D2)   |
| HYDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one is req         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1)         Sediment Deposits (B2)         Drift Deposits (B3)         Algal Mat or Crust (B4)         Iron Deposits (B5)   | <u>uired; check all that apply)</u> Aquatic Fauna (B13) Marl Deposits (B15) <b>(LRR U)</b> Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Livi Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks)   | ing Roots (C3)   | condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns<br>Moss Trim Lines<br>Dry-Season Wate<br>Crayfish Burrows<br>Saturation Visible<br>Geomorphic Posi<br>Shallow Aquitard                                      | (minimum of two required)<br>eks (B6)<br>ed Concave Surface (B8)<br>s (B10)<br>(B16)<br>er Table (C2)<br>(C8)<br>e on Aerial Imagery (C9)<br>tion (D2)<br>(D3)                                     |
| Wybelland Hydrology Indicators:         Primary Indicators (minimum of one is req         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1)         Sediment Deposits (B2)         Drift Deposits (B3)         Algal Mat or Crust (B4)         Iron Deposits (B5)         Inundation Visible on Aerial Imagery (Interpretent of the second seco | <u>uired; check all that apply)</u> Aquatic Fauna (B13) Aquatic Fauna (B15) <b>(LRR U)</b> Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Livi Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks) 37)   | ing Roots (C3)   | Condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns<br>Moss Trim Lines<br>Dry-Season Wate<br>Crayfish Burrows<br>Saturation Visible<br>Geomorphic Posi<br>Shallow Aquitard<br>FAC-Neutral Test                  | (minimum of two required)<br>ks (B6)<br>ed Concave Surface (B8)<br>s (B10)<br>(B16)<br>er Table (C2)<br>(C8)<br>e on Aerial Imagery (C9)<br>tion (D2)<br>(D3)<br>a (D5)                            |
| HYDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one is req         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1)         Sediment Deposits (B2)         Drift Deposits (B3)         Algal Mat or Crust (B4)         Iron Deposits (B5)         Inundation Visible on Aerial Imagery (I         Water-Stained Leaves (B9)   | Lired; check all that apply) Aquatic Fauna (B13) Marl Deposits (B15) <b>(LRR U)</b> Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Livi Presence of Reduced Iron (C4 Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks) 37)  | ing Roots (C3)   | condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns<br>Moss Trim Lines<br>Dry-Season Wate<br>Crayfish Burrows<br>Saturation Visible<br>Geomorphic Posi<br>Shallow Aquitard<br>FAC-Neutral Test<br>Sphagnum Moss | (minimum of two required)<br>eks (B6)<br>ed Concave Surface (B8)<br>s (B10)<br>(B16)<br>er Table (C2)<br>(C8)<br>e on Aerial Imagery (C9)<br>tion (D2)<br>(D3)<br>t (D5)<br>(D8) <b>(LRR T, U)</b> |
| HYDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one is req         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1)         Sediment Deposits (B2)         Drift Deposits (B3)         Algal Mat or Crust (B4)         Iron Deposits (B5)         Inundation Visible on Aerial Imagery (Mater-Stained Leaves (B9)         Field Observations:   | Lired; check all that apply)<br>Aquatic Fauna (B13)<br>Marl Deposits (B15) <b>(LRR U)</b><br>Hydrogen Sulfide Odor (C1)<br>Oxidized Rhizospheres on Livi<br>Presence of Reduced Iron (C4<br>Recent Iron Reduction in Tilled<br>Thin Muck Surface (C7)<br>Other (Explain in Remarks)<br>37)   | ing Roots (C3)<br>4)<br>d Soils (C6)<br>X<br>X   | Condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns<br>Moss Trim Lines<br>Dry-Season Wate<br>Crayfish Burrows<br>Saturation Visible<br>Geomorphic Posi<br>Shallow Aquitard<br>FAC-Neutral Test<br>Sphagnum Moss | (minimum of two required)<br>eks (B6)<br>ed Concave Surface (B8)<br>s (B10)<br>(B16)<br>er Table (C2)<br>(C8)<br>e on Aerial Imagery (C9)<br>tion (D2)<br>(D3)<br>t (D5)<br>(D8) <b>(LRR T, U)</b> |
| HYDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one is req         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1)         Sediment Deposits (B2)         Drift Deposits (B3)         Algal Mat or Crust (B4)         Iron Deposits (B5)         Inundation Visible on Aerial Imagery (Mater-Stained Leaves (B9)         Field Observations:         Surface Water Present?       Yes         Water Table Present?       Yes         Gaturation Present?       Yes         (includes capillary fringe)       Ves   | uired; check all that apply)        Aquatic Fauna (B13)        Marl Deposits (B15) (LRR U)        Hydrogen Sulfide Odor (C1)        Oxidized Rhizospheres on Livi        Presence of Reduced Iron (C4        Recent Iron Reduction in Tilled        Thin Muck Surface (C7)        Other (Explain in Remarks)         37)         No       X         Depth (inches):         No       X         Depth (inches):   | ing Roots (C3)<br>+)<br>d Soils (C6)<br>X<br>X<br>X<br>Wetland Hydr                    | condary Indicators<br>Surface Soil Crac<br>Sparsely Vegetat<br>Drainage Patterns<br>Moss Trim Lines<br>Dry-Season Wate<br>Crayfish Burrows<br>Saturation Visible<br>Geomorphic Posi<br>Shallow Aquitard<br>FAC-Neutral Test<br>Sphagnum Moss | (minimum of two required)<br>eks (B6)<br>ed Concave Surface (B8)<br>s (B10)<br>(B16)<br>er Table (C2)<br>(C8)<br>e on Aerial Imagery (C9)<br>tion (D2)<br>(D3)<br>t (D5)<br>(D8) (LRR T, U)        |
|   |  |  |  |  |

Sampling Point: UPL-JRK-001

|  | Absolute  | Dominant        | Indicator |  |
|--|-----------|-----------------|-----------|--|
| Tree Stratum (Plot size: <u>30 ft</u> )              | % Cover   | Species?        | Status    | Dominance Test worksheet:  |
| 2.   |           |                 |           | Number of Dominant Species         That Are OBL, FACW, or FAC:       2         (A) |
| 3  |           |                 |           | Total Number of Dominant<br>Species Across All Strata:2 (B)                        |
| 5  |           |                 |           | Percent of Dominant Species<br>That Are OBL_EACW_or FAC: 100.0% (A/B)              |
| 7.   |           |                 |           | Prevalence Index worksheet:  |
| 8.   |           |                 |           | Total % Cover of: Multiply by:   |
|  | :         | =Total Cover    |           | OBL species         10         x 1 =         10                                    |
| 50% of total cover:                                  | 20%       | of total cover: |           | FACW species 70 x 2 = 140  |
| Sapling/Shrub Stratum (Plot size: 30 ft )            |           |                 |           | FAC species X 3 = 135  |
| 1  |           |                 |           | FACU species x 4 = 80  |
| 2  |           |                 |           | UPL species <u>5</u> x 5 = <u>25</u>   |
| 3  |           |                 |           | Column Totals: 150 (A) 390 (B)   |
| 4  |           |                 |           | Prevalence Index = B/A = 2.60  |
| 5  |           |                 |           | Hydrophytic Vegetation Indicators:   |
| 6  |           |                 |           | 1 - Rapid Test for Hydrophytic Vegetation  |
| 7  |           |                 |           | X 2 - Dominance Test is >50%   |
| 8  |           |                 |           | 3 - Prevalence Index is ≤3.0 <sup>1</sup>  |
|  |           | =Total Cover    |           | Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)                          |
| 50% of total cover:                                  | 20%       | of total cover: |           |  |
| Herb Stratum (Plot size: 30 ft )                     |           |                 |           |  |
| 1. Phragmites australis                              | 60        | Yes             | FACW      | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be               |
| 2. Juncus tenuis                                     | 40        | Yes             | FAC       | present, unless disturbed or problematic.  |
| 3. Juncus effusus                                    | 10        | No              | OBL       | Definitions of Four Vegetation Strata:   |
| 4. Agrostis gigantea                                 | 10        | No              | FACW      | <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or                     |
| 5. Lespedeza cuneata                                 |           | No              | FACU      | height.  |
| 6. Setaria pumila                                    | 5         | No              | FAC       |  |
| 7. Pyrus calleryana                                  | 5         | No              | UPL       | Sapling/Shrub – Woody plants, excluding vines, less                                |
| 8  |           |                 |           | than 3 in. DBH and greater than 3.28 ft (1 m) tall.                                |
| 9  |           |                 |           |  |
| 10   |           |                 |           | Herb – All herbaceous (non-woody) plants, regardless                               |
| 12   |           |                 |           | of size, and woody plants less than 3.28 ft tall.                                  |
| 12.  | 150       | Total Cover     |           | Weady Vine All weady vince greater than 2.29 ft in                                 |
| E0% of total action 74                               |           |                 | 20        | height.  |
| Woody Vine Stratum (Plot size: 30 ft )               | 20%       |                 |           |  |
| (Flot size)  |           |                 |           |  |
| ·  |           |                 |           |  |
| 2  |           |                 |           |  |
| а  |           |                 |           |  |
| T  |           |                 |           |  |
| J  | <u> </u>  | -Total Cover    |           | Hydrophytic  |
| 50% of total cover                                   | 2004      | of total cover  |           | Vegetation<br>Present? Yes X No  |
|  | 20 /0     |                 |           |  |
| Remarks: (If observed, list morphological adaptation | s below.) | onhytic vocet   | ation     |  |
| vegetation observed meets the dominance lest hidle   |           | opriytic vegeta |           |  |
|  |           |                 |           |  |

| Profile Descr<br>Depth      | ription: (Describe f<br>Matrix | to the dep   | th needed to doc<br>Redo | u <b>ment tl</b><br>x Featur | h <b>e indic</b> a<br>res | ator or c        | onfirm th | e absence of in             | dicators.)           |                           |
|-----------------------------|--------------------------------|--------------|--------------------------|------------------------------|---------------------------|------------------|-----------|-----------------------------|----------------------|---------------------------|
| (inches)                    | Color (moist)                  | %            | Color (moist)            | %                            | Type <sup>1</sup>         | Loc <sup>2</sup> | Te        | exture                      | Rer                  | narks                     |
| 0-3                         | 10yr 4/3                       | 100          |                          |                              | С                         | М                | Loam      | y/Clayey                    | Silty                | loam                      |
| 3-10                        | 10YR 4/4                       | 90           | 10YR 5/8                 | 10                           | С                         | М                | Mucky     | Loam/Clay                   | Clay                 | loam                      |
|                             |                                |              |                          |                              |                           |                  | ,         |                             | ,                    |                           |
|                             |                                |              |                          |                              |                           |                  |           |                             |                      |                           |
|                             |                                |              |                          |                              |                           |                  |           |                             |                      |                           |
|                             |                                |              |                          |                              |                           |                  |           |                             |                      |                           |
|                             |                                |              |                          |                              |                           |                  |           |                             |                      |                           |
|                             |                                |              |                          |                              |                           |                  |           |                             |                      |                           |
| <sup>1</sup> Type: C=Co     | ncentration, D=Depl            | etion, RM=   | Reduced Matrix, N        | /IS=Mas                      | ked Sand                  | d Grains.        |           | <sup>2</sup> Location: PL=F | Pore Lining, M=      | Matrix.                   |
| Hydric Soil In              | ndicators: (Applica            | ble to all L | RRs, unless othe         | erwise n                     | oted.)                    |                  |           | Indicators for F            | Problematic Hy       | dric Soils <sup>3</sup> : |
| Histosol (                  | (A1)                           |              | Thin Dark S              | urface (S                    | 69) <b>(LRR</b>           | S, T, U)         |           | 1 cm Muck                   | (A9) <b>(LRR O)</b>  |                           |
| Histic Epi                  | ipedon (A2)                    |              | Barrier Islan            | ds 1 cm                      | Muck (S                   | 12)              |           | 2 cm Muck                   | (A10) <b>(LRR S)</b> |                           |
| Black His                   | stic (A3)                      |              | (MLRA 15                 | 3B, 153                      | D)                        |                  |           | Coast Prairi                | e Redox (A16)        |                           |
| Hydroger                    | n Sulfide (A4)                 |              | Loamy Muck               | ky Minera                    | al (F1) <b>(L</b>         | .RR O)           |           | (outside l                  | MLRA 150A)           |                           |
| Stratified                  | Layers (A5)                    |              | Loamy Gley               | ed Matriz                    | x (F2)                    |                  |           | Reduced Ve                  | ertic (F18)          |                           |
| Organic E                   | Bodies (A6) (LRR P,            | T, U)        | Depleted Ma              | atrix (F3)                   |                           |                  |           | (outside l                  | MLRA 150A, 1         | 50B)                      |
| 5 cm Muc                    | cky Mineral (A7) <b>(LR</b>    | R P, T, U)   | Redox Dark               | Surface                      | (F6)                      |                  |           | Piedmont F                  | oodplain Soils       | (F19) <b>(LRR P, T)</b>   |
| Muck Pre                    | esence (A8) (LRR U)            |              | Depleted Da              | rk Surfa                     | ce (F7)                   |                  |           | Anomalous                   | Bright Floodpla      | in Soils (F20)            |
| 1 cm Muc                    | ck (A9) <b>(LRR P, T)</b>      |              | Redox Depre              | essions                      | (F8)                      |                  |           | (MLRA 15                    | 3B)                  |                           |
| Depleted                    | Below Dark Surface             | e (A11)      | Marl (F10) (I            | _RR U)                       |                           |                  |           | Red Parent                  | Material (F21)       |                           |
| Thick Da                    | rk Surface (A12)               |              | Depleted Oc              | hric (F1                     | 1) (MLR/                  | A 151)           |           | Very Shallo                 | w Dark Surface       | (F22)                     |
| Coast Pra                   | airie Redox (A16) ( <b>M</b>   | ILRA 150A    | ) Iron-Mangar            | iese Ma                      | sses (F1                  | 2) <b>(LRR</b>   | O, P, T)  | (outside l                  | MLRA 138, 152        | A in FL, 154)             |
| Sandy Mu                    | ucky Mineral (S1) <b>(L</b>    | RR O, S)     | Umbric Surfa             | ace (F13                     | B) (LRR F                 | P, T, U)         |           | Barrier Islar               | ds Low Chrom         | a Matrix (TS7)            |
| Sandy Gl                    | eyed Matrix (S4)               |              | Delta Ochric             | (F17) <b>(</b>               | MLRA 15                   | 51)              |           | (MLRA 15                    | 3B, 153D)            |                           |
| Sandy Re                    | edox (S5)                      |              | Reduced Ve               | rtic (F18                    | ) (MLRA                   | 150A, 1          | 50B)      | Other (Expla                | ain in Remarks       | )                         |
| Stripped I                  | Matrix (S6)                    |              | Piedmont Fl              | oodplain                     | Soils (F                  | 19) <b>(MLF</b>  | RA 149A)  |                             |                      |                           |
| Dark Surf                   | face (S7) <b>(LRR P, S</b>     | , T, U)      | Anomalous                | Bright Fl                    | oodplain                  | Soils (F         | 20)       |                             |                      |                           |
| Polyvalue                   | e Below Surface (S8)           | )            | (MLRA 14                 | 9A, 153                      | C, 153D)                  | )                |           | <sup>3</sup> Indicators of  | of hydrophytic v     | egetation and             |
| (LRR S                      | S, T, U)                       |              | Very Shallow             | v Dark S                     | Surface (F                | -22)             |           | wetland h                   | ydrology must        | be present,               |
|                             |                                |              | (MLRA 13                 | 8, 152A                      | in FL, 1                  | 54)              |           | unless dis                  | sturbed or prob      | lematic.                  |
| Restrictive L               | ayer (if observed):            |              |                          |                              |                           |                  |           |                             |                      |                           |
| Туре:                       |                                |              |                          |                              |                           |                  |           |                             |                      |                           |
| Depth (in                   | ches):                         |              |                          |                              |                           |                  | Hydri     | c Soil Present?             | Yes                  | NoX                       |
| Remarks:<br>Indicators of h | nydric soils were not          | observed.    | Auger refusal at 1       | 0 inches                     | due to c                  | compacti         | on.       |                             |                      |                           |

Appendix C – Watercourse Data Forms

| Project/                              | /Site:                | S                  | Standar           | rd Ch              | lorin            | ie                      |        | Stream       | n ID:      |                    | S       | -JRI  | K-001     |          |
|---------------------------------------|-----------------------|--------------------|-------------------|--------------------|------------------|-------------------------|--------|--------------|------------|--------------------|---------|-------|-----------|----------|
| Applicant/O                           | wner:                 |                    | ]                 | EPA                |                  |                         |        |              | State:     |                    | ]       | Dela  | ware      |          |
| Investigate                           | or(s):                |                    | J. Keil           | , C. B             | arret            | t                       |        | City/Co      | ounty:     | New                | Castle, | , Ne  | w Castle  | County   |
| Sampling                              | Date:                 |                    | 8/2               | 8/202              | 3                |                         |        | Town         | nship:     |                    |         | N     | /A        |          |
| Stream N                              | lame:                 | UN                 | VT to R           | ed Lic             | on Cr            | eek                     |        | Lat          | itude:     |                    |         | 39.5  | 9843      |          |
| Drainage Area (                       | $(mi^2)$ :            |                    |                   |                    |                  |                         |        | Long         | itude:     |                    | -7      | 75.63 | 39479     |          |
| Slope Cate                            | gory:                 | (2)                | ) Mode            | rate G             | radie            | ent                     |        | Open-E       | nded?      | Up                 | stream  | 1     | Dow       | nstream  |
| FERC Designation                      | ation:                |                    |                   | N/A                |                  |                         | Ι      | Delineation  | Type:      | x Cei              | nterlin | e     | x R/L     | Banks    |
| Stream Descrip                        | tion:                 |                    |                   |                    |                  |                         |        |              |            |                    |         |       |           |          |
| A naturalized str<br>Stream drains in | eam char<br>to wetlan | nnel flo<br>nd W-J | owing v<br>RK-001 | vest al<br>I furth | long :<br>her to | roadside (<br>the west. | Gove   | rner Lea Rd  | l.) at th  | e south            | end of  | f the | study ar  | ea.      |
| Stream Subsyst                        | em                    | Stre               | am Ori            | igin               |                  |                         | Pred   | lominant S   | urroui     | nding L            | andus   | se    |           |          |
| Perennia                              | 1                     |                    | Culvert           | Disch              | narge            | :                       | х      | Forest       |            |                    | Com     | mere  | cial      |          |
| Ephemer                               | al                    | ]                  | Pond D            | ischar             | ge               |                         |        | Field/Pastu  | ıre        | х                  | Indus   | stria | l         |          |
| x Intermitte                          | ent                   |                    | Swamp             | , Bog              | or W             | vetland                 |        | Agricultura  | al         |                    | Resid   | denti | ial       |          |
| Tidal                                 |                       |                    | Spring            | Fed                |                  |                         | х      | Other        |            |                    | Roa     | adwa  | ау        |          |
|                                       |                       | ]                  | Mixture           | e of O             | rigin            | s                       | I      | Ieavy rain : | in the     | last 7 d           | ays?    |       | Yes       | x No     |
| Other:                                |                       | X                  | Surface           | Wate               | er Ru            | noff                    | '      | Turbidity?   |            | Clear              | Oth     | ner:  | N         | /A       |
| Flow Pres                             | sent?                 | Yes                |                   | X                  | No               |                         |        | Flow Dire    | ction:     |                    |         | W     | est       |          |
|                                       |                       |                    |                   |                    |                  |                         |        |              |            |                    |         | _     |           |          |
| For linear proje                      | ects, prov            | vide din           | nension           | s at               | Rig              | ht bank/I               | Left b | ank facing   | down       | stream             | Strea   | am I  | Morphol   | ogy      |
| centerlin                             | e of strea            | im cros            | ssing             |                    | Righ             | t Bank (D               | o not  | Horiz.       | 3.0        | 0 Ft.              |         | Ri    | ffle %    | 25       |
| TOP                                   | OF BANK W             | VIDTH              | 1                 |                    | inclu            | ide flow d              | epth)  | Vert.        | 2.0        | 0 Ft.              |         | P     | ool %     | 25       |
|                                       | DINARY HIG            | GH -               |                   |                    | Left             | Bank (Do                | o not  | Horiz.       | 3.0        | 0 Ft.              |         | R     | un %      | 50       |
|                                       | ATER WIDTH            | H/                 |                   |                    | inclu            | ide flow d              | epth)  | Vert.        | 4.0        | 0 Ft.              | Cano    | opy   | Cover     |          |
| TOTAL                                 |                       | _/_                | ł                 | -                  | Wate             | er/Flow De              | epth   |              | 0.0        | 0 Ft.              | (       | Opeı  | 1         |          |
|                                       |                       | -/                 | WATER D           | epth               | Botto            | om of Cha               | nnel   | Width        | 3.5        | 0 Ft.              | I       | Partl | y Open    |          |
|                                       |                       | /                  | ł                 | -                  | Ordi             | nary High               | Wate   | er Depth     | 0.7        | 5 Ft.              | X       | Shad  | led       |          |
| FLOW                                  | BOTTOM                |                    |                   | Ĺ                  | Тор              | of Bank V               | Vidth  |              | 8.0        | 0 Ft.              | Is Cl   | hanr  | nel Natu  | ralized? |
| DEPTH                                 | WIDTH                 | -                  |                   |                    | Ordi             | nary High               | Wate   | er Width     | 5.1        | 9 Ft.              | Х       | Ye    | es        | No       |
|                                       |                       |                    |                   |                    | Tota             | l Depth                 |        | 1            | 2.0        | 0 Ft.              | Fin l   | Fish  | Present   | ?        |
| Macroinver                            | tebrates              | Prese              | nt?               | Ye                 | es               | x N                     | 0      |              |            |                    |         | Ye    | S X       | No       |
| Ephemer                               | optera                | ]                  | Plecopt           | era                | Í                | Trichpote:              | a      | Other        | :          | _                  |         | _     | _         |          |
| Aquatic Vegeta                        | tion - Ine            | dicate             | Domin             | nant C             | Covei            | : Туре                  |        |              |            |                    | -       |       |           |          |
| x N/A                                 |                       | Root               | ed Eme            | ergent             |                  |                         | Ro     | oted Floatin | ıg         |                    |         | Att   | ached Al  | gae      |
|                                       |                       | Roote              | d Subm            | nergen             | t                |                         | FI     | oating Alga  | e          |                    |         | Fr    | ee Floati | ng       |
| Portion of Stream                     | m with A              | quatic             | Vegeta            | tion (             | %):              |                         |        |              |            | _                  | _       | _     | _         |          |
| Riparian Buffe                        | r Veg. (              | (60 Ft.)           | ) - Indi          | cate I             | Jomi             | nant Cov                | er Ty  | pe And Sp    | pecies     |                    |         |       |           |          |
| Trees:                                | A                     | cer ru             | brum, J           | luglan             | s nig            | ra                      | (      | Grasses:     |            |                    |         |       |           |          |
| Shrubs:                               | Lo                    | onicera            | ı morow<br>corymb | vii, Va<br>osum    | iccini           | ium                     | He     | rbaceous:    | Pers       | vicaria v          | virgini | ana,  | Rubus h   | ispidus  |
| Inorganic Subs                        | trate Co              | mpone              | ents (A           | dd to              | 100%             | <b>%</b> )              | Orga   | anic Substr  | ate Co     | ompone             | nts (N  | lay   | be <100)  |          |
| <u>Type</u>                           | Dia                   | <u>meter</u>       |                   | Com                | posit            | <u>ion %</u>            |        | <u>Type</u>  | <u>C</u> l | naracte            | ristics |       | Compos    | sition % |
| Bedrock                               |                       | -                  |                   |                    |                  |                         |        |              | Stick      | Wood               | Con     | rs.0  |           |          |
| Boulder                               | 10                    | )" +               |                   |                    |                  |                         | I      | Detritus     | D          | s, wood<br>lant Mo | , Coal  | 150   | 2         | .0       |
| Cobble                                | 2.5"                  | - 10"              |                   |                    | 25               |                         |        |              | r.         |                    | CIIdi   |       |           |          |
| Gravel                                | 0.1"                  | - 2.5"             |                   |                    | 20               |                         | М      | uck-Mud      | Bla        | ick, Ver           | y Fine  | e     |           |          |
| Sand                                  | 0.06-                 | -2 mm              |                   |                    | 45               |                         | IVI    |              | Or         | ganic M            | aterial | 1     |           |          |
| Silt                                  | 0.004-0               | 0.06 m             | ım                |                    | 10               |                         |        | Marl         | Grou       | Shell E            | ragmo   | nte   |           |          |
| Clay                                  | < 0.00                | 04 mm              | 1                 |                    |                  |                         |        | wiall        | Giey,      | Shell F            | agine   | ants  |           |          |

| Projec                         | t/Site:                  | Sta                            | andard           | l Chl           | lorine           |             |        | Stream             | n ID:          |   | S              | -JR         | K-002               |          |
|--------------------------------|--------------------------|--------------------------------|------------------|-----------------|------------------|-------------|--------|--------------------|----------------|---|----------------|-------------|---------------------|----------|
| Applicant/O                    | Owner:                   |                                | E                | PA              |                  |             |        |                    | State:         |   |                | Dela        | ware                |          |
| Investiga                      | ator(s):                 | J.                             | . Keil, (        | C. Ba           | arrett           |             |        | City/Co            | ounty:         | New   | Castle         | e, Ne       | w Castle            | County   |
| Sampling                       | g Date:                  |                                | 8/28             | /2023           | 3                |             |        | Tow                | nship:         |   |                | N           | /A                  |          |
| Stream                         | Name:                    | UNT                            | Γ to Red         | d Lio           | n Cre            | ek          |        | Lat                | itude:         |   |                | 39.5        | 9843                |          |
| Drainage Area                  | $(mi^2)$ :               |                                |                  |                 |                  |             |        | Long               | itude:         |   | -              | 75.6        | 39934               |          |
| Slope Cat                      | egory:                   | (2) I                          | Modera           | ate G           | radier           | nt          |        | Open-E             | nded?          | Up  | strean         | n           | Dow                 | nstream  |
| FERC Design                    | nation:                  |                                | N                | [/A             |                  |             | Ι      | Delineation        | Type:          | x Cer   | nterlir        | ne          | x R/L               | Banks    |
| Stream Descri                  | ption:                   |                                |                  |                 |                  |             |        |                    |                |   |                |             |                     |          |
| A naturalized s stream S-JRK-( | tream chan<br>001 to the | nnel flov<br>north.            | ving no          | orth fi         | rom a            | culvert j   | ust no | orth of Gove       | erner L        | .ea Rd.   | This :         | strea       | m drains            | into     |
| Stream Subsys                  | stem                     | Stream                         | m Orig           | in              |                  |             | Pred   | lominant S         | urrou          | nding L   | andu           | se          |                     |          |
| Perenni                        | al                       | x Ci                           | ulvert I         | Disch           | arge             |             | х      | Forest             |                |   | Com            | mer         | cial                |          |
| x Epheme                       | eral                     | Po                             | ond Dis          | schar           | ge               |             |        | Field/Pastu        | ire            | х   | Indu           | stria       | 1                   |          |
| Intermi                        | ttent                    | Sv                             | wamp, l          | Bog             | or We            | tland       |        | Agricultura        | al             |   | Resi           | denti       | ial                 |          |
| Tidal                          |                          | SI                             | pring F          | ed              |                  |             | х      | Other              |                |   | Ro             | adwa        | ay                  |          |
|                                |                          | Μ                              | lixture          | of Or           | rigins           |             | H      | Ieavy rain         | in the         | last 7 d  | ays?           |             | Yes                 | x No     |
| Other:                         |                          | x Si                           | urface V         | Water           | r Run            | off         | '      | Turbidity?         |                | Clear   | Otl            | her:        | N                   | /A       |
| Flow Pr                        | esent?                   | Yes                            |                  | x l             | No               |             |        | Flow Dire          | ction:         |   |                | No          | orth                |          |
|                                |                          |                                |                  | _               | _                |             | _      |                    |                |   | _              | _           |                     |          |
| For linear pro                 | jects, provi             | ide dime                       | ensions          | at              | Righ             | t bank/l    | Left b | ank facing         | down           | stream  | Stre           | am l        | Morphol             | ogy      |
| centerli                       | ne of stream             | m crossi                       | ing              | I               | Right            | Bank (D     | o not  | Horiz.             | 3.0            | 0 Ft.   | Ш              | R1          | iffle %             |          |
| N TOP                          | OF BANK W                | IDTH                           | 1                | 1               | includ           | le flow d   | epth)  | Vert.              | 2.0            | 0 Ft.   | $\square$      |             | 001 %               | 20       |
|                                | DRDINARY HIG             | н                              | /                |                 | Left I           | Bank (Do    | o not  | Horiz.             | 3.0            | 0 Ft.   | C              | R           | lun %               | 80       |
| $\neg \neg \land \vdash$       | WATER WIDTH              | -/                             |                  | 1               | includ           | le flow d   | epth)  | Vert.              | 3.0            | 0 Ft.   | Can            | opy         | Cover               |          |
|                                |                          | _/                             | •                |                 | Water            | /Flow Do    | epth   | CK 71 1.1          | 0.0            | 0 Ft.   | $\vdash$       | Oper        | n                   |          |
|                                |                          |                                | ater dei         | high<br>PTH     | Botton           | n of Cha    | innel  | Width              | 4.0            | 0 Ft.   | $\vdash$       | Partl       | ly Open             |          |
|                                |                          |                                | ł                | (               | Ordina           | ary High    | Wate   | er Depth           | 1.0            | 0 Ft.   | X              | Shac        | led                 | 11 10    |
| FLOW                           | BOTTOM                   |                                |                  |                 | l op o           | t Bank V    | Vidth  | ****               | 9.0            | 0 Ft.   | ls C           | hanı        | nel Natu            | ralized? |
| DEFIN                          | -                        |                                |                  |                 | Ordina           | ary High    | Wate   | er Width           | 6.5            | $\begin{array}{c c} 0 & Ft. \\ \hline 0 & Ft \end{array}$ | X              | Ye          | es i                | No       |
|                                | . 1                      | D                              | (0)              |                 | l otal .         | Depth       |        | 1                  | 2.0            | 0 Ft.   | Fin .          | Fish        | Present             |          |
| Macroinve                      | rtebrates                | Present                        |                  | re              | S Z              |             | 0      | Other              |                |   |                | Υe          | es x                | NO       |
| A quotio Vogot                 | eropiera                 | PI<br>Nooto D                  | lecopie          | ra              | 1.               | Twpo        | a      | Other              |                | _   |                |             | _                   |          |
| Aqualic veget                  | ation - 110              | Pootor                         | d Emor           | ant C           | over             | туре        | Po     | oted Floatir       | 207            |   |                | Δ ++        | achod Al            | gaa      |
| x N/A                          |                          | Rooted                         | Submo            | rgent           | +                |             | FI     | oating Alga        | 1g             |   |                | Fr          | actieu Al           | .gae     |
| Portion of Stra                | om with A                | anotic V                       | logotati         | ion (0          | L<br>)/, )•      |             | 1.1    | Datilig Alga       | .C             |   |                | 1.1         |                     | ng       |
| Rinarian Buff                  | er Veg (                 | $\frac{quarre}{60 \text{ Ft}}$ | - Indice         | ate D           | onin             | ant Cov     | or Ts  | me And Sr          | necies         |   |                |             |                     |          |
|                                |                          | 0010.)                         | - Inuica         | ate D           |                  |             |        | pe ma bi           |                |   |                |             |                     |          |
| Trees:                         | Acer ri<br>po            | ubrum, .<br>omifera,           | Juglans<br>Ulmus | s nigr<br>s ame | ra, Ma<br>erican | aclura<br>a | (      | Grasses:           |                |   |                |             |                     |          |
| Shrubs:                        | Lonic                    | era moi                        | rowii, L         | Linde           | ra bei           | ızoin       | Не     | rbaceous:          | Loni           | icera jaį   | oonice         | a, Lo       | nicera m            | orrowii  |
| Inor <u>ganic Sub</u>          | stra <u>te Co</u> r      | np <u>onen</u>                 | ts <u>(Ad</u>    | d <u>to</u> 1   | 10 <u>0%</u>     | )           | Org    | anic <u>Substr</u> | at <u>e Co</u> | om <u>pone</u>  | nt <u>s (N</u> | / <u>ay</u> | be <u>&lt;100</u> ` | )        |
| Type                           | Diar                     | neter                          | (                | Comp            | ositic           | on %        | 0      | Type               | C              | naracte   | ristics        | 5           | Compo               | sition % |
| Bedrock                        |                          | -                              |                  |                 |                  |             |        |                    | G.: 1          | - W   |                |             |                     |          |
| Boulder                        | 10                       | " +                            |                  |                 |                  |             | ]      | Detritus           | Stick          | s, WOOC   | i, Coa         | irse        | 1                   | .5       |
| Cobble                         | 2.5"                     | - 10"                          |                  |                 |                  |             |        |                    |                |   | lerial         |             |                     |          |
| Gravel                         | 0.1"                     | - 2.5"                         |                  |                 |                  |             | М      | uck Mud            | Bla            | ack, Ver  | y Fine         | e           |                     |          |
| Sand                           | 0.06-                    | 2 mm                           |                  |                 | 20               |             | IVI    |                    | Or             | ganic M   | ateria         | .1          |                     |          |
| Silt                           | 0.004-0                  | ).06 mm                        | 1                |                 | 80               |             |        | Marl               | Grou           | Shall E   | raam           | ante        |                     |          |
| Clay                           | < 0.00                   | )4 mm                          |                  |                 |                  |             |        | iviul l            | Giey,          | Shen F  | agint          | ints        |                     |          |

| Project/          | Site:                    | Sta        | andard   | Chl       | orine     |               |         | Stream       | n ID:      |   | S        | -JR     | K-003       |                  |
|-------------------|--------------------------|------------|----------|-----------|-----------|---------------|---------|--------------|------------|---|----------|---------|-------------|------------------|
| Applicant/Ov      | wner:                    |            | EF       | PA        |           |               |         |              | State:     |   |          | Dela    | aware       |                  |
| Investigate       | or(s):                   | J.         | Keil, C  | C. Ba     | arrett    |               |         | City/Co      | ounty:     | New   | Castle   | e, Ne   | w Castle    | County           |
| Sampling          | Date:                    |            | 8/28/    | 2023      | 3         |               |         | Town         | nship:     |   |          | N       | I/A         |                  |
| Stream N          | lame:                    | UNT        | to Red   | l Lio     | n Creel   | k             |         | Lat          | itude:     |   |          | 39.60   | 01133       |                  |
| Drainage Area (   | $mi^2$ ):                |            | 0.1      | 39        |           |               |         | Long         | itude:     |   | -        | 75.6    | 38479       |                  |
| Slope Cate        | gory:                    | (1         | l) Low   | Grac      | lient     |               |         | Open-E       | nded?      | Up  | strean   | n       | Dov         | vnstream         |
| FERC Designation  | ation:                   |            | N        | /A        |           |               | Ι       | Delineation  | Type:      | x Cer   | nterlir  | ne      | x R/L       | Banks            |
| Stream Descrip    | tion:                    |            |          |           |           |               |         |              |            |   |          |         |             |                  |
| A naturalized str | eam flow                 | ing nort   | h from   | a cu      | lvert ju  | st north      | n of G  | overner Lea  | aRd. 7     | This stre   | eams i   | is we   | est of stre | eam S-           |
| JRK-002. The st   | ream flov                | vs throug  | ghout tl | he si     | te and t  | hrough        | out w   | etland W-Jl  | RK-00      | 1 and ev  | ventua   | ally c  | drains die  | rectly into      |
| the Red Lion Cre  | eek to the               | north.     | -        |           |           | -             |         |              |            |   |          | -       |             | -                |
| Stream Subsyst    | em                       | Strean     | n Origi  | in        |           |               | Pred    | lominant St  | urrour     | nding L   | andu     | se      |             |                  |
| x Perennial       | 1                        | Cu         | ılvert D | Disch     | arge      |               | х       | Forest       |            |   | Con      | nmer    | cial        |                  |
| Ephemer           | al                       | Po         | nd Dis   | char      | ge        |               |         | Field/Pastu  | ire        | х   | Indu     | istria  | ıl          |                  |
| Intermitte        | ent                      | Sv         | vamp, E  | Bog (     | or Wetl   | and           |         | Agricultura  | ıl         |   | Resi     | dent    | ial         |                  |
| Tidal             |                          | Sp         | ring Fe  | ed        |           |               | х       | Other        |            |   | Ro       | adw     | ay          |                  |
|                   |                          | x M        | ixture c | of Or     | rigins    |               | H       | Ieavv rain   | in the     | last 7 d  | avs?     |         | Yes         | x No             |
| Other:            |                          | Su         | rface V  | Vater     | r Runof   | ff            | ,       | Turbidity?   | x          | Clear   | Ot       | her:    |             |                  |
| Flow Pres         | sent? x                  | Yes        |          | 1         | No        |               |         | Flow Dire    | ction:     |   |          | No      | orth        |                  |
|                   |                          |            |          |           |           |               |         |              |            |   |          |         |             |                  |
| For linear proje  | ects. nrovi              | ide dime   | nsions : | at        | Right     | bank/I        | left b  | ank facing   | down       | stream  | Stre     | am      | Morpho      | logv             |
| centerlin         | e of stream              | m crossi   | ng       | Ī         | Right B   | ank (D        | o not   | Horiz.       | 1.0        | 0 Ft.   |          | R       | iffle %     | 15               |
|                   | _                        |            | 8        | i         | include   | flow d        | epth)   | Vert.        | 2.5        | 0 Ft  |          | Р       | 2001 %      | 60               |
|                   | OF BANK WI               | IDTH -     | /        |           | Left B    | ank (Do       | not     | Horiz        | 0.7        | 5 Ft.   |          | F       | Run %       | 25               |
|                   | DINARY HIG<br>ATER WIDTH | н          |          | i         | include   | flow d        | enth)   | Vert         | 1.5        | 0 Ft  | Can      | opy     | Cover       |                  |
|                   |                          | -/         |          | X         | Water/F   | Flow De       | enth    | v ert.       | 0.3        | $\frac{0}{0}$ Ft                                  |          | One     | n           |                  |
| DEPTH             |                          |            | DINARY H | IGH       | Bottom    | of Cha        | nnel '  | Width        | 8.0        | $\begin{array}{c c} 0 & Ft \\ \hline \end{array}$ |          | Part    | lv Open     |                  |
|                   |                          | / WA       | ATER DEP | PTH       | Ordinar   | v High        | Wate    | er Denth     | 1.0        | $\begin{array}{c c} 0 & Ft \\ \hline \end{array}$ | v        | Sha     | ded         |                  |
| TI ON             | DOTTON                   | [          | t        | -         | Fon of    | Bank V        | Vidth   | n Depui      | 9.3        | 5 Ft  | Is C     | han     | nel Natu    | uralized?        |
| DEPTH             | WIDTH                    |            |          | 6         | Ordinar   | v High        | Wate    | r Width      | 9.5        | $\frac{5}{0}$ Ft                                  | 15 0     | V       |             | No.              |
| -                 |                          | 1          |          | -         | Fotal D   | y mgn<br>enth | wat     |              | 1.8        | $\frac{0}{0}$ Ft                                  | A<br>Fin | Fich    | Procont     | 10               |
| Macroinver        | tahratas                 | Procont    | 2 v      | Vo        | rotur D   | N             | 0       |              | 1.0        | 0 10  | v        | V       |             | No               |
| Enhemer           | ontera                   | D1         | • A      | - 1 C     | .o<br>Tri | chnoter       | 0<br>ra | Other        |            |   | A<br>V   | Vater   | strider     | 110              |
| A quatic Vegeta   | tion - Ind               | licate D   | omina    | a<br>nt C | over T    | vno           | a       | Other        | •          |   |          | ater    | struct      |                  |
| Aquatic Vegeta    | 1011 - 1110              | Rooted     | Emero    | nn C      |           | ype           | Ro      | oted Floatir | να         |   |          | Δt      | tached A    | 1020             |
| x N/A             |                          | Rooted     | Submor   | gent      |           |               |         | opting Algo  | 1 <u>g</u> |   |          | Au      | rao Eloat   | ina              |
| Doution of Street | a with A                 | motio V    | Submer   | gem       |           |               | 11      | Oatilig Alga | .e         |   |          | 1.1     | lee Piloai  | mg               |
| Pinorion Buffor   |                          | Qualle V   | Indico   | on (9     | 0).       | nt Cov        | or Ta   | mo And Sr    | noine      | _   |          |         |             |                  |
| Riparian Dune     | veg. (                   | 00 F (.) - | muica    | ite D     | omma      |               |         | pe Anu Sp    | Jecles     |   |          |         |             |                  |
| Traca             | 4                        | aan muhn   |          | alan      | . niana   |               |         | Traccoct     |            | Mion  | ostoo    | <b></b> |             |                  |
| ffees.            | A                        | cerrubri   | um, Jug  | gians     | snigra    |               |         | JIASSES.     |            | MICI  | osiegi   | um      | vimineun    | n                |
|                   |                          |            |          |           |           |               |         |              |            |   |          |         |             |                  |
| Chaphar           | Lonice                   | era more   | owii, Li | inder     | ra benz   | oin,          | Ha      | "haaaana     | Per        | sicaria   | sp., P   | hrag    | gmites ai   | ıstralis,        |
| Sillubs.          |                          | Acer       | saccha   | rinu      | т         |               | пе      | Toaceous.    | Boeh       | meria c   | ylindr   | rica,   | Geum co     | anadense         |
| Inorgania Suba    | trata Car                |            | ta (Add  | 40 1      | 1000/ )   |               | ()may   | nio Subatu   | ata Ca     |   | nta (N   | Jan     | bo <100     |                  |
| morganic Subs     |                          | nponen     |          |           | 100%)     | . 0/          | Orga    | True o       |            | ompone  | nus (r   | ay      | De <100     | )                |
| <u>I ype</u>      | Diar                     | neter      |          | omp       | DOSILIOI  | <u>1 70</u>   |         | <u>1 ype</u> |            | laracte   | ristics  | 5       | Compo       | <u>SIUOII 70</u> |
| Deurock           | 10                       | -          |          |           |           |               | Ţ       | Datmitura    | Stick      | s, Wood   | l, Coa   | irse    | l           | 10               |
| Cohble            | 10                       | +          |          |           | 10        |               |         | Jeintus      | P          | lant Ma   | terial   |         | l           | 10               |
| Cooble            | 2.5                      | - 10       |          |           | 20        |               |         |              | D1         | alt V   |          |         |             |                  |
| Sand              | 0.1                      | - 2.5      |          |           | 20        |               | Μ       | uck-Mud      | Bla        | ick, ver  | y Fin    |         | l           |                  |
| Salid             | 0.06-                    | $\sim 100$ |          |           | 25        |               |         |              | Org        | game M  | ateria   | .1      |             |                  |
| Siit              | 0.004-0                  | 1.00 mm    |          |           | 33        |               |         | Marl         | Grey,      | Shell F   | ragme    | ents    | l           |                  |
| Clay              | <0.00                    | 74 IIIII   |          |           |           |               |         |              |            |   |          |         |             |                  |

| Project                            | /Site:              | S                   | tandard               | d Chl           | orine            |                        |                 | Stream                   | n ID:         |   | S                            | -JR                   | K-004                               |               |
|------------------------------------|---------------------|---------------------|-----------------------|-----------------|------------------|------------------------|-----------------|--------------------------|---------------|---|------------------------------|-----------------------|-------------------------------------|---------------|
| Applicant/Or                       | wner:               |                     | E                     | PA              |                  |                        |                 |                          | State:        |   |                              | Dela                  | ware                                |               |
| Investigat                         | or(s):              |                     | J. Keil, (            | C. Ba           | rrett            |                        |                 | City/Co                  | ounty:        | New   | Castle                       | , Ne                  | w Castle                            | County        |
| Sampling                           | Date:               |                     | 8/29                  | /2023           | 3                |                        |                 | Town                     | nship:        |   |                              | N                     | /A                                  |               |
| Stream N                           | lame:               | UN                  | T to Ree              | d Lioi          | n Cre            | ek                     |                 | Lat                      | itude:        |   | (***                         | 39.59                 | 98905                               |               |
| Drainage Area (                    | $(mi^2)$ :          |                     |                       |                 |                  |                        |                 | Long                     | itude:        |   | -                            | 75.6                  | 39431                               |               |
| Slope Cate                         | gory:               | (                   | (3) High              | Grad            | lient            |                        |                 | Open-E                   | nded?         | Up  | strean                       | n                     | Dow                                 | nstream       |
| FERC Designation                   | ation:              |                     | N                     | I/A             |                  |                        | Ι               | Delineation              | Type:         | x Ce  | nterlin                      | ne                    | x R/L                               | Banks         |
| Stream Descrip                     | tion:               |                     |                       |                 |                  |                        |                 |                          |               |   |                              |                       |                                     |               |
| An ephemeral st<br>flows west down | ream tha<br>a steep | at origin<br>embank | ates at a<br>cment w  | culve<br>here i | ert bo<br>t drai | rdering t<br>ns into w | he Tr<br>vetlan | ash Tech pr<br>d W-JRK-0 | operty<br>01. | east of   | the st                       | udy a                 | area. The                           | stream        |
| Stream Subsyst                     | em                  | Strea               | ım Orig               | in              |                  |                        | Pred            | lominant S               | urroui        | nding L   | andu                         | se                    |                                     |               |
| Perennia                           | 1                   | x C                 | Culvert I             | Discha          | arge             |                        | х               | Forest                   |               |   | Com                          | mer                   | cial                                |               |
| x Ephemer                          | al                  | F                   | Pond Dis              | scharg          | ge               |                        |                 | Field/Pastu              | ire           | Х   | Indu                         | stria                 | 1                                   |               |
| Intermitte                         | ent                 | S                   | Swamp, I              | Bog c           | or We            | etland                 |                 | Agricultura              | ıl            |   | Resi                         | denti                 | ial                                 |               |
| Tidal                              |                     | S                   | Spring F              | ed              |                  |                        | х               | Other                    |               |   | Ro                           | adwa                  | ay                                  |               |
|                                    |                     | Ν                   | Mixture               | of Or           | igins            |                        | I               | Ieavy rain :             | in the        | last 7 d  | lays?                        |                       | Yes                                 | x No          |
| Other:                             |                     | x S                 | Surface V             | Water           | Run              | off                    | '               | Turbidity?               |               | Clear   | Otl                          | her:                  | N                                   | /A            |
| Flow Pres                          | sent?               | Yes                 |                       | x N             | No               |                        |                 | Flow Dire                | ction:        |   |                              | W                     | est                                 |               |
|                                    | _                   | _                   | _                     | _               | _                | _                      | _               | _                        |               |   | _                            | _                     | _                                   |               |
| For linear proj                    | ects, pro           | vide dim            | nensions              | at              | Righ             | t bank/I               | Left b          | ank facing               | down          | stream  | Stre                         | am I                  | Morphol                             | ogy           |
| centerlin                          | e of stre           | am cross            | sing                  | F               | Right            | Bank (D                | o not           | Horiz.                   | 1.0           | 0 Ft.   |                              | Ri                    | iffle %                             | 60            |
| N TOP                              | OF BANK             | WIDTH               | 1                     | 1               | nclud            | le flow d              | epth)           | Vert.                    | 2.5           | 0 Ft.   |                              | P                     | ool %                               | 10            |
|                                    | DINARY HI           | IGH                 |                       |                 | Left I           | Bank (Do               | o not           | Horiz.                   | 1.0           | 0 Ft.   | 0                            | R                     | lun %                               | 30            |
|                                    | ATER WIDT           | <sup>™</sup> -//    |                       | 1               | nclud            | le flow d              | epth)           | Vert.                    | 2.5           | 0 Ft.   | Can                          | opy                   | Cover                               |               |
| TOTAL                              |                     | /                   | •                     | V               | Nater.           | /Flow De               | epth            | GT 7* 1.1                | 0.0           | 0 Ft.   | $\square$                    | Oper                  | n                                   |               |
|                                    |                     |                     | WATER DE              | PTH             | Sottor           | n of Cha               | nnel            | Width                    | 5.0           | $\frac{0}{1}$ Ft.   |                              | Partl                 | ly Open                             |               |
|                                    |                     |                     | ŧ                     |                 | Ordina           | ary High               | Wate            | er Depth                 | 1.0           | 0 Ft.   | X                            | Shac                  | led                                 | 11 10         |
| FLOW                               | BOTTOM              |                     |                       | 1               | op o             | f Bank V               | Vidth           | XX 7* 1.1                | 7.0           | $\frac{0}{1}$ Ft.   | Is C                         | hani                  | nel Natu                            | ralized?      |
|                                    |                     | -                   |                       | С<br>т          |                  | ary High               | wate            | er width                 | 5.8           | $\begin{array}{c c} 0 & Ft. \\ \hline 0 & Ft \end{array}$ | X                            | Υe                    | Decements                           | NO            |
| Maanainnan                         | tobrotoc            | Duccou              | .49                   |                 | lotal            | Depth                  | -               |                          | 2.3           | 0 Γι.   | F IN                         | FISH<br>Ve            | Present                             | No            |
| Enhomor                            | contora             | s r reser           | ll:<br>Placonta       | ro              |                  | richnotor              | 0<br>20         | Other                    |               |   |                              | 16                    | 28 X                                | INU           |
| A quatic Vegeta                    | tion - In           | dicate              | Domina                | nt Co           | over '           | Type                   | a               | Other                    | •             |   |                              |                       |                                     |               |
| Aquatic vegeta                     | 1011 - 11           |                     | ed Emer               | gent            | UVEI             | гуре                   | Ro              | oted Floatir             | ια            |   |                              | Δtt                   | ached Al                            | gae           |
| x N/A                              |                     | Rooted              | l Subme               | rgent           |                  |                        | Fl              | oating Alga              | <u>е</u>      |   |                              | Fr                    | ee Floati                           | ng            |
| Portion of Stream                  | m with A            | Aquatic             | Vegetati              | ion (%          | 6).              |                        | 11              |                          | .C            |   |                              | 11                    |                                     | 115           |
| Rinarian Buffe                     | r Veg               | (60  Ft)            | - Indic               | ate D           | omin             | ant Cov                | er Ty           | ne And Sr                | necies        |   |                              |                       |                                     |               |
|                                    |                     |                     | Indici                |                 |                  |                        |                 | perina op                |               |   |                              |                       |                                     |               |
| Trees:                             | Acer<br>Liriod      | rubrum<br>endron    | , Platan<br>tulipifer | us oc<br>a, Qu  | ciden<br>ercus   | talis,<br>s rubra      | (               | Grasses:                 |               | Micr  | ostegi                       | um v                  | vimineum                            | :             |
| Shrubs:                            | Ros                 | sa multij           | flora, Li             | ndera           | ı benz           | zoin                   | He              | rbaceous:                | T<br>mi       | Toxicod<br>ultiflora<br>Cel                               | lendro<br>1 , Boe<br>lastrus | n raa<br>hme<br>s orb | dicans, R<br>ria cylina<br>iculatus | osa<br>Irica, |
| Inorganic Subs                     | trate Co            | mpone               | nts (Ad               | d to 1          | 00%              | )                      | Org             | anic Substr              | ate Co        | ompone  | nts (N                       | /lav                  | be <100)                            |               |
| Type                               | Dia                 | meter               |                       | Comp            | ositic           | on %                   | ~ 5             | Туре                     | Cl            | aracte  | ristics                      | 5                     | Compos                              | sition %      |
| Bedrock                            |                     | -                   |                       |                 |                  |                        |                 |                          |               |   |                              | -                     |                                     |               |
| Boulder                            | 1                   | 0" +                |                       |                 |                  |                        | I               | Detritus                 | Stick         | s, Wood   | l, Coa                       | rse                   | 4                                   | .0            |
| Cobble                             | 2.5                 | " - 10"             |                       |                 | 15               |                        |                 |                          | P             | lant Ma   | terial                       |                       |                                     |               |
| Gravel                             | 0.1"                | " - 2.5"            |                       |                 | 30               |                        |                 | 1.35.1                   | Bla           | ack, Ver  | ry Fine                      | e                     |                                     |               |
| Sand                               | 0.06                | 5-2 mm              |                       |                 | 20               |                        | M               | uck-Mud                  | Or            | ganic M   | lateria                      | .1                    |                                     |               |
| Silt                               | 0.004-              | -0.06 mi            | m                     |                 | 35               |                        |                 | Ma 1                     | C             | 01 11 7   | ,                            |                       |                                     |               |
| Clay                               | < 0.0               | 004 mm              |                       |                 |                  |                        |                 | Mari                     | Grey,         | Shell F   | ragme                        | ents                  |                                     |               |

| Project/           | Site:      | S            | Standar                                | rd Chl                             | lorine                   | 9           |              | Stream       | n ID:    |   | <b>S-</b>      | JRK-0            | 05        |                |
|--------------------|------------|--------------|--|------------------------------------|--------------------------|-------------|--------------|--------------|----------|---|----------------|------------------|-----------|----------------|
| Applicant/Ov       | wner:      |              | ]                                      | EPA                                |                          |             |              |              | State:   |   | Γ              | Delawar          | e         |                |
| Investigate        | or(s):     |              | J. Keil,                               | , C. Ba                            | arrett                   |             |              | City/Co      | ounty:   | New   | Castle,        | New C            | astle     | County         |
| Sampling           | Date:      |              | 8/2                                    | 9/202                              | 3                        |             |              | Town         | nship:   |   |                | N/A              |           |                |
| Stream N           | lame:      | UN           | T to R                                 | ed Lic                             | on Cre                   | ek          |              | Lat          | itude:   |   | 39             | 9.59892          | 26        |                |
| Drainage Area (    | $mi^2$ ):  |              |  |                                    |                          |             |              | Long         | itude:   |   | -7             | 5.63956          | 51        |                |
| Slope Cate         | gory:      |              | (3) Hig                                | h Gra                              | dient                    |             |              | Open-E       | nded?    | Up  | stream         |                  | Dow       | nstream        |
| FERC Designation   | ation:     |              |  | N/A                                |                          |             | Ι            | Delineation  | Type:    | x Cei   | nterline       | x x              | R/L       | Banks          |
| Stream Descrip     | tion:      |              |  |                                    |                          |             |              |              |          |   |                |                  |           |                |
| An ephemeral st    | ream tha   | t origir     | nates at                               | a culv                             | vert bo                  | ordering t  | he Tr        | ash Tech pr  | operty   | east of   | the stu        | dv area          | . The     | stream         |
| flows west down    | a steep    | emban        | kment v                                | where                              | it dra                   | ins into v  | vetlan       | d W-JRK-0    | 01. Th   | is stream   | n is ve        | rv erode         | ed an     | d is           |
| located just north | h of strea | ım S-JI      | RK-004                                 |                                    |                          |             |              |              |          |   |                |                  |           |                |
| Stream Subsyst     | em         | Stre         | am Ori                                 | oin                                |                          |             | Pred         | lominant Si  | irrom    | nding L   | andus          | e                |           |                |
| Perennial          | 1          | x            | Culvert                                | Disch                              | arge                     | _           | x            | Forest       |          |   | Comr           | nercial          |           |                |
| x Enhemer          | -<br>al    |              | Pond D                                 | ischar                             | ange                     |             | A            | Field/Pastu  | ire      | x   | Indus          | trial            |           |                |
| Intermitte         | ent        |              | Swamp                                  | Bog                                | $\frac{50}{\text{or W}}$ | etland      |              | A oricultur  | al       | X   | Resid          | ential           |           |                |
| Tidal              |            |              | Swamp<br>Spring                        | Fed                                | 01 111                   | cuana       | v            | Other        |          |   | Roa            | dway             |           |                |
| Tidui              |            |              | Mixture                                | $\frac{1}{2} \text{ of } \Omega_1$ | rigins                   |             | Λ            | Loovy roin   | in tha   | loct 7 d  | ave?           |                  | 65        | v No           |
| Other:             |            | v            | Surface                                | Wate                               | r Run                    | off         | , <b>1</b> . | Tumbidity?   |          | Clear   | ays:<br>Oth    | er.              | C5<br>N   |                |
| Flow Dro           | aan 49     | Voc          | Surface                                | wate                               | No.                      | 011         |              | Flow Dive    | ations   | Cicai   | Oth            | Wost             | 11/       | A              |
| Flow Flex          | sent:      | 105          |  | X.                                 | INU                      |             |              | Flow Direc   | cuoli:   |   |                | west             |           |                |
| Eau lineau nuais   |            |              | ·· · · · · · · · · · · · · · · · · · · | a a <b>t</b>                       | Diak                     | t honk/     | oft b        | ank faaina   | down     | atraam  | Streep         | m Mor            | mhol      | 0.001          |
| For linear proje   | o of strog | m cros       | nension                                | s at                               | Rigi.<br>Diaht           | Domlt (D    |              |              |          |   | Strea          | Diffle           |           | 20             |
| centerini          |            |              | sing                                   |                                    | inclu                    | balik (D    | onth)        | Nort         | 2.5      |   |                | Riffe            | 70<br>0/  | 50             |
| TOP (              | OF BANK V  | WIDTH .      | 1                                      | -                                  | Loft                     | Domin (D)   | epui)        | Velt.        | 3.3      | $\begin{array}{c c} 0 & \Gamma l. \\ 0 & Et \end{array}$  |                | Pup (            | 70<br>)/. | 30             |
| OR                 | DINARY HI  | GH           |  |                                    | Left .                   | balik (Do   | ) IIOt       | HOIIZ.       | 1.0      | $0$ $\Gamma_{1}$  | Cono           | Kull 9           | /0        | 30             |
|                    | ATER WIDT  | +            |  |                                    | Wata                     | Je now u    | eptii)       | vert.        | 5.5      | 0 Ft.   | Cano           | py Cov           | er        |                |
|                    |            | _/_          |  |                                    | w ater                   | Flow D      |              | W7: 441-     | 0.0      | 0 Ft.   |                | pen              |           |                |
|                    |            | /            | WATER D                                | EPTH                               | Botto                    |             | mei          |              | 3.5      | 0 Ft.   | P              | artiy O          | pen       |                |
|                    |            | í            | ŧ                                      |                                    | Orain                    | ary High    | wate         | er Deptn     | 2.0      | 0 FL.   | X S            | naded            | T         | 1' 10          |
| FLOW               | BOTTOM     |              |  |                                    | $\frac{1000}{0}$         | of Bank V   | viath        | XX7' 1.1     | 5.5      | $\begin{array}{c c} 0 & Ft. \\ \hline 4 & Ft \end{array}$ | Is Cn          | annel r          | Natur     | anzed :        |
|                    |            | -            |  | -                                  | Orain                    | ary High    | wate         | er width     | 4.6      | 4 $Ft$  | X              | Yes              |           | NO             |
|                    |            | D            | 10                                     |                                    | Total                    | Deptn       |              |              | 3.5      | 0 Ft.   | Fin F          | ish Pre          | sent      |                |
| Macroinver         | tebrates   | Prese        | nt?                                    | Ye                                 | ès 🔤                     | X N         | 0            | 0.1          |          |   |                | Yes              | Х         | No             |
| Ephemer            | optera     | 1            | Plecopt                                | era                                | 1                        | richpoter   | ra           | Other        | :        | _   | _              |                  | _         | _              |
| Aquatic Vegeta     | tion - In  | dicate       | Domin                                  | lant C                             | over                     | Туре        | D            | 1.771        |          |   |                | 4 1              | 1.4.1     |                |
| x N/A              |            | Root         | ed Eme                                 | rgent                              |                          |             | Ro           | oted Floatin | ng       |   |                | Attache          | a Al      | gae            |
| D I CC             |            | Roote        | d Subm                                 | ergen                              | t                        |             | FI           | oating Alga  | e        |   |                | Free F           | loati     | ng             |
| Portion of Stream  | m with A   | quatic       | Vegeta                                 | tion (                             | %):                      |             | T            |              | •        | _   | _              |                  | _         | _              |
| Riparian Bullel    | rveg. (    | (OV F t.     | ) - Indi                               | cate L                             | Jomir                    | iant Cov    | er 1y        | pe And Sp    | Decles   |   |                |                  |           |                |
| m                  | Acer       | rubrun       | n, Plata                               | nus o                              | ccidei                   | ntalis,     |              | -            |          | DI  |                |                  |           |                |
| Trees:             | Acer       | saccha       | irinum,                                | Pruni                              | us ser                   | otina,      | C            | frasses:     |          | Ph  | ragmite        | es austro        | alis      |                |
|                    |            | J            | ugians                                 | nıgra                              |                          |             |              |              |          |   |                |                  |           |                |
| <b>CI</b> 1        | Rose       | a multi      | flora, L                               | indera                             | a benz                   | zoin,       |              |              | 1        | loxicod   | endron         | radica.          | ns, R     | osa            |
| Shrubs:            |            |              | Lonicer                                | ra sp.                             |                          |             | Не           | rbaceous:    |          | ultiflora   | , Boeh         | meria c          | zylina    | lrica,         |
|                    |            |              |  |                                    | 4000                     |             | 0            |              | Ono      | clea sen  | sibilis,       | Smilax           | rotu      | ıdıfolia       |
| Inorganic Subst    | trate Co   | mpone        | ents (A                                | dd to                              | 100%                     | b)          | Orga         | anic Substr  | ate Co   | ompone  | nts (M         | ay be <          | (100)     |                |
| <u>Type</u>        | Dia        | <u>meter</u> |  | <u>Com</u>                         | positi                   | <u>on %</u> |              | <u>Type</u>  | <u>C</u> | naracte   | <u>ristics</u> | <u><u>Co</u></u> | mpos      | <u>ition %</u> |
| Bedrock            |            | -            |  |                                    |                          |             |              |              | Stick    | s, Wood   | l, Coar        | se               |           | _              |
| Boulder            | 1(         | J" +         |  |                                    | 15                       |             | I            | Detritus     | Р        | lant Ma   | terial         |                  | 2         | 5              |
| Cobble             | 2.5"       | ' - 10"      |  |                                    | 10                       |             |              |              |          |   |                |                  |           |                |
| Gravel             | 0.1"       | - 2.5"       |  |                                    | 40                       |             | М            | uck-Mud      | Bla      | ack, Vei  | y Fine         |                  |           |                |
| Sand               | 0.06       | -2 mm        |  |                                    | 25                       |             |              |              | Org      | ganic M   | aterial        |                  |           |                |
| Silt               | 0.004-     | 0.06 m       | m                                      |                                    | 10                       |             |              | Marl         | Grev     | Shell F   | ragmer         | nts              |           |                |
| Clay               | < 0.0      | 04 mm        | L                                      |                                    |                          |             |              |              | cicy,    | 2.10111   | - agriner      |                  |           |                |

| Project/Site:                     | Standard Chlorine     | Stream ID:        |    | S-JRK-0      | 06 R | leach 1      |
|-----------------------------------|-----------------------|-------------------|----|--------------|------|--------------|
| Applicant/Owner:                  | EPA                   | State:            |    | Dela         | awaı | re           |
| Investigator(s):                  | J. Keil, C. Barrett   | City/County:      | Ne | w Castle, Ne | ew C | astle County |
| Sampling Date:                    | 8/29/2023             | Township:         |    | N            | I/A  |              |
| Stream Name:                      | UNT to Red Lion Creek | Latitude:         |    | 39.5         | 5994 | 3            |
| Drainage Area (mi <sup>2</sup> ): |                       | Longitude:        |    | -75.6        | 5397 | 13           |
| Slope Category:                   | (1) Low Gradient      | Open-Ended?       |    | Upstream     |      | Downstream   |
| FERC Designation:                 | N/A                   | Delineation Type: | x  | Centerline   | Х    | R/L Banks    |
| Stream Description:               |                       |                   |    |              |      |              |

A naturalized stream channel flowing north originating from a spring seep within the south western part of wetland W-JRK-001. The stream connects with stream S-JRK-003 further north.

| Stream | n Subsystem     | Str | eam Orig | gin    |            | Pred | lominant  | Surro   | undir  | ng La | anduse    |       |   |    |
|--------|-----------------|-----|----------|--------|------------|------|-----------|---------|--------|-------|-----------|-------|---|----|
|        | Perennial       |     | Culvert  | Disch  | arge       | Х    | Forest    |         |        |       | Commen    | rcial |   |    |
|        | Ephemeral       |     | Pond Di  | scharg | ge         |      | Field/Pas | ture    |        | Х     | Industria | al    |   |    |
| х      | Intermittent    |     | Swamp,   | Bog    | or Wetland |      | Agricultu | ıral    |        |       | Resident  | tial  |   |    |
|        | Tidal           | Х   | Spring F | Fed    |            | Х    | Other     |         |        |       | Roadw     | vay   |   |    |
|        |                 | Х   | Mixture  | of Or  | rigins     | H    | Ieavy rai | n in th | e last | 7 da  | ays?      | Yes   | Х | No |
| Other: |                 |     | Surface  | Water  | r Runoff   |      | Turbidity | ? x     | Cle    | ar    | Other:    |       |   |    |
|        | Flow Present? x | Yes | ;        | l      | No         |      | Flow Dir  | ection  |        |       | N         | orth  |   |    |
|        |                 |     |          |        |            |      |           |         |        |       |           |       |   |    |

| For linear proje      | ects, provide dimens | sions at  | Right   | bank/L   | left b | ank f   | acing    | downstre    | eam    | Strea   | am Mo     | rpholo  | ogy               |
|-----------------------|----------------------|-----------|---------|----------|--------|---------|----------|-------------|--------|---------|-----------|---------|-------------------|
| centerlin             | e of stream crossing | 5         | Right E | Bank (D  | o not  | Но      | oriz.    | 1.00        | Ft.    |         | Riffle    | %       |                   |
| I TOP                 | OF BANK WIDTH        | ,         | include | flow d   | epth)  | V       | ert.     | 0.75        | Ft.    |         | Pool      | %       | 60                |
|                       |                      |           | Left B  | ank (Do  | o not  | Но      | oriz.    | 1.00        | Ft.    |         | Run       | %       | 40                |
|                       | ATER WIDTH           |           | include | flow de  | epth)  | V       | ert.     | 0.75        | Ft.    | Can     | opy Co    | ver     |                   |
| TOTAL                 |                      |           | Water/I | Flow De  | epth   |         |          | 0.25        | Ft.    |         | Open      |         |                   |
| DEPTH                 |                      | NARY HIGH | Bottom  | of Cha   | nnel V | Width   | 1        | 2.50        | Ft.    | ]       | Partly C  | pen     |                   |
| · · · · ·             | WAT                  | ER DEFIN  | Ordina  | ry High  | Wate   | r Dep   | oth      | 0.75        | Ft.    | X       | Shaded    |         |                   |
| FLOW                  | BOTTOM               | ,         | Top of  | Bank W   | /idth  |         |          | 4.50        | Ft.    | Is Cl   | hannel    | Natur   | alized?           |
| DEPTH                 | WIDTH                |           | Ordina  | ry High  | Wate   | r Wic   | lth      | 4.50        | Ft.    | х       | Yes       |         | No                |
| 1                     | 1                    |           | Total D | Depth    |        |         |          | 1.00        | Ft.    | Fin l   | Fish Pro  | esent?  | )                 |
| Macroinver            | tebrates Present?    | x Y       | es      | N        | 0      |         | -        |             |        |         | Yes       | х       | No                |
| Ephemer               | roptera Plec         | coptera   | Tri     | chpoter  | a      | х       | Other    | :           |        | Wa      | ater Stri | ders    |                   |
| Aquatic Vegeta        | tion - Indicate Do   | minant (  | Cover T | уре      |        |         |          |             | -      | -       |           |         |                   |
| N/A                   | Rooted I             | Emergent  | t       |          | Ro     | oted I  | Floatir  | ng          | х      |         | Attach    | ed Alg  | gae               |
| 11/21                 | Rooted Su            | ıbmerger  | nt      |          | Fle    | oating  | g Alga   | e           |        |         | Free 1    | Floatii | ng                |
| Portion of Stream     | m with Aquatic Ve    | getation  | (%):    |          |        |         |          | 20          |        |         |           |         |                   |
| <b>Riparian Buffe</b> | r Veg. (60 Ft.) - I  | ndicate ] | Domina  | nt Cov   | er Ty  | pe A    | nd Sp    | oecies      |        |         |           |         |                   |
| Trees                 | Acer rubrun          | n, Platan | us      |          | C      | trace   |          | Micros      | tegiu  | m vin   | nineum,   | Phrag   | gmites            |
| fices.                | occide               | ntalis    |         |          |        | 11 4550 |          |             |        | aus     | stralis   |         |                   |
|                       | Lindera benzoin      | Lonice    | ra sn   |          |        |         |          | Boeh        | meri   | a cvli  | ndrica    | Impat   | iens              |
| Shrubs:               | Rosa mu              | ltiflora  | a sp.,  |          | Her    | rbace   | ous:     | ca          | pensi  | s. On   | oclea se  | ensibil | lis               |
| Inorganic Subs        | trate Components     | (Add to   | 100%)   |          | Orgo   | nic S   | uhetr    | ate Com     | onai   | nte (N  | lov ho    | -100)   |                   |
|                       | Diameter             | Com       | nositio | n %      | Orga   | Tvne    | <b>1</b> | Char        | acter  | ristics |           | mnos    | ition %           |
| Bedrock               | -                    | <u></u>   |         | <u> </u> |        | <u></u> |          | <u>enur</u> | uever  | 150105  |           |         | <u>101011 / 0</u> |
| Boulder               | 10" +                |           |         |          | Г      | Detriti | us       | Sticks, V   | Vood   | , Coa   | rse       | 5       |                   |
| Cobble                | 2.5" - 10"           |           |         |          |        |         |          | Plant       | : Mat  | erial   |           | -       |                   |
| Gravel                | 0.1" - 2.5"          |           |         |          |        |         |          | Black.      | Ver    | y Fine  | e         | -       | 0                 |
| Sand                  | 0.06-2 mm            |           | 10      |          | Mı     | ick-N   | lud      | Organ       | ic Ma  | ateria  | 1         | 6       | 0                 |
| Silt                  | 0.004-0.06 mm        |           | 90      |          |        |         |          |             | 11 5   |         |           |         |                   |
| Clay                  | <0.004 mm            |           |         |          |        | Marl    |          | Grey, Sh    | ell Fr | agme    | ents      |         |                   |

|                | Project/     | Site:          |                | Star   | ıdar  | d Cł  | ılorine   | :   |          |          | Stre          | am ID  | :                |        | S-JR  | K-00                      | )6 R        | leach   | 2        |
|----------------|--------------|----------------|----------------|--|-------|---|---|---|----------|----------|---------------|--|------------------|--------|---|---------------------------|-------------|---------|----------|
| Ap             | plicant/Ov   | vner:          |                |  | E     | EPA   |   |   |          |          |               | State  | :                |        |   | Dela                      | iwar        | re      |          |
| ]              | Investigato  | or(s):         |                | J. F   | Keil, | C. B  | Barrett   |   |          |          | City/C        | County   | : N              | lew (  | Castle  | e, Ne                     | w C         | lastle  | County   |
| S              | Sampling I   | Date:          |                |  | 8/30  | )/202   | 23  |   |          |          | Tov           | vnship   | :                |        |   | Ν                         | /A          |         |          |
|                | Stream N     | ame:           | U              | NT t   | o Re  | d Li  | on Cre  | ek  |          |          | L             | atitude  | :                |        |   | 39.60                     | )015        | 51      |          |
| Draina         | age Area (:  | $mi^2$ ):      |                |  |       |   |   |   |          |          | Lor           | gitude   | :                |        |   | -75.6                     | 392         | 64      |          |
| S              | lope Categ   | gory:          |                | (1)  | Low   | / Gra   | adient  |   |          |          | Open-         | Ended  | ?                | Ups    | streau  | n                         |             | Dow     | nstream  |
| FERC           | C Designa    | tion:          |                |  | Ν     | J/A   |   |   |          | Γ        | Delineation   | n Type   | : x              | Cen    | nterli  | ne                        | х           | R/L     | Banks    |
| Strean         | n Descrip    | tion:          |                |  |       |   |   |   |          |          |               |  |                  |        |   |                           |             |         |          |
| This da        | ata sheet r  | epresents      | data           | coll   | ected | d for   | the se  | cor   | nd, no   | rthern   | reach of      | stream   | S-JF             | RK-0   | 06. T   | his r                     | each        | n diffe | ered     |
| from th        | ne first, so | uthern rea     | ach d          | lue to   | o its | char  | nge in t  | bed   | l and b  | oank,    | substrate,    | and su   | rroui            | nding  | g veg   | etatic                    | )n. ]       | This r  | each had |
| a wide         | r more def   | fined bed      | and            | bank   | ζ.    |   |   |   |          |          |               |  |                  |        |   |                           |             |         |          |
| Strean         | n Subsyste   | em             | Stre           | eam  | Ori   | gin   |   |   |          | Pred     | ominant       | Surro  | undi             | ng La  | andu  | ise                       |             |         |          |
|                | Perennial    | l              |                | Cul  | vert  | Disc  | harge   |   |          | х        | Forest        |  |                  |        | Con   | nmer                      | cial        |         |          |
|                | Ephemera     | al             |                | Pon  | d Di  | scha  | irge  |   |          |          | Field/Pas     | ture   |                  | х      | Indu  | ıstria                    | 1           |         |          |
| х              | Intermitte   | ent            | х              | Swa  | amp,  | Bog   | g or We   | etla  | ind      |          | Agricultu     | ıral   |                  |        | Res   | ident                     | ial         |         |          |
|                | Tidal        |                | х              | Spri   | ing F | Fed   |   |   |          | х        | Other         |  |                  |        | Ro  | badw                      | ay          |         |          |
|                |              |                | х              | Mix  | ture  | of C  | Drigins   |   |          | I        | Ieavy rai     | n in th  | e las            | t 7 da | ays?  | х                         | Ŷ           | /es     | x No     |
| Other:         |              |                |                | Sur  | face  | Wat   | er Run  | off   | 2        | ,        | Furbidity     | ? x  | Cle              | ear    | Ot  | her:                      |             | Clo     | udy      |
|                | Flow Pres    | sent? x        | Yes            |  |       |   | No  |   |          |          | Flow Dir      | ection   | :                |        |   | No                        | orth        |         |          |
|                |              |                |                |  |       |   |   |   |          |          |               |  |                  |        |   |                           |             |         |          |
| For li         | near proie   | ects, provi    | de di          | men  | sions | at  | Righ  | t b   | ank/I    | Left b   | ank facin     | g dow  | nstre            | eam    | Stre  | eam 1                     | Moi         | rphol   | ogv      |
|                | centerlin    | e of stream    | n cro          | ssin   | g     |   | Right   | Ba  | ınk (D   | o not    | Horiz.        | 1  | .00              | Ft.    |   | Ri                        | iffle       | %       | 30       |
|                |              |                |                |  |       |   | includ  | le f  | low d    | epth)    | Vert.         | 3  | .00              | Ft.    |   | Р                         | ool         | %       | 30       |
|                | TOP          | OF BANK WI     | DTH            | -  | /     | Right bank/Left bank facing downstream       Street         Origin       Predominant Surrounding veg         Predominant Surrounding Landu         erigin       Predominant Surrounding Landu         erigin       Predominant Surrounding Landu         erigin       Predominant Surrounding Landu         prigin       Cor         Discharge       Field/Pasture       x       Indu         pred       x       Cor         Discharge       Field/Pasture       x       Indu         Agricultural       Res         Gred       x       Other       Res         Gred       x       Other       Res         Gred       x       Other       Res         Gred       x       Other         Right bank/Left bank facing downstream       Street         Right Bank (Do not       Horiz       1.00 <th colspa<="" td=""><td>R</td><td>liin</td><td>%</td><td>40</td></th> |   |   |          |          |               |  |                  |        | <td>R</td> <td>liin</td> <td>%</td> <td>40</td> | R                         | liin        | %       | 40       |
|                |              | DINARY HIGH    | +              |  | /     |   | Predominant Surrounding vegetation         Predominant Surrounding Landuse         Discharge       X       Forest       Commending transmission         Discharge       X       Forest       Commending transmission         Discharge       Field/Pasture       x       Industria         Residen         Aggin of Wetland       Agricultural       Residen         Bod of Wetland       Agricultural       Residen         Meavy rain in the last 7 days?       x         Vater Runoff       Turbidity?       x       Clear       Other:         No       Flow Direction:       Nother         Agint bank/Left bank facing downstream       Stream         Right Bank (Do not       Horiz.       1.00       Ft.       R       R         include flow depth)       Vert.       3.00       Ft.       R       Part         Utel Bank (Do not       Horiz.       1.00       Ft.       S       Part         Ordinary High Water Depth  |   |          |          |               |  |                  |        |   | Cov                       | ver         | 10      |          |
| 1              | _/           | RIER NUCH      | - /            | $\square$  |       |   | Water   | Definition Type: A period of the period o |          |          |               |  |                  |        |   |                           |             |         |          |
| TOTAL<br>DEPTH | X            |                | _/_            | ORDI   | NARY  | HIGH  | Rottor  | Defineation Type:       x       Centernine       x       INTE-         second, northern reach of stream S-JRK-006. This reach diffen ned and bank, substrate, and surrounding vegetation. This reach diffen ned and bank, substrate, and surrounding vegetation. This reach diffen ned and bank, substrate, and surrounding vegetation. This reach diffen ned and bank, substrate, and surrounding vegetation. This reach diffen ned and bank, substrate, and surrounding vegetation. This reach diffen ned and bank, substrate, and surrounding vegetation. This reach diffen ned and bank, substrate, and surrounding vegetation. This reach diffen ned and bank, substrate, and surrounding vegetation. This reach diffend ned bank/left bank facing downstream         Residential       x       Other       Residential         x       Other       Roadway         ns       Heavy rain in the last 7 days?       x       Yes         unoff       Turbidity?       x       Clear       Other:       Cloar         ght bank/Left bank facing downstream       Stream Morphol       Noth:       North         ght bank/Left bank facing downstream       Stream Morphol       No Ft.       Run %         ude flow depth)       Vert.       3.00       Ft.       Run %         ude flow depth)       Vert.       3.00       Ft.       Run %         ude flow depth)       Vert.       3.00       Ft.       Partly Open         tany High Water Depth  |          |          |               |  |                  |        |   |                           |             |         |          |
|                |              |                | /              | WAT  | ER DE | PTH   | Predominant Surrounding vegetat         in       Predominant Surrounding Landuse         Discharge       x       Forest       Comme         Discharge       x       Forest       Comme         Bog or Wetland       Agricultural       Resider         Sog or Wetland       Agricultural       Resider         Sog or Wetland       Agricultural       Resider         of Origins       Heavy rain in the last 7 days?       x         Vater Runoff       Turbidity?       x       Clear       Other         No       Flow Direction:       N       N         at       Right bank/Left bank facing downstream       Stream         Right Bank (Do not       Horiz.       1.00       Ft.       I         include flow depth)       Vert.       3.00       Ft.       Camp         Water/Flow Depth       0.40       Ft.       Op         Water/Flow Depth       0.40       Ft.       Op         Ordinary High Water Depth       1.00       Ft.       x       Stream         Ordinary High Water Width       5.67       Ft.       x       Stream         Ordinary High Water Width       5.67       Ft.       X       Stream   |   |          |          |               |  |                  |        |   | Shac                      | lod         | pen     |          |
|                |              | BOTTON         |                |  | t.    |   | Top   | f P   | ank W    | Width    | n Deptii      | 7  | 00               | Tt.    |   | 'hon                      |             | Notu    | colizod? |
| FLC<br>DEF     | PTH HT       | WIDTH          |                |  |       |   | Ordin   | Intervy rain in the last 7 days: $x = 103$ unoffTurbidity? xClearOther: CFlow Direction:Northght bank/Left bank facing downstreamStream Morphht Bank (Do notHoriz.1.00Ft.Riffle %ude flow depth)Vert.3.00Ft.Riffle %ude flow depth)Vert.3.00Ft.Run %of Colspan="2">Colspan="2">Stream Morphinary High Water Depth1.00Ft.X <td colsp<="" td=""><td>latu</td><td>Mo</td></td>   |          |          |               |  |                  |        |   | <td>latu</td> <td>Mo</td> | latu        | Mo      |          |
|                | -            | -              |                |  |       |   | Total   | ar y<br>Do  | nth      | wate     |               | 2  | 40               | Ft.    | X   | Fich                      | 28<br>D     | a cont  |          |
| Ма             |              | <b>h</b> notog | Dunga          |  |       | V   | Total   |   | pui<br>N |          |               | 3  | .40              | Γι.    |   |                           | Pre         | esem    | No       |
| IVIa           | Enhomor      | optoro         | Prese          |  | X     | 1   |   | rial  | IN       | 0        | Oth           | or   |                  |        | Wata  | r Stri                    | 28<br>idori |         |          |
| Acred          |              | optera         | icot           |  | copie |   | Corror  | пс.   | npoter   | a        | x Oui         | er.  | -                |        | vv ale  | a Sui                     | uers        | 5/ SIU  | 38       |
| Aquat          | ic vegeta    | 1011 - 1110    | Dee            | tod I  | Ema   |   | Lover   | ц<br>Т У  | pe       | Do       | oted Floor    | ina  | -                |        |   | Δ ++                      | ach         | ad Al   | 200      |
| х              | N/A          |                | ROO            |  | uhmer | gem   | l<br>nt   | _   |          | K0<br>El | oleu Floa     | ing  |                  | -      |   | Au<br>E                   |             | eu Al   | gae      |
| Dortion        | of Stroop    | n with A       | NOOle          |  | gotot | tion  | (0/2)   |   |          | ГГ       | oating Aig    | gae  |                  |        |   | Г                         | ee I        | rioati  | ng       |
| Dinori         | on Puffor    |                | Juan<br>() Et  |  | gela  |   | (70).   | 0 m   | t Cov    | on Tr    | no And (      | Incoio   | 3                |        |   |                           |             |         |          |
| Kipari         | an Duner     | -veg. ((       | στι            | •) • 1   | mult  | ate   | DOIIIII   | alli  |          | er Ty    | pe Anu S      | specie   | 5                |        |   |                           |             |         |          |
|                | Trees:       |                | Ac             | er rı  | ıbru  | т   |   |   |          | (        | Grasses:      |  | Ì                | Micro  | osteg   | ium 1                     | vimi        | ineum   | ļ        |
|                |              |                |                |  |       |   |   |   |          |          |               |  |                  |        | 0   |                           |             |         |          |
|                | <b>C1</b> 1  | <b>T</b> • 1   | ,              |  |       |   |   |   |          |          |               |  | Bo               | ehme   | ria c   | ylina                     | lricc       | ı, Rul  | ous      |
|                | Shrubs:      | Linder         | a bei          | nzou   | n, Lo | nice  | ra sp.  |   |          | Не       | rbaceous:     | p p  | hoen             | icold  | isius   | , Onc                     | oclea       | a sens  | sibilis  |
| Inorga         | nic Subst    | rate Cor       | nnor           | ents   |       | d to  | 100%  | )   |          | Orge     | nic Subs      | trate (  | ימס <sup>ר</sup> | າດກອງ  | nts ()  | Max                       | he -        | -100)   |          |
| T              | vne          | Dian           | neter          | x       Swamp, Bog or Wetland       Agricultural       Residential         x       Spring Fed       x       Other       Roadway         x       Mixture of Origins       Heavy rain in the last 7 days?       x       Ye         Surface Water Runoff       Turbidity?       x       Clear       Other:         es       No       Flow Direction:       North         dimensions at rossing       Right bank/Left bank facing downstream       Stream Morp         dimensions at rossing       Right bank/Left bank facing downstream       Stream Morp         dimensions at rossing       Right bank/Left bank facing downstream       Stream Morp         dinclude flow depth)       Vert.       3.00       Ft.       Rinfle 9         include flow depth)       Vert.       3.00       Ft.       Run %         include flow depth)       Vert.       3.00       Ft.       Partly Op         ORDINARY HICH       Bottom of Channel Width       5.00       Ft.       Partly Op         Ordinary High Water Depth       1.00       Ft.       Stick Partly Op         Ordinary High Water Width       5.67       Ft. x       Shaded         Op of Bank Width       7.00       Ft.       Fin Fish Pres         Stoted Submergent< |       |   |   |   |          |          |               |  |                  | mno    | sition %  |                           |             |         |          |
| Be             | drock        | Dian           |                | -  |       |   | positio   | /11   | /0       |          | <u>1 y pc</u> | on Type: x Centerline x R/L Ban<br>f stream S-JRK-006. This reach differed<br>c, and surrounding vegetation. This reach<br>t Surrounding Landuse<br>Commercial<br>asture x Industrial<br>tural Residential<br>Residential<br>Roadway<br>in in the last 7 days? x Yes x<br>ty? x Clear Other: Cloudy<br>irection: North<br>ing downstream Stream Morphology<br>2. 1.00 Ft. Riffle %<br>3.00 Ft. Pool %<br>2. 1.00 Ft. Run %<br>3.00 Ft. Pool %<br>3.00 Ft. Schannel Naturaliz<br>5.67 Ft. x Yes N<br>3.40 Ft. Fin Fish Present?<br>Yes x N<br>ating Attached Algae<br>Igae Free Floating<br>Species<br>Microstegium vimineum<br>s: Boehmeria cylindrica, Rubus<br>phoenicolasius, Onoclea sensibil<br>strate Components (May be <100)<br>Characteristics Compositio<br>Attached Algae<br>Black, Very Fine<br>Organic Material<br>Attached Algae |                  |        |   |                           |             |         |          |
| Bo             | ulder        | 10             | " +            |  |       |   | Clear Construction         Clear Construction           A         Delineation Type:         x         Centerline         x         R/L B           Or the second, northern reach of stream S-JRK-006. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate, and surrounding vegetation. This reach different ange in bed and bank, substrate and surrounding vegetation. This reach different ange in bed and bank and the include flow depth) Vert.         Clear Other:         Vess           I         Right bank/Left bank facing downstream         Stream Morpholog         Right Bank (Do not Horiz.         1.00         Ft.         Riffle %           Include flow depth)         Vert.         3.00         Ft.         Roop Over         Water/Flow Depth         0.40 |   |          |          |               |  |                  |        | 5   |                           |             |         |          |
|                | bble         | 2.5"           | 10"            | _  |       |   | 15  |   |          |          | Jeunus        |  | Plant            | t Mat  | erial   |                           |             | -       | ,        |
| G              | ravel        | 2.5            | 2 5'           |  |       |   | 50  |   |          |          |               | п  | lack             | Vor    | v Ein   | 0                         |             |         |          |
| 0              | and          | 0.1            | · 2.5          | 1  |       |   | 10  |   |          | M        | uck-Mud       |  | rger             | ic M   | y TIII<br>atorij                                | al                        |             |         |          |
| 5              | Silt         | 0.00-          | <u>د مار د</u> | nm   |       |   | 25  |   |          |          |               |  | ngall            |        | aterra  | 11                        |             |         |          |
|                |              | 0.004-0        | .00 fi         | <u> </u>   |       | 23  |   |   |          | Marl     | Gre           | y, Sh  | ell Fi           | agm    | ents  |                           |             |         |          |
| C              | Jiay         | <0.00          | 4 mn           | 11   |       |   |   |   |          |          |               |  |                  |        |   |                           |             |         |          |

| Project                       | /Site:     | 5         | Standar   | d Chl   | orine        | •             |        | Stream      | n ID:        |                        | S               | -JRI           | <u>X-00</u>  | 6A              |                       |
|-------------------------------|------------|-----------|-----------|---------|--------------|---------------|--------|-------------|--------------|------------------------|-----------------|----------------|--------------|-----------------|-----------------------|
| Applicant/O                   | wner:      |           | E         | EPA     |              |               |        |             | State:       |                        |                 | Dela           | awar         | e               |                       |
| Investigat                    | or(s):     |           | J. Keil,  | C. Ba   | arrett       |               |        | City/Co     | ounty:       | New                    | Castl           | e, Ne          | w C          | astle           | County                |
| Sampling                      | Date:      |           | 8/29      | 9/2023  | 3            |               |        | Tow         | nship:       |                        |                 | N              | I/A          |                 |                       |
| Stream N                      | Jame:      | UN        | NT to Re  | ed Lio  | n Cre        | ek            |        | Lat         | itude:       |                        |                 | 39.5           | 9987         | 78              |                       |
| Drainage Area                 | $(mi^2)$ : |           |           |         |              |               |        | Long        | itude:       |                        |                 | -75.6          | 394          | 15              |                       |
| Slope Cate                    | gory:      |           | (1) Low   | v Grad  | dient        |               |        | Open-E      | nded?        | Up                     | strea           | m              |              | Dow             | nstream               |
| FERC Design                   | ation:     |           | N         | N/A     |              |               | I      | Delineation | Type:        | x Cei                  | nterli          | ne             | x            | R/L             | Banks                 |
| Stream Descrip                | tion:      |           |           |         |              |               |        |             | 71           |                        |                 |                |              |                 |                       |
| A naturalized str<br>JRK-006. | ream cha   | unnel flo | owing no  | orthwo  | est ori      | iginating     | from   | a spring se | ep loca      | ated sou               | theas           | t of f         | lag 9        | ) of s          | tream S-              |
| Stream Subsyst                | tem        | Stre      | am Oriş   | gin     |              |               | Pred   | lominant S  | urrou        | nding L                | andu            | ıse            |              |                 |                       |
| Perennia                      | .1         |           | Culvert   | Disch   | arge         |               | Х      | Forest      |              |                        | Cor             | nmer           | cial         |                 |                       |
| Ephemer                       | ral        |           | Pond Di   | scharg  | ge           |               | Х      | Field/Pastu | ire          | х                      | Ind             | ustria         | ıl           |                 |                       |
| x Intermitt                   | ent        |           | Swamp,    | Bog     | or We        | etland        |        | Agricultura | al           |                        | Res             | ident          | ial          |                 |                       |
| Tidal                         |            | Х         | Spring F  | Fed     |              |               | х      | Other       |              |                        | Re              | oadw           | ay           |                 |                       |
|                               |            | X         | Mixture   | of Or   | rigins       |               | I      | Heavy rain  | in the       | last 7 d               | ays?            |                | Y            | <i>es</i>       | x No                  |
| Other:                        |            |           | Surface   | Water   | r Run        | off           | 1      | Turbidity?  | Х            | Clear                  | O               | ther:          |              |                 |                       |
| Flow Pre                      | sent? x    | Yes       |           | 1       | No           |               |        | Flow Dire   | ction:       |                        |                 | Nort           | hwe          | st              |                       |
|                               |            |           |           |         |              |               |        |             |              |                        |                 |                |              |                 |                       |
| For linear proj               | ects, pro  | vide dir  | nensions  | s at    | Righ         | t bank/I      | Left b | ank facing  | down         | stream                 | Str             | eam            | Mor          | phol            | ogy                   |
| centerlin                     | e of stre  | am cros   | ssing     | I       | Right        | Bank (D       | o not  | Horiz.      | 0.5          | 60 Ft.                 |                 | R              | iffle        | %               |                       |
| TOP                           | OF BANK    | WIDTH     | 1 2       | i       | includ       | le flow d     | epth)  | Vert.       | 0.7          | '5 Ft.                 |                 | P              | ool          | %               | 98                    |
|                               |            |           | - /       |         | Left I       | Bank (Do      | o not  | Horiz.      | 0.5          | 60 Ft.                 |                 | F              | Run 🤉        | %               | 2                     |
|                               | ATER WIDT  | TH        |           | i       | includ       | le flow d     | epth)  | Vert.       | 1.0          | 00 Ft.                 | Car             | nopy           | Cov          | ver             |                       |
|                               |            | _/        | í i       | ١       | Water        | /Flow D       | epth   |             | 0.1          | 5 Ft.                  |                 | Ope            | n            |                 |                       |
| DEPTH                         |            |           | ORDINARY  | HIGH    | Bottor       | n of Cha      | innel  | Width       | 1.5          | 60 Ft.                 |                 | Part           | ly O         | pen             |                       |
|                               |            |           | WATER DE  | EP TH   | Ordina       | ary High      | Wate   | er Depth    | 0.5          | 60 Ft.                 | х               | Sha            | ded          |                 |                       |
| FLOW                          | BOTTOM     |           | I         | 7       | Горо         | f Bank V      | Vidth  |             | 2.3          | 8 Ft.                  | Is (            | Chan           | nel I        | Natu            | ralized?              |
| DEPTH                         | WIDTH      | -         |           | (       | Ordina       | ary High      | Wate   | er Width    | 2.0          | 98 Ft.                 | х               | Y              | es           |                 | No                    |
|                               |            |           |           | 7       | [<br>Total ] | Depth         |        |             | 0.9          | 0 Ft.                  | Fin             | Fish           | Pre          | esent           | ?                     |
| Macroinver                    | tebrates   | s Prese   | nt?       | Ye      | s z          | x N           | 0      |             |              |                        |                 | Y              | es           | х               | No                    |
| Ephemer                       | roptera    |           | Plecopte  | era     | T            | richpoter     | ra     | Other       | :            |                        |                 |                |              | <u>.</u>        |                       |
| Aquatic Vegeta                | tion - In  | ndicate   | Domin     | ant C   | over '       | Туре          |        |             |              |                        |                 |                |              |                 |                       |
| 1 8                           |            | Root      | ed Emer   | rgent   |              |               | Ro     | oted Floati | ופ           |                        |                 | At             | tache        | ed Al           | gae                   |
| x N/A                         |            | Roote     | d Subme   | ergent  |              |               | Fl     | oating Alga | e            |                        |                 | F              | ree F        | Floati          | ng                    |
| Portion of Strea              | m with A   | Aquatic   | Vegetat   | tion (9 | %):          |               |        | 8 8         |              |                        |                 |                |              |                 | 0                     |
| <b>Riparian Buffe</b>         | r Veg.     | (60 Ft.   | ) - Indic | cate D  | omin         | ant Cov       | er Ty  | vpe And Si  | oecies       |                        |                 |                |              |                 |                       |
| *                             |            |           | ,         |         |              |               |        |             |              |                        |                 |                |              |                 |                       |
| Trees:                        | Acer       | • rubrui  | m, Plata  | nus oc  | ccider       | ntalis        | (      | Grasses:    | Mio          | crostegii              | um vi<br>aı     | mine<br>ıstral | um,<br>lis   | Phra            | gmites                |
| Shrubs:                       |            | Li        | indera b  | enzoir  | n            |               | He     | erbaceous:  | Rosa<br>Impa | ı Multifl<br>atiens ca | ora, I<br>ipens | Boeh<br>is, O  | meri<br>nocl | ia cyl<br>ea se | indrica,<br>nsibilis, |
| I                             |            |           |           |         | 10004        | ·             | 0      |             |              | Lo                     | onice           | ra ja          | poni         | ca<br>100       |                       |
| Inorganic Subs                | trate Co   | ompone    | ents (Ad  |         |              | )<br>         | Org    | anic Substr | ate C        | ompone                 | nts (1          | way            | be <         | (100)           |                       |
| <u>Type</u><br>Dedrealt       | Dia        | imeter    |           | Comb    | DOSILIC      | <u>)   70</u> |        | <u>Type</u> |              | laracte                | ristic          | <u>.s</u>      |              | mpos            | <u>sition 70</u>      |
| Deutock                       | 1.         | -         |           |         |              |               |        | Dotritur    | Stick        | s, Wood                | l, Co           | arse           |              | 2               | 20                    |
| Call                          |            | 0 +       |           |         |              |               |        | Dennus      | P            | lant Ma                | terial          |                |              | 3               | U                     |
| Cobble                        | 2.5        | - 10"     |           |         |              |               |        |             | DI           | . 1 17                 |                 |                |              |                 |                       |
| Gravel                        | 0.1        | - 2.5"    |           |         |              |               | Μ      | uck-Mud     | Bla          | ack, Vei               | y Fir           | ie<br>al       |              | 2               | .5                    |
| Sand                          | 0.06       | -2  mm    |           |         | 100          |               |        |             | Or           | ganic M                | ateri           | al             |              |                 |                       |
| Silt                          | 0.004-     | -0.06 m   | nm        |         | 100          |               |        | Marl        | Grey.        | , Shell F              | ragm            | ents           |              |                 |                       |
| Clay                          | < 0.0      | 104 mm    | 1         |         |              |               |        |             |              |                        |                 |                |              |                 |                       |

|                | Project/         | Site:   |               | Stan     | dard C          | hlorin         | e           |          |        | Stream             | m ID:          |               |              | S-                 | JRK           | <b>C-007</b>       |              |
|----------------|------------------|---|---------------|----------|-----------------|----------------|-------------|----------|--------|--------------------|----------------|---------------|--------------|--------------------|---------------|--------------------|--------------|
| Ap             | plicant/Ov       | vner:   |               |          | EPA             |                |             |          |        |                    | State:         |               |              | Ľ                  | Delay         | vare               |              |
|                | Investigato      | or(s):  |               | J. K     | eil, C. I       | Barrett        |             |          |        | City/Co            | ounty:         | Ne            | w C          | Castle,            | New           | / Castle           | County       |
| S              | Sampling I       | Date:   |               |          | 8/30/20         | 23             |             |          |        | Tow                | nship:         |               |              | ,                  | N/.           | A                  | 5            |
|                | Stream N         | ame:  | U             | NT to    | Red L           | ion Cre        | eek         |          |        | Lat                | itude:         |               |              | 39                 | 9.60          | 0713               |              |
| Draina         | nge Area (1      | $mi^2$ ):   |               |          |                 |                |             |          |        | Long               | itude:         |               |              | -7                 | 5.63          | 8825               |              |
| S              | lope Cates       | gory:   |               | (1)      | Low Gr          | adient         |             |          |        | Open-E             | nded?          | 1             | Ups          | tream              |               | Dov                | vnstream     |
| FERC           | Designa          | tion:   |               | ( )      | N/A             |                |             |          | Ι      | Delineation        | Type:          | x             | Cen          | terline            | e             | x R/L              | Banks        |
| Strean         | 1 Descript       | tion:   |               |          |                 |                |             |          |        |                    | <i>J</i> 1     |               |              |                    |               |                    |              |
| A natu         | rally chan       | nelized   | strean        | n that   | origina         | tes in t       | he t        | foreste  | ed sec | ction of wet       | land W         | /-JRF         | K-0(         | 01 (soi            | uth v         | vest sec           | ction).      |
| The str        | eam is ver       | ry erode  | d and         | drain    | s north         | into st        | rear        | n S-JI   | RK-00  | 03.                |                |               |              | × ·                |               |                    |              |
| Strean         | n Subsyste       | em  | Str           | eam (    | Origin          |                |             |          | Pred   | lominant S         | urrou          | nding         | g La         | andus              | e             |                    |              |
|                | Perennial        |   |               | Culv     | ert Dise        | charge         |             |          | х      | Forest             |                |               |              | Comr               | nerc          | ial                |              |
|                | Ephemera         | al  |               | Pond     | l Discha        | arge           |             |          |        | Field/Pastu        | ıre            |               | х            | Indus              | trial         |                    |              |
| х              | Intermitte       | ent   | х             | Swar     | mp, Bog         | g or W         | etla        | ind      |        | Agricultur         | al             |               |              | Resid              | entia         | al                 |              |
|                | Tidal            |   |               | Sprin    | ng Fed          |                |             |          | х      | Other              |                |               |              | Roa                | dwa           | у                  |              |
|                |                  |   | х             | Mixt     | ture of (       | Origins        | 5           |          | E      | Heavy rain         | in the         | last '        | 7 da         | ays?               | Х             | Yes                | No           |
| Other:         |                  |   | х             | Surfa    | ace Wa          | ter Rur        | noff        | 2        | ,      | Turbidity?         | Х              | Clear         | r            | Othe               | er:           |                    |              |
| ]              | Flow Pres        | sent? x   | Yes           | 3        |                 | No             |             |          |        | Flow Dire          | ction:         |               |              |                    | Nor           | th                 |              |
|                |                  | ent? x Yes<br>cts, provide dimensions<br>of stream crossing             |               |          |                 |                |             |          |        |                    |                |               |              |                    |               |                    |              |
| For li         | near proje       | Present? x Yes<br>rojects, provide dimensio<br>rline of stream crossing |               |          | ions at         | Rigl           | ht b        | ank/I    | Left b | ank facing         | down           | strea         | m            | Strea              | m N           | Iorpho             | logy         |
|                | centerline       | rojects, provide dimensio<br>rline of stream crossing                   |               |          |                 | Right          | t Ba        | ınk (D   | o not  | Horiz.             | 1.0            | 0 1           | Ft.          |                    | Rif           | fle %              |              |
|                |                  | ects, provide dimensio<br>ne of stream crossing<br>OF BANK WDTH         |               |          |                 | inclu          | de f        | low d    | epth)  | Vert.              | 4.0            | 0 1           | Ft.          |                    | Ро            | ol %               | 50           |
|                |                  | DE DAINK I  | WIDTH         | /        | Left            | Bar            | nk (Do      | o not    | Horiz. | 2.5                | 0 ]            | Ft.           |              | Rı                 | ın %          | 50                 |              |
|                |                  | ATER WIDT   | сн<br>ГН      |          | /               | inclu          | de f        | low d    | epth)  | Vert.              | 4.0            | 0 1           | Ft.          | Cano               | py (          | Cover              |              |
|                | $\backslash$     |   | -             | /        | Ļ               | Wate           | r/Fl        | ow D     | epth   |                    | 0.1            | 0 1           | Ft.          | C                  | )pen          |                    |              |
| DEPTH          |                  |   |               | ORDIN    | ARY HIGH        | Botto          | m o         | of Cha   | innel  | Width              | 7.0            | 0 1           | Ft.          | Р                  | artly         | Open               |              |
| +              |                  |   |               | WATE     | RDEPTH          | Ordin          | nary        | High     | Wate   | er Depth           | 1.5            | 0 1           | Ft.          | x S                | hade          | ed                 |              |
| FLO            | ow I             | BOTTOM  |               |          | 1               | Top o          | of B        | ank V    | Vidth  | 1                  | 10.5           | 50 1          | Ft.          | Is Ch              | ann           | el Natu            | ralized?     |
| DEF            | тн —             | WIDTH   | -             |          |                 | Ordin          | nary        | , High   | Wate   | er Width           | 8.3            | 1             | Ft.          | х                  | Yes           | 3                  | No           |
|                |                  |   | 1             |          |                 | Total          | De          | pth      |        |                    | 4.1            | 0 1           | Ft.          | Fin F              | ʻish l        | Present            | t?           |
| Ma             | croinvert        | tebrates  | s Pres        | ent?     | x Y             | les            |             | N        | 0      |                    |                |               |              |                    | Yes           | S X                | No           |
|                | Ephemer          | optera  |               | Plece    | optera          | Г              | ric         | hpotei   | ra     | Othe               | r:             |               |              | Wa                 | ater s        | strider            |              |
| Aquati         | ic Vegetat       | tion - In   | ndicat        | e Don    | ninant          | Cover          | Ty          | pe       |        |                    |                |               |              |                    |               |                    |              |
|                |                  |   | Roo           | ted E    | mergen          | ıt             | Ť           | <u> </u> | Ro     | oted Floatin       | ng             |               |              |                    | Atta          | ched A             | lgae         |
| х              | N/A              |   | Root          | ed Su    | bmerge          | nt             |             |          | Fl     | oating Alga        | ie             |               |              |                    | Fre           | e Float            | ing          |
| Portion        | of Stream        | n with A  | Aquati        | c Veg    | getation        | (%):           | - 1         |          |        |                    |                |               |              |                    |               |                    |              |
| Ripari         | an Buffer        | · Veg.  | (60 F1        | t.) - Ir | ndicate         | Domi           | nan         | t Cov    | er Ty  | pe And Sp          | oecies         |               |              |                    |               |                    |              |
|                | Trees:           |   | Ac            | er rui   | brum            |                |             |          | (      | Grasses:           |                | М             | icra         | ostegiu            | ım vi         | imineur            | п            |
|                | Shrubs:          | Linde   | era be        | nzoin    | , Lonice        | era sp.        |             |          | Не     | rbaceous:          | ŀ              | Rubus<br>sen. | s ph<br>sibi | oenico<br>lis, Lii | olasi<br>nder | us, Onc<br>a benzo | oclea<br>oin |
| In <u>orga</u> | nic <u>Subst</u> | rate <u>Co</u>  | om <u>por</u> | nents    | (A <u>dd to</u> | o 1 <u>00%</u> | <b>(</b> 0) |          | Orga   | anic <u>Substr</u> | at <u>e Co</u> | ompo          | ner          | nts (M             | lay b         | e < <u>100</u>     | )            |
| T              | ype              | Dia   | meter         | r        | Con             | npositi        | on          | %        |        | Type               | Cl             | harac         | cter         | istics             |               | Compo              | sition %     |
| Be             | drock            |   | -             |          |                 |                |             |          |        |                    | C+1-1          | o W           | 1.00         | Car                |               |                    |              |
| Bo             | ulder            | 1   | 0" +          |          |                 |                |             |          | I      | Detritus           | SUCK           | S, W(         | DOC          | , Coars            | se            |                    | 10           |
| Co             | obble            | 2.5'  | " - 10"       | '        |                 |                |             |          | 1      |                    | P              | iant I        | viat         | enal               |               |                    |              |
| G              | ravel            | 0.1"  | ' - 2.5'      | "        |                 |                |             |          | ÞÆ     | ualt Mad           | Bla            | ack, V        | Very         | y Fine             |               |                    |              |
| S              | and              | 0.06  | 5-2 mn        | n        |                 | 50             |             |          | IVI    | uck-wud            | Or             | ganic         | Ma           | aterial            |               |                    |              |
| ,<br>L         | Silt             | 0.004-  | 0.06 r        | nm       |                 | 40             |             |          |        | Mori               | C              | C1-1          | 1 E          |                    | ata           |                    |              |
| C              | Clay             | < 0.0   | 04 mr         | n        |                 | 10             |             |          |        | wan                | Grey,          | Shel          | I FI         | agmer              | its           |                    |              |

|  | Project/          | Site:                             | e: Standard Chlorine         |                 |                      |          |                                  |                                 | Stream ID:   |  |                       | S-JRK-008                    |                         |              |       |
|--|-------------------|-----------------------------------|------------------------------|-----------------|----------------------|----------|----------------------------------|---------------------------------|--|--|-----------------------|------------------------------|-------------------------|--------------|-------|
| Ap   | plicant/Ov        | vner:                             | ner: EPA                     |                 |                      |          |                                  | State:                          |  |  | Delaware              |                              |                         |              |       |
| Investigator(s):   |                   |                                   | J. Keil, C. Barrett          |                 |                      |          |                                  | City/County: N                  |  |  | New (                 | ew Castle, New Castle County |                         |              |       |
| Sampling Date:   |                   |                                   | 8/30/2023                    |                 |                      |          |                                  | Township:                       |  |  |                       | N/A                          |                         |              |       |
| Stream Name:   |                   |                                   | UNT to Red Lion Creek        |                 |                      |          |                                  | Latitude:                       |  |  |                       | 39.60045                     |                         |              |       |
| Draina   | $mi^2$ ):         |                                   |                              |                 |                      |          | Longitude:                       |                                 |  |  | -75.638479            |                              |                         |              |       |
| Slope Category:  |                   |                                   | (3) High Gradient            |                 |                      |          |                                  | Open-Ended?                     |  |  | Ups                   | stream                       | D                       | ownstr       | eam   |
| FERC   | tion:             | N/A                               |                              |                 |                      |          | Delineation Type: x              |                                 |  | x Cer  | nterline              | x R                          | /L Ban                  | ks           |       |
| Stream   | n Descrip         | tion:                             |                              |                 |                      |          |                                  |                                 |  |  |                       |                              |                         |              |       |
| An ephemeral channel that originates from a culvert along top of hillside bordering the Trash Tech property to the easy<br>This stream is located north of S-JRK-005 and flows west into stream S-JRK-003. |                   |                                   |                              |                 |                      |          |                                  |                                 |  |  |                       |                              |                         |              | east. |
| Stream Subsystem   |                   |                                   | Stream Origin                |                 |                      |          |                                  | Predominant Surrounding Landuse |  |  |                       |                              |                         |              |       |
|  | Perennial         |                                   | x Culvert Discharge          |                 |                      |          |                                  | x Forest                        |  |  |                       | Commercial                   |                         |              |       |
| Х  | Ephemera          | al                                | ]                            | Pond Discharge  |                      |          |                                  | x Field/Pa                      |  | ire  | Х                     | Industrial                   |                         |              |       |
|  | Intermitte        | nittent Sy                        |                              |                 | vamp, Bog or Wetland |          |                                  | Agricultural                    |  |  |                       | Residential                  |                         |              |       |
|  | Tidal             | idal S <sub>I</sub>               |                              |                 | ring Fed             |          |                                  | x Other                         |  |  |                       | Roadway                      |                         |              |       |
|  |                   |                                   | Mixture of Origins           |                 |                      |          |                                  | Heavy rain in the las           |  |  | ast 7 da              | days? x Yes No               |                         |              |       |
| Other:   |                   |                                   | X                            | Surface         | Wate                 | r Runof  | f                                |                                 | <b>Furbidity</b> ?                                   | (  | Clear                 | Other:                       |                         | N/A          |       |
| Flow Present?YesxNoFlow Direction:West   |                   |                                   |                              |                 |                      |          |                                  |                                 |  |  |                       |                              |                         |              |       |
|  | _                 | _                                 | _                            | _               |                      |          |                                  | 0.7                             |  |  |                       | <i>a</i> .                   |                         | _            |       |
| For li   | near proje        | cts, provi                        | ide din                      | nension         | s at                 | Right I  | bank/l                           | ∠eft b                          | ank facing   | downs  | tream                 | Stream                       | Morp                    | nology       | 10    |
|  | centerline        | im crossing R                     |                              |                 | Right Bank (Do       |          | o not                            | Horiz.                          | 2.00 Ft  |  | K                     | attle %                      |                         | 10           |       |
| 1  |                   |                                   |                              |                 |                      | eptn)    | (th) Vert. 3.00                  |                                 | ) $Ft.$  |  | Pool % 10             |                              | 10                      |              |       |
|  | DINARY HIG        | r HIGH                            |                              |                 | Left Bank (Do        |          |                                  | Horiz.                          | 2.00   | .00 FL Kun %                                 |                       |                              | 80                      |              |       |
| 1  | AIER WIDIH        |                                   |                              |                 | include flow de      |          | epui)                            | vert.                           | 3.00   | $\mathbf{F}_{\mathbf{L}}$                    | Canopy                | py Cover                     |                         |              |       |
| TOTAL  | X                 |                                   |                              |                 |                      |          | Water/Flow De                    |                                 | eptn<br>maal Width                                   |  | ) $\Gamma_{1}$        |                              | ll<br>Iv Onen           |              |       |
|  |                   |                                   | WATER DEPTH Ordinary         |                 |                      |          | U Uigh                           | Wata                            | w Iuui<br>vr Donth                                   | 1.50   | ) Γι.                 |                              | ded                     |              |       |
| -  |                   | DOTTON                            |                              |                 |                      |          | y High Water Depth<br>Book Width |                                 |  | 7.00   | ) Et                  | Je Chor                      | ueu<br>nel Naturalized? |              |       |
| DEP  | PTH H             | WIDTH                             | Ordin                        |                 |                      |          | Joi Dalik Wituli                 |                                 |  | 5.00   | ) $Ft$                |                              |                         |              | No.   |
|  | [ <sup>-</sup>    |                                   |                              |                 | Total De             | nth      | wate                             | 3.00                            |  | ) Ft   | Fin Fish Present?     |                              | nt?                     |              |       |
| Ma   | croinver          | tehrates ]                        | Prese                        | nt?             | Ye                   |          | N                                | 0                               |  | 5.00   | , 10.                 | Y                            | r r resc                | $\mathbf{x}$ | No    |
|  | Enhemer           | ontera                            |                              | Plecont         | era                  | Tric     | hpoter                           | a.                              | Other  | ··   |                       |                              | 05                      | <u>a</u> 1   | . 10  |
| Aquati   | c Vegetat         | tion - Ind                        | licate                       | Domin           | nant C               | lover Ty | vne                              | u                               | 0 uno  |  |                       |                              |                         |              |       |
|  | Rooted Emergent   |                                   |                              |                 |                      |          | Rooted Floating                  |                                 |  |  | Attached Algae        |                              |                         |              |       |
| Х  | N/A               | Rooted Submergent                 |                              |                 |                      |          | Floating Algae                   |                                 |  |  | Free Floating         |                              |                         |              |       |
| Portion  | of Stream         | n with Ac                         | quatic                       | Vegeta          | tion (9              | %):      |                                  |                                 | <u> </u>   |  |                       |                              |                         |              |       |
| Ripari   | an Bu <u>ffer</u> | · Veg. (6                         | 50 <u>Ft.</u>                | ) - <u>Indi</u> | ca <u>te D</u>       | ominar   | nt <u>Cov</u>                    | er Ty                           | pe And S   | pec <u>ies</u>                               |                       |                              |                         |              |       |
| Carva glabra, Liriodendron   |                   |                                   |                              |                 |                      |          |                                  |                                 |  |  |                       |                              |                         |              |       |
| Trees:   |                   | tulipifera, Platanus occidentalis |                              |                 |                      |          | Grasses:                         |                                 | Microstegium vimineum                                |  |                       |                              |                         |              |       |
|  |                   | 10                                |                              |                 |                      |          |                                  |                                 |  | Rubus phoenicolasius Rubus idaeus            |                       |                              |                         |              |       |
|  | Shrubs:           | Linder                            | Lindera benzoin, Acer rubrum |                 |                      |          |                                  | Herbaceous:                     |  | Lonicera japonica, Dryopteris<br>carthusiana |                       |                              |                         |              |       |
|  | Shiruesi          | Linuer                            |                              |                 |                      |          |                                  |                                 |  |  |                       |                              |                         |              |       |
| Inorganic Substrate Components (Add to 100%)   |                   |                                   |                              |                 |                      |          |                                  |                                 | <b>Organic Substrate Components (May be &lt;100)</b> |  |                       |                              |                         |              |       |
| Туре   |                   | Dian                              |                              | Composition %   |                      |          | Type Ch:                         |                                 | aracter  | istics                                       | Com                   | positio                      | on %                    |              |       |
| Bedrock  |                   | -                                 |                              |                 |                      |          |                                  |                                 |  |  |                       |                              |                         |              |       |
| Boulder  |                   | 10" +                             |                              |                 | 5                    |          |                                  | Detritus                        |  | Sticks, Wood, Coarse<br>Plant Material       |                       |                              | 25                      |              |       |
| Cobble   |                   | 2.5" - 10"                        |                              |                 | 5                    |          |                                  |                                 |  |  |                       |                              |                         |              |       |
| Gravel   |                   | 0.1" - 2.5"                       |                              |                 | 15                   |          |                                  | Muck-Mud                        |  | Black, Very Fine<br>Organic Material         |                       |                              |                         |              |       |
| Sand   |                   | 0.06-2 mm                         |                              |                 | 50                   |          |                                  |                                 |  |  |                       |                              |                         |              |       |
| Silt   |                   | 0.004-0.06 mm                     |                              | m               | 25                   |          |                                  | Maril                           |  | Grav Shall Frogmanta                         |                       |                              |                         |              |       |
| Clay   |                   | < 0.00                            | <0.004 mm                    |                 |                      |          |                                  |                                 | Mari   |  | Grey, Snell Fragments |                              |                         |              |       |
|                    | Project/                  | Site:                 | S          | Standa    | rd Ch               | lorine           |         |                | Stream              | n ID:          |                     | S             | -JRK                | -009     |          |
|--------------------|---------------------------|-----------------------|------------|-----------|---------------------|------------------|---------|----------------|---------------------|----------------|---------------------|---------------|---------------------|----------|----------|
| Ap                 | plicant/Ov                | vner:                 |            |           | EPA                 |                  |         |                |                     | State:         |                     |               | Delaw               | vare     |          |
| 1                  | Investigato               | or(s):                |            | J. Keil   | , C. B              | arrett           |         |                | City/Co             | ounty:         | New (               | Castle        | , New               | Castle   | County   |
| S                  | Sampling I                | Date:                 |            | 8/3       | 30/202              | 3                |         |                | Town                | nship:         |                     |               | N/A                 | 1        |          |
|                    | Stream N                  | ame:                  | UN         | NT to R   | ed Lic              | on Creek         | _       |                | Lat                 | itude:         |                     |               | 39.600              | 876      |          |
| Draina             | age Area (                | $mi^2$ ):             |            |           |                     |                  |         |                | Long                | itude:         |                     | -             | 75.638              | 3875     |          |
| S                  | lope Categ                | gory:                 |            | (1) Lo    | w Gra               | dient            |         |                | Open-E              | nded?          | Ups                 | strean        | n                   | Dow      | nstream  |
| FERC               | C Designa                 | tion:                 |            |           | N/A                 |                  |         | Ι              | Delineation         | Type:          | x Cer               | nterlin       | ne y                | K R/L    | Banks    |
| Strean             | n Descript                | tion:                 |            |           |                     |                  |         |                |                     |                |                     |               |                     |          |          |
| A natur<br>north o | rally chan<br>of stream S | nelized st<br>-JRK-00 | ream<br>6. | that is a | spring              | fed and          | flows   | north          | east and dra        | ins into       | o stream            | n S-JR        | RK-007              | 7 and is | located  |
| Strean             | n Subsyst                 | em                    | Stre       | am Or     | igin                |                  |         | Pred           | lominant St         | urrour         | nding L             | andu          | se                  |          |          |
|                    | Perennial                 |                       |            | Culver    | t Disch             | narge            |         | х              | Forest              |                |                     | Com           | merci               | al       |          |
|                    | Ephemera                  | al                    |            | Pond D    | Dischar             | ge               |         | х              | Field/Pastu         | ire            | х                   | Indu          | strial              |          |          |
| х                  | Intermitte                | ent                   | х          | Swamp     | , Bog               | or Wetla         | and     |                | Agricultura         | al             |                     | Resi          | dentia              | 1        |          |
|                    | Tidal                     |                       | х          | Spring    | Fed                 |                  |         | х              | Other               |                |                     | Ro            | adway               | 7        |          |
|                    |                           |                       | х          | Mixtur    | e of O              | rigins           |         | E              | <b>leavy rain</b> i | in the I       | last 7 da           | ays?          | х                   | Yes      | No       |
| Other:             |                           |                       |            | Surface   | e Wate              | er Runof         | f       | ,              | <b>Furbidity</b> ?  | х              | Clear               | Otl           | her:                |          |          |
| ]                  | Flow Pres                 | ent? x                | Yes        |           |                     | No               |         |                | Flow Dire           | ction:         |                     |               | Northe              | east     |          |
|                    |                           |                       |            |           |                     |                  |         |                |                     |                |                     |               |                     |          |          |
| For lin            | near proje                | cts, provi            | de diı     | mensior   | ns at               | Right I          | bank/l  | Left b         | ank facing          | downs          | stream              | Stre          | am M                | orphol   | ogy      |
|                    | centerline                | e of strear           | n cros     | ssing     |                     | Right Ba         | ank (D  | o not          | Horiz.              | 1.0            | 0 Ft.               |               | Riff                | le %     |          |
| \<br>\             | TOP C                     | OF BANK WI            | DTH        | 1 2       | ,                   | include          | flow d  | epth)          | Vert.               | 1.0            | 0 Ft.               |               | Poo                 | ol %     | 10       |
|                    | ORI                       | DINARY HIGH           | 4          |           |                     | Left Ba          | nk (Do  | o not          | Horiz.              | 1.5            | 0 Ft.               |               | Ru                  | n %      | 90       |
|                    | -\W                       | ATER WIDTH            |            |           |                     | include          | flow d  | epth)          | Vert.               | 1.0            | 0 Ft.               | Can           | opy C               | over     |          |
| TOTAL              |                           |                       |            | +         | _                   | Water/F          | low D   | epth           |                     | 0.2            | 0 Ft.               |               | Open                |          |          |
| DEPTH              |                           |                       | 1          |           | Y <sup>°</sup> HIGH | Bottom           | of Cha  | nnel '         | Width               | 3.5            | 0 Ft.               |               | Partly              | Open     |          |
| 1                  |                           |                       | /          | WATER     |                     | Ordinar          | y High  | Wate           | r Depth             | 0.7            | 5 Ft.               | х             | Shade               | d        |          |
| FLC                | w                         | BOTTOM                |            | '         | Ī                   | Top of I         | Bank V  | Vidth          |                     | 6.0            | 0 Ft.               | Is C          | hanne               | el Natu  | ralized? |
| DEF                | TH -                      | WIDTH                 |            |           |                     | Ordinar          | y High  | Wate           | er Width            | 5.3            | 8 Ft.               | х             | Yes                 |          | No       |
|                    | 1                         |                       |            |           | 7                   | Total De         | epth    |                |                     | 1.2            | 0 Ft.               | <b>Fin</b> 2  | Fish P              | resent   | ?        |
| Ma                 | croinvert                 | tebrates ]            | Prese      | nt?       | Ye                  | es x             | N       | 0              |                     |                |                     |               | Yes                 | Х        | No       |
|                    | Ephemero                  | optera                |            | Plecop    | tera                | Tric             | chpoter | ra             | Other               | :              |                     |               |                     |          |          |
| Aquati             | ic Vegetat                | tion - Ind            | licate     | Domi      | nant C              | Cover Ty         | ype     |                |                     |                |                     |               |                     |          |          |
|                    |                           |                       | Root       | ted Eme   | ergent              |                  |         | Ro             | oted Floatir        | ıg             | х                   |               | Atta                | ched Al  | lgae     |
|                    | IN/A                      | J                     | Roote      | d Subn    | nergen              | t                |         | Fl             | oating Alga         | e              |                     |               | Free                | e Floati | ng       |
| Portion            | n of Stream               | n with Ac             | juatic     | Vegeta    | ation (             | %):              |         |                |                     |                | 5                   | _             |                     |          |          |
| Ripari             | an B <u>uffer</u>         | • Veg. (6             | 50 Ft.     | ) - Indi  | icate I             | Dom <u>ina</u> r | nt Cov  | ver <u>T</u> y | pe And Sp           | pecies         |                     |               |                     |          |          |
|                    | T                         |                       | 4          | 7         |                     |                  |         |                |                     | Mic            | rostegiı            | ım vir        | nineur              | n, Phra  | igmites  |
|                    | Trees:                    |                       | Ace        | er rubri  | ım                  |                  |         | C              | srasses:            |                | -                   | aus           | stralis             |          | -        |
|                    | Shrubs:                   |                       | Lind       | era ben   | zoin                |                  |         | Не             | rbaceous:           | В              | Boehmer             | ia cyl<br>sen | lindric<br>sibilis, | a, Ono   | clea     |
| Inorga             | nic Subst                 | rate Con              | npon       | ents (A   | dd to               | 100%)            |         | Orga           | anic S <u>ubstr</u> | ate <u>C</u> o | mpone               | nts (N        | Aay b               | e <100)  | )        |
| T                  | ype                       | Dian                  | neter      |           | Com                 | position         | %       |                | Туре                | Ch             | aracter             | ristics       | <u>s</u>            | Compo    | sition % |
| Bee                | drock                     | -                     | -          |           |                     |                  |         |                |                     | Sticle         | Wood                | Coo           | rac                 |          |          |
| Bo                 | ulder                     | 10                    | " +        |           |                     |                  |         | I              | Detritus            | SUCKS          | s, WOOd<br>lant Met | , Coa         | ise                 | 1        | .0       |
| Co                 | obble                     | 2.5"                  | - 10"      |           |                     | 2                |         |                |                     | P              |                     |               |                     |          |          |
| Gı                 | ravel                     | 0.1" -                | 2.5"       |           |                     |                  |         | М              | uck-Mud             | Bla            | ick, Ver            | y Fine        | e                   |          | 10       |
| S                  | and                       | 0.06-2                | 2 mm       |           |                     | 10               |         | IVI            | uek-iviuu           | Org            | ganic M             | ateria        | 1                   |          | .0       |
| S                  | Silt                      | 0.004-0               | .06 m      | nm        |                     | 88               |         |                | Marl                | Grou           | Shall E             | ragmo         | onte                |          |          |
| C                  | Clay                      | < 0.00                | 4 mm       | 1         |                     |                  |         |                | wiall               | oley,          | Shell F             | agine         | ints                |          |          |

| Project/           | /Site: Sta                                     | andard Chlor                      | rine                     |        | Stream             | m ID:              | 91   | S-JRK-                             | 010 Rea                       | ch 1                              |
|--------------------|--|-----------------------------------|--------------------------|--------|--------------------|--------------------|--|------------------------------------|-------------------------------|-----------------------------------|
| Applicant/Ov       | wner:  | EPA                               |                          |        |                    | State:             |  | De                                 | elaware                       |                                   |
| Investigate        | or(s): J.                                      | Keil, M. Curr                     | ran                      |        | City/Co            | ounty:             | New C  | Castle, N                          | lew Cast                      | le County                         |
| Sampling           | Date:  | 9/8/2023                          |                          |        | Town               | nship:             |  |                                    | N/A                           |                                   |
| Stream N           | lame: UNT                                      | to Red Lion                       | Creek                    |        | Lat                | itude:             |  | 39.                                | 601348                        |                                   |
| Drainage Area (    | $(mi^2)$ :                                     |                                   |                          |        | Long               | itude:             |  | -75                                | .637318                       |                                   |
| Slope Cate         | gory: (3                                       | ) High Gradie                     | ent                      |        | Open-E             | nded?              | Ups  | stream                             | Do                            | ownstream                         |
| FERC Designa       | ation:   | N/A                               |                          | Ι      | Delineation        | Type:              | x Cer  | terline                            | x R/                          | L Banks                           |
| Stream Descrip     | otion:   |                                   |                          | -      |                    |                    |  |                                    |                               |                                   |
| A naturalized ch   | annel that origina                             | ates from the t                   | top of a slop            | e at t | he western         | side of            | the faci   | lity pro                           | perty. Th                     | e channel                         |
| flows west down 2. | slope. This react                              | has more ero                      | oded banks,              | differ | ent width, a       | and dif            | ferent sı  | ıbstrate                           | then that                     | t of reach                        |
| Stream Subsyst     | tem Strear                                     | n Origin                          |                          | Pred   | lominant S         | urroui             | nding L  | anduse                             |                               |                                   |
| Perennia           | l Cu   | ulvert Dischar                    | ge                       | х      | Forest             |                    |  | Comm                               | ercial                        |                                   |
| x Ephemer          | ral Po   | ond Discharge                     | :                        |        | Field/Pastu        | ıre                |  | Industr                            | ial                           |                                   |
| Intermitt          | ent Sv   | vamp, Bog or                      | Wetland                  |        | Agricultura        | al                 |  | Reside                             | ntial                         |                                   |
| Tidal              | Sp   | oring Fed                         |                          |        | Other              |                    |  |                                    |                               |                                   |
|                    | Μ  | ixture of Orig                    | ins                      | lŧ     | leavy rain i       | in the l           | last 7 da  | ays? x                             | Yes                           | No                                |
| Other:             | x Su   | Irface Water F                    | Runoff                   | ,      | Turbidity?         |                    | Clear  | Other                              | :                             | N/A                               |
| Flow Pres          | sent? Yes                                      | x No                              | )                        |        | Flow Dire          | ction:             |  |                                    | West                          |                                   |
|                    |  |                                   |                          |        |                    |                    |  |                                    |                               |                                   |
| For linear proje   | ects, provide dime                             | nsions at Ri                      | ight bank/I              | Left b | ank facing         | down               | stream   | Stream                             | n Morph                       | nology                            |
| centerlin          | e of stream crossi                             | ng F                              | Right Bank (             | Do     | Horiz.             | 2.0                | 0 Ft.  |                                    | Riffle %                      | 30                                |
|                    |  | n                                 | ot include f             | low    | Vert.              | 4.0                | 0 Ft.  |                                    | Pool %                        | 20                                |
|                    | OF BANK WIDTH                                  | / Le                              | eft Bank (Do             | o not  | Horiz.             | 3.0                | 0 Ft.  |                                    | Run %                         | 50                                |
|                    | DINARY HIGH                                    | inc                               | lude flow d              | epth)  | Vert.              | 4.0                | 0 Ft.  | Canor                              | v Cover                       |                                   |
|                    |  | T Wa                              | ater/Flow D              | enth   |                    | 0.0                | 0 Ft   | O                                  | ben                           |                                   |
| DEPTH              | OR   | DINARY HIGH BO                    | ttom of Cha              | nnel   | Width              | 2.5                | 0 Ft   | Pa                                 | rtly Ope                      | n                                 |
|                    |  | ATER DEPTH                        | dinary High              | Wate   | er Denth           | 2.0                | $\frac{1}{0}$ Ft.  | x Sh                               | aded                          | -                                 |
| FLOW               | ROTTOM   |                                   | n of Bank V              | Vidth  | or Deptil          | 7.5                | 0 Ft   | Is Cha                             | nnel Na                       | turalized?                        |
| DEPTH              | WIDTH  |                                   | dinary High              | Wate   | er Width           | 5.0                | $\begin{array}{c c} 0 & Ft \\ \hline 0 & Ft \end{array}$ | v v                                | Yes                           | No                                |
|                    |  |                                   | tal Denth                | un     |                    | 4.0                | 0 Ft   | Fin Fi                             | sh Prese                      | nt?                               |
| Macroinver         | tehrates Present                               | 2 Ves                             |                          | 0      |                    | 4.0                | 0 I t.   |                                    | Yes v                         | No                                |
| Enhemer            | rontera Pl                                     | econtera                          | Trichpote                | ra     | Other              | r•                 |  |                                    | 105                           | 110                               |
| Aquatic Vegeta     | tion - Indicate I                              | Cominant Cor                      | ver Type                 | u      | Other              |                    |  |                                    |                               |                                   |
| Aquatic Vegeta     | Rooted   | Emergent                          | ver rype                 | Ro     | oted Floatin       | 10                 |  |                                    | ttached                       | Algae                             |
| x N/A              | Rooted   | Submergent                        |                          | Fl     | oating Alga        | 1 <u>5</u>         |  | 1                                  | Eree Elo                      | ating                             |
| Portion of Stream  | m with Aquatic V                               | Submergent                        | )·                       | 11     | oating Aiga        |                    |  |                                    |                               | uning                             |
| Dinarian Buffa     | $\frac{11}{r} \frac{1}{Vog} = (60 \text{ Et})$ | Indicate Do                       | minant Car               | vor T  | vno And S          | nooios             |  |                                    |                               |                                   |
| Riparian Dune      | 1 veg. (0011.)                                 | - mulcate Do                      |                          |        | ype And S          | pecies             |  |                                    |                               |                                   |
| Trees:             | Liriodendron t<br>Quei                         | ulipifera, Acer<br>cus montana    | r rubrum,                | (      | Grasses:           |                    |  |                                    |                               |                                   |
| Shrubs:            | Elaeagnus umbe<br>Lindera benz                 | ellata, Lonicer<br>oin, Clethra a | ra maackii,<br>ılnifolia | Не     | rbaceous:          | Ci<br>radica<br>ma | lethra a<br>ans, Lor<br>arginali.                        | lnifolia,<br>ticera ja<br>s, Rubus | Toxicod<br>ponica,<br>phoenic | 'endron<br>Dryopteris<br>colasius |
| Inorganic Subs     | trate <u>Componen</u>                          | ts (A <u>dd to 10</u>             | 0%)                      | Org    | anic <u>Substr</u> | ate Co             | ompon <u>e</u>   | nts (Ma                            | y b <u>e &lt;1</u>            | 00)                               |
| Туре               | Diameter                                       | Compos                            | sition %                 |        | Туре               | Ch                 | naracter   | istics                             | Com                           | oosition %                        |
| Bedrock            | -  |                                   |                          |        |                    | G .: 1             | 117  | C                                  |                               |                                   |
| Boulder            | 10" +  | 1                                 | 0                        | I      | Detritus           | Sticks             | s, Wood  | , Coarse                           | e                             | 5                                 |
| Cobble             | 2.5" - 10"                                     | 3                                 | 0                        |        |                    | P                  | iant Mat   | erial                              |                               |                                   |
| Gravel             | 0.1" - 2.5"                                    | 3                                 | 0                        |        | 1                  | Bla                | ick, Ver   | y Fine                             |                               |                                   |
| Sand               | 0.06-2 mm                                      | 2.                                | 0                        | M      | uck-Mud            | Org                | ganic M  | aterial                            |                               |                                   |
| Silt               | 0.004-0.06 mm                                  | 1                                 | 0                        |        |                    | (                  | Grev. SI   | nell                               |                               |                                   |
| Clay               | <0.004 mm                                      |                                   |                          |        | Marl               |                    | Fragme   | nts                                |                               |                                   |
|                    |  |                                   |                          |        |                    |                    | v  |                                    |                               |                                   |

| Project               | /Site:         | Stan             | dard Ch    | nlorine     |            |         | Stream       | m ID:    |                    | S-JRI   | K-01   | 0 Reacl   | 12         |
|-----------------------|----------------|------------------|------------|-------------|------------|---------|--------------|----------|--------------------|---------|--------|-----------|------------|
| Applicant/O           | wner:          |                  | EPA        |             |            |         |              | State:   |                    |         | Dela   | ware      |            |
| Investigat            | cor(s):        | J. K             | Ceil, M. C | Curran      |            |         | City/Co      | ounty:   | New                | Castle  | , Nev  | w Castle  | County     |
| Sampling              | Date:          |                  | 9/8/202    | 3           |            |         | Town         | nship:   |                    |         | N      | /A        |            |
| Stream N              | Name: U        | UNT to           | o Red Li   | on Cree     | ek         |         | Lat          | itude:   |                    | 3       | 39.60  | 01453     |            |
| Drainage Area         | $(mi^2)$ :     |                  |            |             |            |         | Long         | itude:   |                    | -′      | 75.63  | 37832     |            |
| Slope Cate            | egory:         | (3)              | High Gra   | dient       |            |         | Open-E       | nded?    | Up                 | strean  | n      | Dov       | vnstream   |
| FERC Designation      | ation:         |                  | N/A        |             |            | Ι       | Delineation  | Type:    | x Ce               | nterlin | ne     | x R/L     | Banks      |
| Stream Descrip        | otion:         |                  |            |             |            |         |              |          |                    |         |        |           |            |
| A naturalized ch      | nannel that or | iginate          | es from t  | he top o    | of a slop  | be at t | he western   | side of  | the fac            | ility p | rope   | rty. The  | channel    |
| flows west down       | nslope. This 1 | each l           | nas a moi  | re dissij   | pated be   | ed and  | l bank, mor  | e cobbl  | le subs            | rate, a | nd d   | rains int | iO         |
| wetland W-JRK         | 001.           |                  |            |             |            |         |              |          |                    |         |        |           |            |
| Stream Subsys         | tem St         | ream             | Origin     |             |            | Pred    | lominant S   | urrou    | nding l            | Landu   | se     |           |            |
| Perennia              | ıl             | Cul              | vert Disc  | harge       |            | Х       | Forest       |          |                    | Com     | mere   | cial      |            |
| x Ephemer             | ral            | Pon              | d Discha   | rge         |            | Х       | Field/Pastu  | ıre      | X                  | Indu    | stria  | 1         |            |
| Intermitt             | tent           | Swa              | ump, Bog   | or We       | tland      |         | Agricultura  | al       |                    | Resi    | denti  | ial       |            |
| Tidal                 |                | Spri             | ing Fed    |             |            |         | Other        |          |                    |         |        |           |            |
|                       |                | Mix              | ture of C  | Drigins     |            | l       | leavy rain i | in the l | last 7 d           | lays?   | Х      | Yes       | No         |
| Other:                | Х              | Surf             | face Wate  | er Runo     | off        |         | Turbidity?   |          | Clear              | Oth     | ner:   | N         | J/A        |
| Flow Pre              | sent? Ye       | es               | Х          | No          |            |         | Flow Dire    | ction:   |                    |         | W      | est       |            |
|                       |                |                  |            |             |            |         |              |          |                    |         |        |           |            |
| For linear proj       | ects, provide  | dimens           | sions at   | Right       | t bank/I   | Left b  | ank facing   | down     | stream             | Stre    | am I   | Morpho    | logy       |
| centerlin             | ne of stream c | rossing          | g          | Righ        | t Bank (   | (Do     | Horiz.       | 2.0      | 0 Ft.              |         | Ri     | ffle %    | 50         |
| I TOP                 | OF BANK WIDTH  | 1                | ,          | not ii      | nclude f   | low     | Vert.        | 0.5      | 0 Ft.              |         | Pe     | ool %     |            |
|                       | DINARY HIGH    | -                | /          | Left B      | Bank (Do   | o not   | Horiz.       | 2.0      | 0 Ft.              |         | R      | un %      | 50         |
|                       | VATER WIDTH    |                  | ]          | include     | e flow d   | epth)   | Vert.        | 0.5      | 0 Ft.              | Can     | ору    | Cover     |            |
| TOTAL                 |                | /                | ÷          | Water/      | Flow D     | epth    |              | 0.0      | 0 Ft.              |         | Oper   | 1         |            |
| DEPTH                 | /              | ORDI             | NARY HIGH  | Botton      | n of Cha   | annel   | Width        | 4.0      | 0 Ft.              |         | Partl  | y Open    |            |
|                       |                | WAL              | ER DEPTH   | Ordina      | ary High   | Wate    | er Depth     | 0.7      | 5 Ft.              | X       | Shad   | led       |            |
| FLOW                  | BOTTOM         |                  | A.         | Top of      | Bank V     | Vidth   |              | 8.0      | 0 Ft.              | Is C    | hanı   | nel Natu  | iralized?  |
| DEPTH                 | WIDTH          |                  |            | Ordina      | ıry High   | Wate    | er Width     | 10.0     | 00 Ft.             | Х       | Ye     | es        | No         |
|                       |                |                  |            | Total I     | Depth      |         |              | 0.5      | 0 Ft.              | Fin 1   | Fish   | Presen    | t?         |
| Macroinver            | tebrates Pre   | sent?            | Y          | es x        | N          | 0       |              |          |                    |         | Ye     | s x       | No         |
| Ephemer               | roptera        | Plec             | coptera    | Tr          | richpoter  | ra      | Other        | r:       |                    |         |        |           |            |
| Aquatic Vegeta        | ation - Indica | ate Do           | minant     | Cover '     | Туре       |         |              |          |                    | -       |        |           |            |
| x N/A                 | Ro             | oted E           | Emergent   | ;           |            | Ro      | oted Floatin | ng       |                    |         | Att    | ached A   | lgae.      |
|                       | Roc            | ted Su           | ıbmerger   | nt          |            | Fl      | oating Alga  | ie       |                    |         | Fr     | ee Float  | ing        |
| Portion of Stream     | m with Aqua    | tic Ve           | getation   | (%):        |            |         |              |          |                    |         | _      |           |            |
| <b>Riparian Buffe</b> | er Veg. (60 ]  | F <b>t.) -</b> 1 | Indicate   | Domin       | ant Co     | ver T   | ype And S    | pecies   | 5                  |         |        |           |            |
|                       | Liriodendi     | on tul           | ipifera. A | Acer ru     | brum.      |         |              |          |                    |         |        |           |            |
| Trees:                |                | Ouerci           | us monta   | na          |            | (       | Grasses:     |          |                    |         |        |           |            |
|                       |                |                  |            |             |            |         |              |          |                    |         |        |           | -          |
|                       |                |                  |            |             |            |         |              | C        | lothra i           | Inifali | ia T   | oricoda   | ndron      |
| Shrubs                | Lindera ben    | zoin,            | Clethra a  | ılnifolia   | a, Rosa    | He      | rhaceous     | radic    | ans I a            | nicera  | ia, 10 | onica D   | invonteris |
| Silluos.              |                | ті               | ıltiflora  |             |            | IIC     | Touccous.    | m        | uns, Lo<br>aroinal | is Ruk  | bus n  | hoenico   | lasius     |
|                       |                |                  |            |             |            |         |              | 1110     | ıı şınaı           | is, nuc | ns p   | noemeo    | lasins     |
| <b>Inorganic Subs</b> | strate Compo   | onents           | s (Add to  | <b>100%</b> | )          | Org     | anic Substr  | rate Co  | ompon              | ents (N | May    | be <100   | ))         |
| Туре                  | Diamet         | er               | Com        | positio     | <u>n %</u> |         | Type         | Ch       | naracte            | ristics | 5      | Compo     | sition %   |
| Bedrock               | -              |                  |            |             |            |         |              | G. 1     | ***                | 1.0     |        |           |            |
| Boulder               | 10" +          |                  |            | 2           |            | I       | Detritus     | Sticks   | S, WOO             | 1, Coa  | rse    |           | 15         |
| Cobble                | 2.5" - 10      | )"               |            | 80          |            |         |              |          | iant Ma            | nerial  |        |           |            |
| Gravel                | 0.1" - 2       | 5"               |            | 10          |            | М       | uok Mud      | Bla      | ick, Ve            | ry Fine | e      |           |            |
| Sand                  | 0.06-2 m       | m                |            | 5           |            | IVI     | uck-iviud    | Org      | ganic M            | Iateria | 1      |           |            |
| Silt                  | 0.004-0.06     | mm               |            | 3           |            |         | Marl         |          | Grey, S            | hell    |        | -         |            |
| Clay                  | <0.004 n       | nm               |            |             |            |         | wiall        |          | Fragm              | ents    |        |           |            |

| Proje          | ect/Site:       | Star                       | dard Ch                 | lorine               |                 |        | Stream          | n ID:                      |  | S   | S-JR  | K-011   |                                      |                                  |
|----------------|-----------------|----------------------------|-------------------------|----------------------|-----------------|--------|-----------------|----------------------------|--|---|---|---|--------------------------------------|----------------------------------|
| Applicant      | /Owner:         |                            | EPA                     |                      |                 |        | 1               | State:                     |  |   | Dela  | ware  |                                      |                                  |
| Investig       | gator(s):       | J. K                       | Keil, M. C              | urran                |                 |        | City/Co         | ounty:                     | New  | Castle  | e, Ne                                       | w Cas   | tle C                                | County                           |
| Samplin        | ng Date:        |                            | 9/11/202                | 3                    |                 |        | Town            | nship:                     |  |   | Ν   | /A  |                                      |                                  |
| Stream         | n Name:         | UNT t                      | o Red Lio               | on Creek             |                 |        | Lat             | itude:                     |  |   | 39.60                                       | )2025   |                                      |                                  |
| Drainage Are   | $ea (mi^2)$ :   |                            |                         |                      |                 |        | Long            | itude:                     |  | -   | -75.6                                       | 33032   |                                      |                                  |
| Slope C        | ategory:        | (2) M                      | oderate G               | radient              |                 |        | Open-E          | nded?                      | Up   | stream  | m   | D   | own                                  | stream                           |
| FERC Desi      | gnation:        |                            | N/A                     |                      |                 | Γ      | Delineation     | Type:                      | x Ce   | nterli  | ne  | x R   | /L B                                 | anks                             |
| Stream Desc    | ription:        |                            |                         |                      |                 |        |                 | ••                         |  |   |   |   |                                      |                                  |
| A natrulized   | stream chan     | nel that or                | riginates f             | rom a sr             | nall cu         | ılvert | along the e     | ast sid                    | e emba                                       | nkme  | nt of                                       | the fa  | cility                               | y                                |
| property. The  | stream flow     | ws through                 | n wetland               | W-JRK                | -002 a          | nd co  | ntinues unt     | il it dra                  | ains int                                     | o wet   | land `                                      | W-JRI   | K-00                                 | 1.                               |
| Stream Subs    | ystem           | Stream                     | Origin                  |                      |                 | Pred   | lominant S      | urrou                      | nding l                                      | Landu   | use   |   |                                      | ĺ                                |
| Peren          | nial            | Cul                        | vert Discł              | narge                |                 | Х      | Forest          |                            |  | Con   | nmer  | cial  |                                      |                                  |
| Epher          | neral           | Pon                        | d Dischar               | rge                  |                 |        | Field/Pastu     | ıre                        | Х  | Indu  | ustria                                      | ıl  |                                      |                                  |
| x Intern       | nittent         | Swa                        | amp, Bog                | or Wetla             | and             |        | Agricultura     | al                         |  | Res   | ident                                       | ial   |                                      |                                  |
| Tidal          |                 | Spri                       | ing Fed                 |                      |                 |        | Other           |                            |  |   |   |   |                                      |                                  |
|                |                 | x Mix                      | ture of O               | rigins               |                 | Ĥ      | leavv rain i    | in the l                   | last 7 d                                     | lavs?   |   | Yes   | ;                                    | No                               |
| Other:         |                 | Sur                        | face Wate               | er Runof             | f               | ,      | Furbidity?      |                            | Clear  | Ot  | her:  |   | _                                    |                                  |
| Flow P         | resent?         | Yes                        | x                       | No                   |                 |        | Flow Dire       | ction:                     |  | -   | No  | orth  |                                      |                                  |
|                |                 |                            |                         |                      |                 |        |                 |                            |  |   |   |   |                                      |                                  |
| For linear n   | roiects. nrov   | vide dimens                | sions at                | Right h              | oank/L          | .eft b | ank facing      | down                       | stream                                       | Stre  | eam 1                                       | Morpl   | holo                                 | gv                               |
| center         | rline of strea  | m crossing                 |                         | Right                | Bank (          | Do     | Horiz.          | 1.0                        | 0 Ft   |   | R   | iffle %   |                                      | 07                               |
|                |                 |                            |                         | not inc              | lude f          | low    | Vert            | 0.7                        | 5 Ft   | x   | Р   | 001 %   |                                      | 50                               |
|                | OP OF BANK V    | VIDTH                      | /                       | Left Ba              | nk (Do          | not    | Horiz           | 1.0                        | 0 Ft.  | x   | R   | sun %   |                                      | 50                               |
|                | ORDINARY HI     | GH                         | /                       | include t            | flow d          | enth)  | Vert            | 1.0                        | 0 Ft   | Car   | ionv  | Cover   |                                      | 23                               |
| -              | MATER MILLI     | /                          |                         | Water/F              |                 | eptil) | vert.           | 0.0                        | 0 Ft   | Cai   | One   | n   |                                      |                                  |
|                |                 | ORDI                       | NARY HIGH               | Rottom               | of Cha          | nnel   | Width           | 5.0                        | 0 Ft   |   | Part  | lv One  | n                                    |                                  |
|                | <u></u>         | WAT                        | ER DEPTH                | Ordinar              | v High          | Wate   | r Denth         | 0.5                        | 0 Ft   |   | Shac  | ly Ope  | -11                                  |                                  |
|                |                 | 1                          | 1                       | Top of I             | y mgn<br>Donk W | W all  | n Depui         | 6.7                        | 5 Et   | Ic (  | Shar  | icu   |                                      | lizod?                           |
| FLOW<br>DEPTH  | WIDTH           |                            |                         | Ordinar              | Ulich           | Wot    | w Width         | 6.1                        | Ј ГІ.<br>7 Бғ                                | 15 (  |   |   | itur a                               | Mo                               |
|                | -               |                            | ,                       |                      | y High          | wate   |                 | 0.1                        | 7 I't.<br>5 Et                               | X   | I C   | -S  |                                      | NO                               |
| Moorein        | outobuotoa      | Duogont?                   | Va                      | Total De             | epui<br>N       |        |                 | 0.7                        | 5 11.  |   |   | Frese   | :11U :                               | No                               |
| Fahar          | ertebrates      | Present:                   | Ie                      | 2S X                 | IN              | 0      | Other           |                            |  |   | 10  | es :  | X                                    | INO                              |
| Epher          | neroptera       |                            | copiera                 |                      | inpoter         | a      | Other           |                            | _  |   |   |   | _                                    |                                  |
| Aquatic veg    | etation - In    | Idicate Do                 | minant (                | Jover 1              | уре             | D      | ( 1 F1 ('       |                            |  | -   | <b>A</b> 44                                 | 1 1   | A 1                                  |                                  |
| x N/A          | \               | Rooted I                   | Emergent                |                      |                 | K0     | oted Floatin    | ng                         |  |   | Att   |   | Alga                                 | ae                               |
|                |                 | Rooted St                  | ubmergen                |                      |                 | FI     | oating Alga     | ie                         |  |   | FI  | ree Flo   | ating                                | 5                                |
| Portion of Sti | ream with A     | quatic ve                  | getation (              | <u>%):</u>           | 4 0             | 70     |                 |                            | _  | _   | _   |   | _                                    |                                  |
| Riparian Bu    | ffer Veg.       | (60 Ft.) - 1               | Indicate I              | Dominai              | nt Cov          | er T   | ype And S       | pecies                     |  |   |   |   |                                      |                                  |
| Trees:         | Aceı<br>Liriode | r saccharii<br>endron tuli | num, Jugl<br>ipifera, M | ans nigr<br>alus bac | ra,<br>ccata    | (      | Brasses:        | Mic                        | rostegi                                      | um vi<br>au                                   | mine<br>Istral                              | um, pl<br>is                                    | iragi                                | mites                            |
| Shrubs:        | Lind            | lera benzo                 | in, Rosa                | Multiflo             | ra              | Не     | rbaceous:       | Boel<br>ra<br>Amp<br>alles | hmeria<br>Idicans<br>Delopsi<br>ghenier<br>L | cylina<br>, Rub<br>s brev<br>usis, P<br>onice | drica<br>us ph<br>ipedi<br>Persic<br>ra jaj | Toxic<br>coenico<br>uncula<br>caria v<br>ponica | oder<br>olasi<br>ta, R<br>irgin<br>t | ndron<br>ius,<br>Rubus<br>1iana, |
| Inorganic Su   | ibstrate Co     | omponents                  | s (Add to               | 100%)                |                 | Orga   | anic Substr     | ate Co                     | ompon  | ents (  | May   | be <1   | 00)                                  |                                  |
| <u>Type</u>    | Dia             | <u>meter</u>               | Com                     | position             | <u>%</u>        |        | Type            | <u>Ch</u>                  | naracte                                      | eristic                                       | <u>s</u>                                    | Com   | posit                                | tion %                           |
| Bedrock        |                 | -                          |                         |                      |                 |        |                 | Sticks                     | s, Woo                                       | d, Co   | arse  |   | _                                    |                                  |
| Boulder        | 1(              | )" +                       | ļ                       |                      |                 | I      | Detritus        | Р                          | lant Ma                                      | terial  |   |   | 25                                   |                                  |
| Cobble         | 2.5"            | - 10"                      |                         |                      |                 |        |                 |                            |  |   |   |   |                                      |                                  |
| Gravel         |                 | -                          |                         |                      |                 |        |                 | I Bla                      | ick Ve                                       | rv Fin  | e   |   |                                      |                                  |
|                | 0.1"            | - 2.5"                     |                         |                      |                 | M      | uck-Mud         | Dia                        | ier, ve                                      |   |   |   | 20                                   |                                  |
| Sand           | 0.1"            | - 2.5"<br>-2 mm            |                         | 50                   |                 | M      | uck-Mud         | Org                        | ganic N                                      | Iateria                                       | al  |   | 20                                   |                                  |
| Sand<br>Silt   | 0.1"            | - 2.5"<br>-2 mm<br>0.06 mm |                         | 50<br>50             |                 | M      | uck-Mud<br>Marl | Org                        | ganic M<br>Grey, S                           | lateria<br>hell                               | al  |   | 20                                   |                                  |

| Project/          | Site:          | Star             | ndard Cl   | hlori      | ne            |                    | Stream       | m ID:    |         |             | S       | 5-JRI        | K-012        |                  |
|-------------------|----------------|------------------|------------|------------|---------------|--------------------|--------------|----------|---------|-------------|---------|--------------|--------------|------------------|
| Applicant/Ov      | wner:          |                  | EPA        |            |               |                    |              | State:   |         |             |         | Dela         | ware         |                  |
| Investigate       | or(s):         | J. K             | Keil, M. C | Curra      | n             |                    | City/Co      | ounty:   | Ne      | w C         | Castle  | , Nev        | w Castl      | e County         |
| Sampling 1        | Date:          |                  | 9/29/202   | 23         |               |                    | Town         | nship:   |         |             |         | N/           | 'A           |                  |
| Stream N          | lame: U        | JNT t            | o Red Li   | on C       | reek          |                    | Lat          | itude:   |         |             |         | 39.60        | 0176         |                  |
| Drainage Area (   | $(mi^2)$ :     |                  |            |            |               |                    | Long         | itude:   |         |             | -′      | 75.63        | 38764        |                  |
| Slope Cate        | gory:          | (3)              | High Gra   | adien      | t             |                    | Open-E       | nded?    | ۱       | Ups         | trean   | n            | Do           | wnstream         |
| FERC Designation  | ation:         |                  | N/A        |            |               | Ι                  | Delineation  | Type:    | X       | Cen         | terlir  | ne           | x R/L        | Banks            |
| Stream Descrip    | tion:          |                  |            |            |               |                    |              |          |         |             |         |              |              |                  |
| A natrulized stre | am channel t   | hat or           | riginates  | from       | a culvert     | at the             | base of the  | berm     | on th   | e ea        | ıst sic | de of        | the clea     | ared             |
| ROW. The strea    | m seems to c   | ome f            | rom grou   | undw       | ater assoc    | iated <sup>•</sup> | with wetlan  | d com    | muni    | ty V        | V-JR    | K-00         | 1 PEM        | 2. The           |
| stream dissipates | s into wetlan  | d W-J            | RK-001     | PFO        | 1A to the     | east.              |              |          |         |             |         |              |              |                  |
| Stream Subsyst    | tem St         | ream             | Origin     |            |               | Pred               | lominant S   | urrou    | nding   | g L         | andu    | ise          |              |                  |
| Perennia          | l x            | Cul              | vert Disc  | harg       | e             | Х                  | Forest       |          |         |             | Com     | nmerc        | cial         |                  |
| Ephemer           | al             | Pon              | d Discha   | urge       |               | х                  | Field/Pastu  | ıre      |         | х           | Indu    | strial       | [            |                  |
| x Intermitte      | ent            | Swa              | amp, Bog   | g or V     | Vetland       | х                  | Agricultur   | al       |         |             | Resi    | denti        | al           |                  |
| Tidal             | x              | Spr              | ing Fed    |            |               | x                  | Other        |          |         |             | Ro      | adwa         | ıv           |                  |
|                   | x              | Mix              | ture of C  | Drigin     | 15            | H                  | leavy rain i | in the   | last 7  | 7 da        | vs?     | x            | Yes          | No               |
| Other:            |                | Sur              | face Wat   | er Ru      | inoff         | ,                  | Turbidity?   | x        | Clea    | r           | Otl     | her:         | 100          | 110              |
| Flow Pres         | sent? x Ye     | 2S               |            | No         |               |                    | Flow Dire    | ction.   | orea    | -           | 01      | Ea           | st           |                  |
|                   |                |                  |            | 110        |               |                    |              | cu011.   |         |             |         | 24           | .50          |                  |
| For linear proje  | ects provide ( | limen            | sions at   | Rig        | ht hank/l     | left h             | ank facing   | down     | strea   | m           | Stre    | am N         | Aornho       | alagy            |
| centerlin         | e of stream ci | ossin            |            | Ri         | oht Bank      |                    | Horiz        | 05       |         | Ft          |         | Ri           | ffle %       | 20               |
|                   |                |                  | 5          | 10         | t include f   | ไดพ                | Vert         | 0.5      | 15 1    | Ft          | v       | P            | nol %        | 30               |
| TOP (             | OF BANK WDTH   | -                | /          | Lef        | t Bank (De    | o not              | Horiz        | 0.7      | 5 I     | Ft          | A<br>V  | R            | un %         | 50               |
|                   | DINARY HIGH    |                  | /          | inch       | ide flow d    | enth)              | Vort         | 0.3      | 15 I    | Г <b>г.</b> |         |              | Covor        | 50               |
|                   |                | $\square$        |            | Wet        | ar/Elow D     | opth               | ven.         | 0.7      | 5 1     | гі.<br>Бғ   |         | Oper         | Cover        |                  |
| DEPTH             | /              |                  |            | W at       | en/140w D     | epui               | Wedth        | 0.2      | .5<br>1 | гі.<br>Г4   |         | Doget1       |              |                  |
|                   | /              | WAT              | ER DEPTH   | Ond        |               | Wat                | w Iuuii      | 1.5      |         | гі.<br>Бғ   |         | Falu<br>Shod | y Open       |                  |
|                   |                |                  | t          | Tan        | of Domin      | Vidth              | er Deptil    | 0.5      |         | гч.<br>Г4   |         | Shau         | eu<br>al Nat | malizad?         |
| FLOW<br>DEPTH     | WIDTH          |                  |            | Top        | OI Dalik V    | V Ium              |              | 2.3      |         | Γt.<br>Γt   | 18 C.   | mann<br>V-   |              | uranzeu:         |
| -                 |                |                  |            |            | nary High     | wate               | er width     | 2.1      |         | гі.<br>Г4   | X       | re           | S D          | NO               |
| 34                |                | 40               | <b>X</b> 2 | Tota       | il Depth      | r .                | 1            | 1.0      | 1 00    | Γt.         | Fin .   | FISH         | Presen       | U.               |
| Macroinver        | tebrates Pre   | sent?            | ľ          | es         | X N           | 0                  | 0.1          |          |         |             |         | re           | S X          | NO               |
| Epnemer           | optera         | Plea             | coptera    |            | Tricnpote     | ra                 | Other        | r:       |         |             |         |              | _            |                  |
| Aquatic vegeta    | tion - Indica  | ite Do           | ominant    | Cove       | er Type       | D                  | ( 1 EL (     |          | _       |             |         | <b>A</b> 44  | 1 1 4        | 1                |
| x N/A             | R0             |                  | Emergen    | t          |               | K0                 | oted Floatin | ng       |         |             |         | Atta         | ached $P$    | iigae            |
|                   | Roc            | ted Si           | ubmerger   | nt         |               | FI                 | oating Alga  | ie       |         |             |         | Fr           | ee Floa      | ling             |
| Portion of Stream | m with Aqua    | tic ve           | getation   | (%):       | • • •         | T                  |              |          | _       |             | _       | _            | _            |                  |
| Riparian Buffe    | r Veg. (60]    | f <b>t.) -</b> 1 | Indicate   | Don        | unant Co      | ver T              | ype And S    | pecies   | 5       |             |         |              |              |                  |
| -                 | Acer rubru     | m, Li            | riodendr   | on tu      | lipifera,     |                    | ~            | Mie      | croste  | egiu        | m vir   | minei        | ım, phr      | agmites          |
| Trees:            | Liqu           | uidam            | bar styrc  | iciflu     | a             |                    | Jrasses:     |          |         | 0           | aus     | strali       | s            | 0                |
|                   |                |                  | 2          | v          |               |                    |              |          |         |             |         |              |              |                  |
|                   |                |                  | _          |            |               |                    |              |          | _       |             |         |              |              |                  |
| Shrubs:           | Lindera ben    | zoin,            | Rosa mu    | ltiflo     | ra, Rubus     | He                 | rbaceous:    |          | Loni    | cera        | a japo  | onica        | ı, Celas     | trus             |
|                   |                | alleg            | heniensi   | <i>s</i> , |               |                    |              |          |         |             | orbi    | culat        | us           |                  |
|                   | ~              |                  |            | 100        | <b>~</b> / \  |                    |              |          | _       |             |         | ~            |              | 0                |
| Inorganic Subs    | trate Compo    | onent            | s (Add to  | o 100      | %)            | Org                | anic Substr  | rate C   | ompo    | onei        | nts (I  | May          | be <10       | 0)               |
| <u>Type</u>       | <u>Diamete</u> | er –             | <u>Com</u> | iposi      | <u>tion %</u> |                    | <u>Type</u>  | <u>C</u> | harac   | cter        | istics  | <u>s</u>     | <u>Comp</u>  | <u>)sition %</u> |
| Bedrock           | -              |                  |            |            |               |                    |              | Stick    | s. Wo   | bod         | Coa     | rse          |              |                  |
| Boulder           | 10" +          |                  |            |            |               | ]                  | Detritus     | P        | lant N  | Mat         | erial   |              |              | 5                |
| Cobble            | 2.5" - 10      | )"               |            |            |               |                    |              |          |         |             |         |              |              |                  |
| Gravel            | 0.1" - 2.:     | 5"               |            | 25         |               | М                  | uck-Mud      | Bla      | ack, V  | /ery        | y Fine  | e            |              | 10               |
| Sand              | 0.06-2 m       | m                |            | 40         |               |                    |              | Or       | ganic   | Ma          | ateria  | .1           |              | - ~              |
| Silt              | 0.004-0.06     | mm               |            | 35         |               |                    | Marl         |          | Grey    | , Sh        | nell    |              |              |                  |
| Clay              | <0.004 m       | m                |            |            |               |                    | Man          |          | Frag    | mei         | nts     |              |              |                  |

| Applicant/Owner:       EPA       State:       Delaware         Investigator(s):       J. Keil, M. Curum       City/Coury):       New Castle, New Castle County         Sampling Date:       11/7/2023       Township:       N/A         Stream Name:       Red Lion Creek       Latitude:       39.605291         Prininge Area (m)?       8.67       Longitude:       -7.5.634104         Stope Category:       (1) Low Gradient       Open-Ended?       x       Upstream (x)       N/A         Performation:       N/A       Delineation Type:       x       Centerline (x)       N/A         Stream Subsystem       Stream Origin       Predominant Surrounding Landuse         x       Performat       Commercial       Commercial         Fibemeral       Pond Discharge       x       Field/Pasture       X       Indextrial         Tidal       Spring Fed       x       Other       Roudway       East         Filow Present2       x       Yes       No       Flow Direction       East         for interprojects, provide dimensions at<br>centerline of stream consign       Right Bank (Do No       Flow Direction       East         for interprojects, provide dimensions       X       Right Bank (Do No       Flore       Flore       <   | Project/   | /Site:                   | Standar              | d Chlo               | rine            |                | Stream                     | n ID:             |                          |                          | S-JR                       | K-013                          |                              |       |
|---|--|--------------------------|----------------------|----------------------|-----------------|----------------|----------------------------|-------------------|--------------------------|--------------------------|----------------------------|--------------------------------|------------------------------|-------|
| Investigator(s)     J. Keil, M. Curran     City/County:     New Castle. New Castle County       Sampling Date:     11/7/2023     Township:     N/A       Stream Nunc:     Red Lion Creek     Latitude:     39.605291       Drainage Area (m <sup>2</sup> ):     8.67     Longitude:     -75.634104       Slope Category:     (1) Low Gradient     Open-EnddV:     V Upstream:     X Downstream       FERC Designation:     N/A     Delineation Type:     x Centerline     x Bornerial       Stream Description:     Red Lion Creek.     Creck runs cast across the northern most part of the study area.     Commercial       Stream Subsystem     Stream Origin     Perdominant Surrounding Landose     x Red Lion Creek.     Creck runs cast across the northern most part of the study area.       Stream Subsystem     Stream of Origins     Fleed/Pasture     x Industrial       Intermittent     Swamp, Bog or Wetland     x Agricultural     Residential       Todal     Spring Fed     X Other     Readway       Flow Present?     x Yes     No     Flow Direction:     East       For linear projects provide dimensions at centerline of stream crossing     Right Bank (Do not Horiz, 6.00     Ft.     Rift/ 5%       Tog linear projects provide dimensions at centerline of stream crossing     Right Bank (Do not Horiz, 6.00     Ft.     Rift/ 5% <td< td=""><td>Applicant/Ov</td><td>wner:</td><td>]</td><td>EPA</td><td></td><td></td><td>1</td><td>State:</td><td></td><td></td><td>Del</td><td>aware</td><td></td></td<>   | Applicant/Ov   | wner:                    | ]                    | EPA                  |                 |                | 1                          | State:            |                          |                          | Del                        | aware                          |                              |       |
| Sampling Date:         11/7/2023         Township:         N/A           Darinage Area (m <sup>2</sup> ):         8.67         Longitude:         39.065291           Parinage Area (m <sup>2</sup> ):         8.67         Longitude:         75.634104           Stope Category:         (1) Low Gradient         Open-Ended?         x Upstream         x         Downstream           FRC:         Designation:         N/A         Delineation Type:         x Centerline         x         R.7.Banks           Stream Description:         Red Lion Creek.         Creek runs east across the northern most part of the study area.          Commercial         x         R.7.Banks           Stream Subsystem         Stream Origin         Percominant Surrounding Landuse         x         Nature of Origins         Forest         Industrial           Total         Percental         Pond Discharge         x         Field Pasture         X Industrial         Residential           Total         X         Surface Ware Runoff         Turbidity?         Clear         Other:         Turbid           Total         Surface Ware Runoff         Turbidity?         Clear         Other:         Turbidity?           Total         Surface Ware Runoff         Vert         2.00         For         Foreign Orgene Sur   | Investigate  | or(s):                   | J. Keil,             | M. Cur               | ran             |                | City/Co                    | ounty:            | New                      | Cas                      | tle, Ne                    | ew Cast                        | le County                    |       |
| Stream Name         Red Lion Creek         Latitude:         39.065291           Drainage Area (mg <sup>2</sup> ):         8.67         Longitude:         -75.634104           Stope Clargory:         (1) Low Gradient         Open-Faded?) x Upstream         x Downstream           FERC Designation:         N/A         Delincation Type:         x Centerline         x RL Banks           Stream Description:         N/A         Delincation Type:         x Centerline         x RL Banks           Stream Subsystem         Stream Origin         Predominant Surrounding Landuse         x RL Banks           x         Perennial         Culvert Discharge         x Forst         Commercial           Intermittent         Swanp. Bog or Wetland         x Agricultural         Residential         Residential           Intermittent         Swanp. Bog or Wetland         x Agricultural         Residential         Residential           For intear projects, provide dimensions at centerline of stream crossing         Clar         Other         Rift Bank (Do         Horiz.         6.00         Ft.         Rift Bank (Do         Ft.         Rift Bank (Do         Ft.         Rift Bank (Do         Ft.         Pool %         Include flow depth         Vert.         2.00         Ft.         Comporeover         Warer Flow Depth         10.00 <td>Sampling</td> <td>Date:</td> <td>11/</td> <td>7/2023</td> <td></td> <td></td> <td>Town</td> <td>nship:</td> <td></td> <td></td> <td>N</td> <td>J/A</td> <td></td>  | Sampling   | Date:                    | 11/                  | 7/2023               |                 |                | Town                       | nship:            |                          |                          | N                          | J/A                            |                              |       |
| Drainage Area (m <sup>2</sup> ):         8.67         Longitude:         -75.634104           Slope Category:         (1) Low Gradient         Open-Ended?         x         Upstream         x         Robusteam           FERC Designation:         NA         Defineation Type:         x         Centerline         x         RL Banks           Stream Description:         Red Lion Creek.         Creek runs east across the northern most part of the study area.         Stream Subsystem         Stream Origin         Predominant Surrounding Landuse           x         Ephemeral         Portonial         Commercial         Robustrial         Commercial           Total         Dyring Fed         x         Field/Pasture         X         Residential           Total         Surface Water Runoff         Turbidity?         Clear         Other         Raith to of Origins           Flow Present?         x         Yes         No         Flow Direction:         Fast           Tor Imaer projects, provide dimensions at event flow of the study   | Stream N   | lame:                    | Red L                | ion Cre              | ek              |                | Lat                        | itude:            |                          |                          | 39.6                       | 05291                          |                              |       |
| Stope Category:       (1) Low Gradient       Open-Ended?       x       Downstream         FERC Designation:       N/A       Delineation Type:       x       Centerline       x       R2. Banks         Stream Description:       Recruition:       x       R2. Banks       Stream Description:       x       R2. Banks         Stream Description:       Stream Origin       Predominant Surrounding Landuse       x       R2. Banks         x       Perennial       Culvert Discharge       x       Field/Pasture       x       Industrial         Intermittent       Swamp, Bog or Wetland       x       Agricultural       Residential       Residential         Intermittent       Swamp, Bog or Wetland       x       Agricultural       Residential       No         Flow Present?       x       Yes       No       Flow Direction:       East         For linear projects provide dimensions at centerline of stream cossing       Right Bank (Do       Horiz:       6.00       Ft.       Riffle %       100         Include flow depthy       Vert.       2.00       Ft.       Riffle %       No       100         For linear projects provide dimensions at centerline of stream cossing       Right Bank (Do       100       Ft.       Riffle %       No <td< td=""><td>Drainage Area (</td><td><math>(mi^2)</math>:</td><td>:</td><td>8.67</td><td></td><td></td><td>Long</td><td>itude:</td><td></td><td></td><td>-75.6</td><td>534104</td><td></td></td<>  | Drainage Area (  | $(mi^2)$ :               | :                    | 8.67                 |                 |                | Long                       | itude:            |                          |                          | -75.6                      | 534104                         |                              |       |
| FERC Designation:       N/A       Delincation Type:       x       Centerline       x       R4. Banks         Stream Description:       Red Lion Creek.       Createrline       x       R4. Banks         Stream Subsystem       Stream Origin       Predominant Surrounding Landuse         x       Perennial       Culver Discharge       x       Field/Pasture       X       Industrial         Intermittent       Swamp, Bog or Wetland       x       Apricultural       Residential       Residential         Tidal       Spring Fed       x       Other       Roadway       No       Stream Origins       Heavy rain in the last 7 days? X       Yes       No         Plow Present?       x       Yes       No       Flow Directions       East       East         for Incar projects, provide dimensions at constream       Right Bank/Left bank facing downstream       Stream Only       No       Include flow depth       Vert.       2.00       Rt       x       Rong %       100         include flow depth       Vert.       2.00       Rt       x       Rt       Partly Open       No         Total wear wear       Include flow depth       Vert.       2.00       Rt       x       No       Yes       No         Tota  | Slope Cate   | gory:                    | (1) Lov              | w Gradi              | ent             |                | Open-Er                    | nded?             | x U                      | pstre                    | am                         | x Do                           | ownstream                    |       |
| Stream Description:         Red Lion Creek. Creek runs east across the northern most part of the study area.         Stream Origin       Predominant Surrounding Landuse         x       Predominant Surrounding Landuse         x       Predominant Surrounding Landuse         x       Predominant Surrounding Landuse         x       Forest       Commercial         Ephemeral       Pond Discharge       x       Field/Pasture       x       Nother         Surface Water Runoff       Turbid         Surface Water Runoff       Turbid         For linear projects, provide dimensions at centerline of stream crossing       Right Bank (Do       Horiz       Col Preventions       Right Bank (Do       Turbid         Top of Pastwer Work       Right Bank (Do       No       Stream Cores         Top of Pastwer Work       Right Bank (Do       No       Right Bank (Do       Pool %       Col Pastwer Work         Top of Colspark Work       Right B   | FERC Designa   | ation:                   | ]                    | N/A                  |                 | Ι              | Delineation                | Type:             | x C                      | enter                    | line                       | x R/                           | L Banks                      |       |
| Red Lion Creek.       Creek runs east across the northern most part of the study area.         Stream Subsystem       Neream Origin       Perdominant Surrounding Landuse         x       Perennial       Culvert Discharge       x       Forest       Commercial         Ephemeral       Pond Discharge       x       Field/Pasture       x       Industrial         Intermittent       Swamp, Bog or Wetland       x       Agricultural       Residential         Tidal       Spring Fed       x       Mixture of Origins       Heavy rain in the last 7 days?       X       Yes       No         Other       Surface Water RunOf       Turbidity?       Clear       Other:       Turbid       East         For linear projects, provide dimensions at centerline of stream Crossing       Right Bank (Do not       Horiz.       6.00       Ft.       Right Bank (Do not       Horiz.       6.00       Ft.       Range %       100         Tot of Stream Work       Contary Heavier       Vert.       2.00       Ft.       Canopy Cover       No       Vert.       2.00       Ft.       Schaded         Tot of Stream Work       Contary High Water Dight       3.00       Ft.       Schaded       Tot of Chany Heir       No       No       Ft.       Schaded       Top of Bank Width<   | Stream Descrip   | tion:                    |                      |                      |                 |                |                            |                   |                          |                          |                            |                                |                              |       |
| x       Percential       Culturet Discharge       x       Frest       Commercial         Ephemeral       Pond Discharge       x       Freid/Pasture       x       Industrial         Intermittent       Swamp, Bog or Wetland       x       Agricultural       Residential         Tidal       Spring Fed       x       Other       Residential         Other:       Surface Water Runoff       Turbidity?       Clear       Other         For linear projects, provide dimensions at centerline of stream crossing       Right bank/Left bank facing downstream       Stream Morphology         Right Bank (Do not Horiz, 6:00 Ft.       Riffle %6       not include flow       Vert.       2:00 Ft.       Riffle %6         Intermitter worth       Stream Crossing       Right Bank (Do not Horiz, 6:00 Ft.       Riffle %6       Intermitter worth         Intermitter worth       Stream Crossing       Right Bank (Do not Horiz, 6:00 Ft.       Riffle %6       Intermitter worth         Intermitter worth       Stream Crossing       Right bank/Left bank facing downstream       Stream Morphology         Right Bank (Do not Horiz, 6:00 Ft.       Name Name Naturalized?       Name Naturalized?       Stream With Popen         Cornary High Water Depth       1:00 Ft.       Name Naturalized?       No         Torial Dept   | Red Lion Creek.<br>Stream Subsyst  | Creek runs e<br>tem Stre | east acro<br>eam Ori | ss the n             | orthern most    | t part<br>Pred | of the study<br>lominant S | v area.<br>urroui | nding                    | Lan                      | duse                       | _                              |                              |       |
| Ephemeral       Pond Discharge       x       Field/Pasture       x       Industrial         Intermittent       Swamp, Bog of Wetland       x       Agricultural       Residential         Tidal       Spring Fed       x       Other       Roadway       No         Other       Surface Water Runoff       Turbidity?       Clear       Other:       Turbid         For Inear projects, provide dimensions at centerline of stream crossing       Right bank/Left bank facing downstream       Stream Morphology         Incluster       Incluster work       No       For Inear projects, provide dimensions at centerline of stream crossing       Right bank/Left bank facing downstream       Stream Morphology         Incluster work       No       Horiz.       6.00       Ft.       Riffle %         Incluster work       Incluster work       No       Horiz.       6.00       Ft.       Riffle %         Incluster work       Optimary High Water Depth       1.00       Ft.       Sthaded       Top of Bank Width       47.00       Ft.       S Channel Naturalized?         Macroinvertebrates       Present?       X       Yes       No       Ephemeroptera       Plecoptera       Trichpotera       Other:       A ttached Algae         N/A       X       Rooted Emergent  | x Perennia   | 1                        | Culvert              | Dischar              | rge             | х              | Forest                     |                   |                          | Co                       | omme                       | rcial                          |                              |       |
| Intermittent       Swamp, Bog or Wetland       x       Agricultural       Residential         Tidal       Spring Fed       x       Other       Readway         Watter Corigins       Heavy rain in the last 7 days?       x       Yes       No         Other       Surface Water Runoff       Turbidity?       Clear       Other       Readway         For linear projects, provide dimensions at centerline of stream crossing       Right bank/Left bank facing downstream       Stream Morphology         No       How Direction:       East         For linear projects, provide dimensions at centerline of stream crossing       Right bank/Left bank facing downstream       Stream Morphology         No       Horizz       6.00       Ft.       Riftle %         No       Department of the stream crossing       No       Horizz       6.00       Ft.       Riftle %         No       Matter Methus       Other       Vert.       2.00       Ft.       Ram %       100         No       Department       No       Net.       Stream Norphology       No       No<  | Ephemer  | al                       | Pond D               | ischarge             | e               | х              | Field/Pastu                | ıre               |                          | . In                     | dustria                    | al                             |                              |       |
| Tidal       Spring Fed       x       Other       Roadway         0       x       Mixture of Origins       Heavy rain in the last 7 days?       x       Yes       No         Flow Present?       x       Yes       No       Flow Direction:       East       East         For linear projects, provide dimensions at centerline of stream crossing       Right Bank (Do       Horiz.       6.00       Ft.       Riftle %       not include flow         Vert.       2.00       Ft.       Pool %       Left Bank (Do not Horiz.       6.00       Ft.       Riftle %       100         MixTE WOTH       Genuary HOH       Include flow depth       Vert.       2.00       Ft.       Pool %       100         MixTE WOTH       Genuary HOH       Include flow depth       Vert.       2.00       Ft.       Run %       100         WATE WOTH       MixTE NOTH       Include flow depth       Vert.       2.00       Ft.       Shaded         Toy of Bank Width       47.00       Ft.       X       No       Toy of Bank Width       47.00       Ft.       Shaded         Toy of Bank Width       47.00       Ft.       Schaded       Toy of Bank Width       47.00       Ft.       Schaded         Toy of Bank Width </td <td>Intermitt</td> <td>ent</td> <td>Swamp</td> <td>, Bog or</td> <td>Wetland</td> <td>х</td> <td>Agricultura</td> <td>al</td> <td></td> <td>Re</td> <td>esiden</td> <td>tial</td> <td></td>   | Intermitt  | ent                      | Swamp                | , Bog or             | Wetland         | х              | Agricultura                | al                |                          | Re                       | esiden                     | tial                           |                              |       |
| X       Mixture of Origins       Heavy rain in the last 7 days?       X       Yes       No         Other:       X       Mixture of Origins       Turbidity?       Clear       Other:       Turbid         For linear projects, provide dimensions at centerline of stream crossing       Right Bank/Left bank facing downstream       Stream Morphology         Right Bank (Do       Horiz.       6.00       FL       Right Bank/Left bank facing downstream       Stream Morphology         Central Control of BAW WDTH       Include flow       Vert.       2.00       FL       Right Bank (Do       No       FL       Pool %       Entral Mark (Do       FL       Right Bank (Do       No       FL       Pool %       FL       No       To       FL       Shaded       To       FL       Pool %       FL       No       To       FL       Shaded       To  | Tidal  |                          | Spring               | Fed                  |                 | x              | Other                      | <u> </u>          |                          | I                        | Roadw                      | /ay                            |                              |       |
| Other:         Surface Water Runoff         Turbidity?         Clear         Other:         Turbid           For linear projects, provide dimensions at centerline of stream crossing         Right bank/Left bank facing downstream         Stream Morphology           Right Bank (Do not include flow         Vert.         2.00         Ft.         Riffle %         not include flow         Vert.         2.00         Ft.         Riffle %         not include flow         Vert.         2.00         Ft.         Roopy Cover           WATER WOTH         AMER WOTH         Include flow depth         Vert.         2.00         Ft.         Roopy Cover           WATER WOTH         Include flow depth         Vert.         2.00         Ft.         No         Dot         Dot         Turbid         Include flow depth         Vert.         2.00         Ft.         No         Dot         Dot         No         Include flow depth         Vert.         2.00         Ft.         Name %         Dot         Dot         Dot         Dot         Dot         Rooted Prosent?         Nater %         Dot         Stream %         No         Dot         Dot         Dot  |  | x                        | Mixture              | e of Orig            | gins            | H              | leavy rain i               | in the l          | last 7                   | davs                     | ? x                        | Yes                            | No                           |       |
| Flow Present? X Yes       No       Flow Direction:       East         For linear projects, provide dimensions at centerline of stream crossing       Right bank/Left bank facing downstream       Stream Morphology         For linear projects, provide dimensions at centerline of stream crossing       Right bank/Left bank/Left bank facing downstream       Stream Morphology         TOP OF BANK WOTH       Colspan="2">Colspan="2">Colspan="2">Stream Morphology         TOP OF BANK WOTH       Colspan="2">Colspan="2">Colspan="2">Stream Morphology         TOP OF BANK WOTH       Colspan="2">Colspan="2">Colspan="2">Colspan="2">Stream Morphology         TOP OF BANK WOTH       Colspan="2">Colspan="2">Colspan="2">Colspan="2">Stream Morphology         TOP OF BANK WOTH       Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colspan="   | Other:   |                          | Surface              | Water                | Runoff          | ,              | Turbidity?                 |                   | Clear                    |                          | Other:                     | <u></u>                        | urbid                        |       |
| Two Directions         For linear projects, provide dimensions at centerline of stream crossing       Right bank/Left bank facing downstream       Stream Morphology         Tope of BANK WOH         OP of BANK WITH         OP of BANK WITH <th c<="" td=""><td>Flow Pres</td><td>sent? x Yes</td><td>Surrave</td><td>N</td><td>)</td><td></td><td>Flow Dire</td><td>ction.</td><td>orear</td><td></td><td>F</td><td>last</td><td>arora</td></th>   | <td>Flow Pres</td> <td>sent? x Yes</td> <td>Surrave</td> <td>N</td> <td>)</td> <td></td> <td>Flow Dire</td> <td>ction.</td> <td>orear</td> <td></td> <td>F</td> <td>last</td> <td>arora</td> | Flow Pres                | sent? x Yes          | Surrave              | N               | )              |                            | Flow Dire         | ction.                   | orear                    |                            | F                              | last                         | arora |
| Stream voide dimensions at centerline of stream crossing       Right bank/Left bank facing downstream       Stream Morphology         Top of BANK WOTH       Right Bank (Do not include flow       Horiz.       6.00       Ft.       Riffle %       not include flow       Vert.       2.00       Ft.       x       Run %       100         Torat or of BANK WOTH       User Run %       Horiz.       6.00       Ft.       x       Run %       100         Colspan="2">Not water worth         Provide dimensions at center worth         Water Worth         Water Worth         Water Worth         Water Worth         Water Worth         Provide dimensions at center worth         Water Worth         Water Worth         Water Worth         Provide dimensions at center worth         Right Bank/Left bank facing downstream         Water Worth         Provide dimensions at center worth         Mater Worth         Provide dimension of Channel Width       35.00       Ft.       Canopy Cover         Water Worth   |  |                          |                      | 1.1                  | •               |                |                            | cuon              |                          |                          |                            | ast                            |                              |       |
| Right Bank (Do       Horiz.       6.00       Ft.       Riffle %         TOP OF BANK WOTH         Not include flow       Vert.       2.00       Ft.       R Run %       100         OF BANK WOTH         OF BOIL OF Ft.       R Run %       100         OF BANK WOTH         OF BOIL OF Ft.       R Run %       100         OF Run Ft.       R Run %       100         OF Run Ft.       S Run %       100         OF Run Ft.       S Run %       100       100         OF Run Ft.       S Run %       100       100       100       100       100       100       100       100       100       100       100       100       100 </td <td>For linear proje</td> <td>ects, provide di</td> <td>mension</td> <td>sat R</td> <td>light bank/I</td> <td>left b</td> <td>ank facing</td> <td>down</td> <td>streat</td> <td>n St</td> <td>ream</td> <td>Morph</td> <td>nology</td>   | For linear proje   | ects, provide di         | mension              | sat R                | light bank/I    | left b         | ank facing                 | down              | streat                   | n St                     | ream                       | Morph                          | nology                       |       |
| TOP OF BANK WUTH<br>WATER W | centerlin  | e of stream cro          | ssing                |                      | Right Bank (    | Do             | Horiz.                     | 6.0               | 0 F                      |                          | R                          | iffle %                        |                              |       |
| Image: Construction of the state with the state of t   |  |                          | 8                    |                      | not include f   | low            | Vert                       | 2.0               | 0 F                      |                          | F                          | Pool %                         |                              |       |
| International Construction       International Construction <td< td=""><td>TOP (</td><td>OF BANK WIDTH</td><td>- /</td><td>T.</td><td>eft Bank (Do</td><td>not</td><td>Horiz</td><td>6.0</td><td>0 F</td><td>. v</td><td></td><td>Run %</td><td>100</td></td<>  | TOP (  | OF BANK WIDTH            | - /                  | T.                   | eft Bank (Do    | not            | Horiz                      | 6.0               | 0 F                      | . v                      |                            | Run %                          | 100                          |       |
| Interference       Accer rubrum, Liriodendron tulipifera, Liquidambar styraciflua, Platanus occidentalis       Plate occurs       Microstegium vimineum, phragmites australis         No       X       Rooted Enorgent       Rooted Floating Algae       Fire Floating Algae         Portion of Stream with Aquatic Vegetation (%):       20       Ricera japonica, Celastrus oriculatus, Schoenoplectus tubernagmites australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus allegheniensis,       Herbaceous:       Microstegium vimineum, phragmites tubernagmites australis         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)  |  | DINARY HIGH              | /                    | in                   | clude flow d    | enth)          | Vert                       | 2.0               | 0 F                      |                          | anony                      | Cover                          | 100                          |       |
| Total       Internet for the second and t  |  |                          |                      | X/                   | ater/Flow D     | enth           | vert.                      | 1.0               |                          | . C                      |                            | n                              |                              |       |
| Mater neers       Dottini of Channel Within       2.00       FL       Shaded         PLOW       BOTTOM       Ordinary High Water Depth       2.00       FL       Shaded         Top of Bank Width       47.00       FL       Is Shaded       Top of Bank Width       47.00       FL       Shaded         Macroinvertebrates Present?       x       Yes       No       x       Yes       No         Aquatic Vegetation - Indicate Dominant Cover Type       Trichpotera       Other:       Attached Algae       Free Floating         x       N/A       Rooted Emergent       Rooted Floating       x       Attached Algae         Portion of Stream with Aquatic Vegetation (%):       20       20       Riparian Buffer Veg. (60 FL) - Indicate Dominant Cover Type And Species         Trees:       Acer rubrum, Liriodendron tulipifera, Liquidambar styraciflua, Platanus occidentalis       Grasses:       Microstegium vimineum, phragmites australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus allegheniensis,       Herbaceous:       Conicera japonica, Celastrus orbiculatus, Schoenoplectus tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)  | DEPTH  |                          |                      |                      | attom of Che    | nnol           | Width                      | 35.0              |                          | . ^                      | Dart                       | tly One                        | n                            |       |
| FLOW       BOTTOM       FUNDAL       FUNDAL       FUNDAL       Staded         TOW       BOTTOM       FUNDAL       FUNDAL       FUNDAL       Staded         TOW       BOTTOM       FUNDAL       FUNDAL       Staded       FUNDAL       Staded         Macroinvertebrates Present?       x       Yes       No       FUNDAL       Trichpotera       Other:         Aquatic Vegetation - Indicate Dominant Cover Type       Trichpotera       Other:       Attached Algae       Free Floating         A       Rooted Emergent       Rooted Floating Algae       Free Floating       Statched Algae         Portion of Stream with Aquatic Vegetation (%):       20       20         Riparian Buffer Veg.       (60 Ft.) - Indicate Dominant Cover Type And Species       Microstegium vimineum, phragmites australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus allegheniensis,       Grasses:       Lonicera japonica, Celastrus orbiculatus, Schoenoplectus tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)  |  | /                        | WATER D              | EPTH                 | dinary High     | Wot            | w luii                     | 2.0               |                          |                          | T art                      | dod                            | .1                           |       |
| PLOW       BOTION       Fille Bails Wildling       47.00       Ft.       Is Chamler Natural/Set:         Ordinary High Water Width       47.00       Ft.       Is Chamler Natural/Set:         Macroinvertebrates Present?       x       Yes       No       String Ft.       Fin Fish Present?         Macroinvertebrates Present?       x       Yes       No       x       Yes       No         Aquatic Vegetation - Indicate Dominant Cover Type       Trichpotera       Other:       Attached Algae       Free Floating         Aquatic Vegetation of Stream with Aquatic Vegetation (%):       20       20       Riparian Buffer Veg. (60 Ft.) - Indicate Dominant Cover Type And Species         Accer rubrum, Liriodendron tulipifera, Liquidambar styraciflua, Platanus occidentalis       Grasses:       Microstegium vimineum, phragmites australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus orbiculatus, Schoenoplectus tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)   |  |                          | t                    |                      | n of Pople V    | Vidth          | er Deptil                  | 47.0              |                          | Ia                       | Chan                       | ueu<br>mol No                  | turolizod?                   |       |
| Macroinvertebrates Present?       x       Yes       No         Macroinvertebrates Present?       x       Yes       No       Fin Fish Present?         Aquatic Vegetation - Indicate Dominant Cover Type       x       No       x       Yes       No         X       N/A       X       Rooted Emergent       Rooted Floating       x       Attached Algae         Portion of Stream with Aquatic Vegetation (%):       20       20       Riparian Buffer Veg. (60 FL) - Indicate Dominant Cover Type And Species         Trees:       Accer rubrum, Liriodendron tulipifera, Liquidambar styraciflua, Platanus occidentalis       Grasses:       Microstegium vimineum, phragmites australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus orbiculatus, Schoenoplectus tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)  | FLOW<br>DEPTH  | WIDTH                    |                      |                      | op of Dalik V   | Wat            | w Width                    | 47.0              |                          | . 15                     |                            |                                | uranzeu.                     |       |
| Total Depth       South Prise Present?         Macroinvertebrates Present?       x       Yes       No         X No       X       Yes       No         X       N/A       X       Rooted Emergent       Rooted Floating       x       Attached Algae         Free Floating         Portion of Stream with Aquatic Vegetation (%):       20         Riparian Buffer Veg. (60 FL) - Indicate Dominant Cover Type And Species         Macer rubrum, Liriodendron tulipifera, Liquidambar styraciflua, Platanus occidentalis       Grasses:       Microstegium vimineum, phragmites australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus orbiculatus, Schoenoplectus tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)         Type       Diameter       Composition %         Boulder       10"         Grasses:       Diameter Components (May be <100)         T   | -  |                          |                      |                      | runary High     | wate           | er width                   | 47.0              |                          | ·X                       | I I                        | es                             | NO                           |       |
| Macronverteorates Present?       x       Yes       No       x       Yes       No         Ephemeroptera       Plecoptera       Trichpotera       Other:         Aquatic Vegetation - Indicate Dominant Cover Type       Rooted Emergent       Rooted Floating       x       Attached Algae         x       N/A       x       Rooted Submergent       Floating Algae       Free Floating         Portion of Stream with Aquatic Vegetation (%):       20         Riparian Buffer Veg. (60 Ft.) - Indicate Dominant Cover Type And Species       Microstegium vimineum, phragmites australis         Trees:       Acer rubrum, Liriodendron tulipifera, Liquidambar styraciflua, Platanus occidentalis       Grasses:       Microstegium vimineum, phragmites australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus orbiculatus, Schoenoplectus tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)   | 34   |                          | 49                   |                      | stal Depth      |                |                            | 3.0               | ОГ                       | . F1                     | In Fist                    | 1 Prese                        |                              |       |
| Epinemeroptera       Plecoptera       Irricipotera       Other:         Aquatic Vegetation - Indicate Dominant Cover Type       Rooted Floating       x       Attached Algae         x       N/A       x       Rooted Emergent       Rooted Floating       x       Attached Algae         Portion of Stream with Aquatic Vegetation (%):       20         Riparian Buffer Veg.       (60 Ft.) - Indicate Dominant Cover Type And Species         Trees:       Acer rubrum, Liriodendron tulipifera, Liquidambar styraciflua, Platanus occidentalis       Grasses:       Microstegium vimineum, phragmites australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus orbiculatus, Schoenoplectus tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)  | Macroinver   | tebrates Prese           | ent? x               | res                  |                 | 0              | 0.1                        |                   |                          | Х                        | Ŷ                          | es                             | NO                           |       |
| X       N/A       X       Rooted Emergent       Rooted Floating       X       Attached Algae         Portion of Stream with Aquatic Vegetation (%):       20         Riparian Buffer Veg. (60 Ft.) - Indicate Dominant Cover Type And Species       20         Riparian Buffer Veg. (60 Ft.) - Indicate Dominant Cover Type And Species       Species         Trees:       Acer rubrum, Liriodendron tulipifera,<br>Liquidambar styraciflua, Platanus<br>occidentalis       Grasses:       Microstegium vimineum, phragmites<br>australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus<br>allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus<br>orbiculatus, Schoenoplectus<br>tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)   | Ephemer  | roptera                  | Plecopt              | era                  | Trichpoter      | ra             | Other                      | r:                | _                        |                          | _                          | _                              |                              |       |
| x       N/A       X       Rooted Emergent       Rooted Floating       x       Attached Algae         Portion of Stream with Aquatic Vegetation (%):       Free Floating Algae       Free Floating         Riparian Buffer Veg.       (60 Ft.) - Indicate Dominant Cover Type And Species       20         Riparian Buffer Veg.       (60 Ft.) - Indicate Dominant Cover Type And Species       Microstegium vinineum, phragmites australis         Trees:       Acer rubrum, Liriodendron tulipifera, Liquidambar styraciflua, Platanus occidentalis       Grasses:       Microstegium vinineum, phragmites australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus orbiculatus, Schoenoplectus tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)  | Aquatic Vegeta   | tion - Indicate          | e Domii              | nant Co              | ver Type        | D              | · 1.171 · ·                |                   |                          |                          | <b>A</b> .                 | . 1 1                          | A 1                          |       |
| Rooted Submergent       Floating Algae       Free Floating         Portion of Stream with Aquatic Vegetation (%):       20         Riparian Buffer Veg. (60 Ft.) - Indicate Dominant Cover Type And Species       Species         Trees:       Acer rubrum, Liriodendron tulipifera,<br>Liquidambar styraciflua, Platanus<br>occidentalis       Grasses:       Microstegium vimineum, phragmites<br>australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus<br>allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus<br>orbiculatus, Schoenoplectus<br>tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)   | x N/A  | X Root                   | ted Eme              | rgent                |                 | Ro             | oted Floatin               | ıg                |                          | ζ                        | At                         | tached                         | Algae                        |       |
| Portion of Stream with Aquatic Vegetation (%):       20         Riparian Buffer Veg. (60 Ft.) - Indicate Dominant Cover Type And Species         Trees:       Acer rubrum, Liriodendron tulipifera,<br>Liquidambar styraciflua, Platanus<br>occidentalis       Grasses:       Microstegium vimineum, phragmites<br>australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus<br>allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus<br>orbiculatus, Schoenoplectus<br>tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)  |  | Roote                    | ed Subm              | ergent               | <b>`</b>        | FI             | oating Alga                | le                | 20                       |                          | F                          | ree Flo                        | ating                        |       |
| Kiparian Buffer Veg.       (60 Ft.) - Indicate Dominant Cover Type And Species         Acer rubrum, Liriodendron tulipifera,<br>Liquidambar styraciflua, Platanus<br>occidentalis       Grasses:       Microstegium vimineum, phragmites<br>australis         Shrubs:       Lindera benzoin, Rosa multiflora, Rubus<br>allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus<br>orbiculatus, Schoenoplectus<br>tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)   | Portion of Stream  | m with Aquatio           | c Vegeta             | ition (%             | ):              | T              |                            |                   | 20                       | _                        | _                          | _                              |                              |       |
| Acer rubrum, Liriodendron tulipifera,<br>Liquidambar styraciflua, Platanus<br>occidentalisGrasses:Microstegium vimineum, phragmites<br>australisTrees:Liquidambar styraciflua, Platanus<br>occidentalisGrasses:Microstegium vimineum, phragmites<br>australisShrubs:Lindera benzoin, Rosa multiflora, Rubus<br>allegheniensis,Herbaceous:Lonicera japonica, Celastrus<br>orbiculatus, Schoenoplectus<br>tabernaemontani, Typha angustifoliaInorganic Substrate Components (Add to 100%)Organic Substrate Components (May te <100)   | Riparian Buffe   | r Veg. (60 Ft            | .) - Ind             | icate Do             | ominant Co      | ver T          | ype And S                  | pecies            |                          |                          |                            |                                |                              |       |
| Trees:Liquidambar styractflua, Platanus<br>occidentalisGrasses:Lindera sustralisShrubs:Lindera benzoin, Rosa multiflora, Rubus<br>allegheniensis,Herbaceous:Lonicera japonica, Celastrus<br>orbiculatus, Schoenoplectus<br>tabernaemontani, Typha angustifoliaInorganic Substrate Components (Add to 100%)Organic Substrate Components (May be <100)  | T  | Acer rubrum              | ı, Liriod            | lendron              | tulipifera,     |                | ~                          | Mic               | rosteg                   | ium                      | vimine                     | eum, ph                        | ragmites                     |       |
| Occidentalis       Lindera benzoin, Rosa multiflora, Rubus<br>allegheniensis,       Herbaceous:       Lonicera japonica, Celastrus<br>orbiculatus, Schoenoplectus<br>tabernaemontani, Typha angustifolia         Inorganic Substrate Components (Add to 100%)       Organic Substrate Components (May be <100)         Type       Diameter       Composition %       Type       Characteristics       Composition %         Bedrock       -       -       Detritus       Sticks, Wood, Coarse<br>Plant Material       Composition %         Gravel       0.1" - 2.5"       Muck-Mud       Black, Very Fine<br>Organic Material       50         Silt       0.004-0.06 mm       100       Marl       Grey, Shell<br>Fragments       50   | Trees:   | Liquidamb                | oar styra            | icifiua, 1           | Platanus        | C              | Jrasses:                   |                   |                          | C                        | austra                     | lis                            |                              |       |
| Shrubs:Lindera benzoin, Rosa multiflora, Rubus<br>allegheniensis,Herbaceous:Lonicera japonica, Celastrus<br>orbiculatus, Schoenoplectus<br>tabernaemontani, Typha angustifoliaInorganic Substrate Components (Add to 100%)Organic Substrate Components (May angustifolia)TypeDiameterComposition %TypeCharacteristicsComposition %BedrockDetritusSticks, Wood, Coarse<br>Plant Material-Cobble2.5" - 10"DetritusSticks, Wood, Coarse<br>Plant Material-Gravel0.1" - 2.5"Muck-MudBlack, Very Fine<br>Organic Material50Silt0.004-0.06 mm100MarlGrey, Shell<br>Fragments50  |  |                          | occiaei              | italis               |                 |                |                            |                   |                          |                          |                            |                                |                              |       |
| Inorganic Substrate Components (Add to 100%)Organic Substrate Components (May be <100) $\overline{\mathbf{Tvpe}}$ DiameterComposition % $\overline{\mathbf{Tvpe}}$ CharacteristicsComposition %Bedrock- $  -$   | Shrubs:  | Lindera benza<br>a       | oin, Ros<br>alleghen | a multifi<br>iensis, | lora, Rubus     | Не             | rbaceous:                  | tabe              | Lonic<br>orbic<br>ernaen | era jo<br>ulatu<br>ionta | aponic<br>s, Sch<br>mi, Ty | ca, Cela<br>oenople<br>pha ang | strus<br>ectus<br>gustifolia |       |
| TypeDiameterComposition %TypeCharacteristicsComposition %Bedrock  | <b>Inorganic Subs</b>  | trate Compon             | nents (A             | dd to 1              | 00%)            | Org            | anic Substr                | ate Co            | ompor                    | ients                    | (May                       | v be <1                        | 00)                          |       |
| Bedrock-DetritusSticks, Wood, Coarse<br>Plant MaterialBoulder10" +DetritusSticks, Wood, Coarse<br>Plant MaterialCobble2.5" - 10"Muck-MudBlack, Very Fine<br>Organic Material50Sand0.06-2 mm100MarlGrey, Shell<br>Fragments50  | <u>Type</u>  | Diameter                 |                      | <u>Compo</u>         | <u>sition %</u> |                | <b>Type</b>                | Ch                | naract                   | erist                    | ics                        | Com                            | osition %                    |       |
| Boulder10" +DetritusSticks, wood, Coarse<br>Plant MaterialCobble2.5" - 10"DetritusPlant MaterialGravel0.1" - 2.5"Muck-MudBlack, Very Fine<br>Organic Material50Sand0.06-2 mm100MarlGrey, Shell<br>Fragments50   | Bedrock  | -                        |                      |                      |                 |                |                            | Cti-1             | a <b>W</b> 7-            |                          | 0.000                      |                                |                              |       |
| Cobble2.5" - 10"Plant MaterialGravel0.1" - 2.5"Muck-MudBlack, Very Fine<br>Organic Material50Sand0.06-2 mmMuck-MudGrey, Shell<br>Fragments50  | Boulder  | 10" +                    |                      |                      |                 | ]              | Detritus                   | Sticks            | s, WO                    | otari                    | oarse                      |                                |                              |       |
| Gravel0.1" - 2.5"Muck-MudBlack, Very Fine<br>Organic Material50Sand0.06-2 mm100Grey, Shell<br>Fragments50   | Cobble   | 2.5" - 10"               |                      |                      |                 |                |                            | P                 |                          | ateri                    | al                         |                                |                              |       |
| Sand0.06-2 mmMuck-MudOrganic Material50Silt0.004-0.06 mm100MarlGrey, ShellClay<0.004 mm   | Gravel   | 0.1" - 2.5"              | '                    |                      |                 | N              | uale Mart                  | Bla               | nck, V                   | ery F                    | ine                        |                                | 50                           |       |
| Silt0.004-0.06 mm100MarlGrey, ShellClay<0.004 mm  | Sand   | 0.06-2 mm                | 1                    |                      |                 | M              | uck-iviud                  | Org               | ganic l                  | Aate                     | rial                       |                                | 30                           |       |
| Clay <0.004 mm Marl Fragments   | Silt   | 0.004-0.06 n             | nm                   | 1                    | 00              |                | M 1                        | (                 | Grey,                    | Shell                    |                            |                                |                              |       |
|   | Clay   | <0.004 mn                | n                    |                      |                 |                | Marl                       |                   | Fragn                    | ents                     |                            |                                |                              |       |

Appendix D – Photographic Log



Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 







Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 



| Photo No.<br>4                                | Date:<br>August<br>2023         |  |
|---|---------------------------------|--|
| Description:                                  |                                 |  |
| S-JRK-003 (F<br>upstream of s<br>reach facing | PER) view<br>southern<br>south. |  |
|   |                                 |  |
|   |                                 |  |
|   |                                 |  |
|   |                                 |  |
|   |                                 |  |
|   |                                 |  |
|   |                                 |  |





#### Site Location: New Castle, Delaware

**Project No.** 60707136

PHOTOGRAPH LOG





#### Site Location: New Castle, Delaware

**Project No.** 60707136

PHOTOGRAPH LOG

**APPENDIX B** 



**Description:** 

S-JRK-003 (PER) view downstream of northern reach facing north.





### Site Location: New Castle, Delaware

Project No. 60707136

**PHOTOGRAPH LOG** 

| Photo No.      | Date:     | Date:    | Date:     | oto No.    |
|----------------|-----------|----------|-----------|------------|
| 9              | August    | August   | August    | 9          |
| Description    | 2020      | 2020     | 2020      | cription:  |
| S-JRK-004 (l   | EPH) view | PH) view | EPH) view | RK-004 (E  |
| upstream tov   | vards     | ards     | vards     | tream towa |
| culvert facing | g east.   | east.    | g east.   | ert facing |

| Photo No.     | Date:          |  |
|---------------|----------------|--|
| 10            | August         |  |
| 10            | 2023           |  |
| Description:  |                |  |
| •             |                |  |
| S-JRK-004 (F  | EPH) view      |  |
| downstream    | towards        |  |
| cobble facinc | i west         | The second se  |
|               | <i>y</i> west. |  |
|               |                | and the second sec |
|               |                |  |
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|               |                | and the second   |
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|               |                | The second s   |
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|               |                |  |
|               |                |  |
|               |                |  |



Photo No.

11

Description:

sub-stream.

S-JRK-004 (EPH) view

Standard Chlorine of Delaware Superfund Site Project

Date:

August

2023

### Site Location: New Castle, Delaware

Project No. 60707136

**PHOTOGRAPH LOG** 

| CAR | Child | 4 |
|-----|-------|---|

| Photo No.    | Date:     |  |
|--------------|-----------|--|
| 12           | August    |  |
|              | 2023      | The second s   |
| Description: |           |  |
|              |           |  |
| S-JRK-004 (E | EPH) view |  |
| upstream fac | ing       |  |
| northeast.   |           |  |
|              |           |  |
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|              |           | and the second sec |
|              |           | a set and the set and the  |
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Site Location: New Castle, Delaware

Project No. 60707136

**PHOTOGRAPH LOG** 

**APPENDIX B** 

| Photo No.      | Date:          |
|----------------|----------------|
| 13             | August<br>2023 |
| Description:   | 2020           |
|                |                |
| S-JRK-005 (E   | EPH) view      |
| upstream tow   | ards           |
| cuivent lacing | nonneast.      |
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|                |                |
|                |                |
|                |                |
| Photo No.      | Date:          |
| 14             | August         |
| Description:   | 2023           |

S-JRK-005 (EPH) view downstream facing west.





Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 









Site Location: New Castle, Delaware

PHOTOGRAPH LOG Project No. 60707136

| Photo No.<br>17  | Date:<br>August<br>2023      |  |
|--|------------------------------|--|
| Description:<br>S-JRK-006 vi<br>downstream<br>reach facing | iew<br>of southern<br>north. |  |

| Photo No.    | Date:    |  |
|--------------|----------|--|
| 18           | August   |  |
| 10           | 2023     |  |
| Description: |          |  |
| S-JRK-006 (I | NT) view |  |
| sub-stream.  | ,,       |  |
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### Site Location: New Castle, Delaware

**Project No.** 60707136

PHOTOGRAPH LOG





### Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 



| Photo No.<br>22             | Date:<br>August |  |
|-----------------------------|-----------------|--|
|                             | 2023            |  |
| Description:                |                 |  |
| S-JRK-006 (I<br>sub-stream. | NT) view        |  |
|                             |                 |  |
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#### Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 







Site Location: New Castle, Delaware

PHOTOGRAPH LOG Project No.

**APPENDIX B** 

Project No. 60707136

| Photo No.<br>25                             | Date:<br>August<br>2023 |  |
|---|-------------------------|--|
| Description:<br>S-JRK-007 (I<br>sub-stream. | NT) view                |  |
|   | Date:                   |  |

| Photo No.    | Date:      |
|--------------|------------|
| 26           | August     |
|              |            |
| Description  | •          |
| S-JRK-008 (  | EPH) view  |
| upstream fac | cing east. |
|              |            |
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Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 

**APPENDIX B** 



| Photo No.<br>28     | Date:<br>August<br>2023 |
|---------------------|-------------------------|
| <b>Description:</b> |                         |

S-JRK-003 (PER) view downstream of the northern reach facing northwest.





Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 

**APPENDIX B** 



| Decri  | ntion  |
|--------|--------|
| Descii | DUUUI. |

S-JRK-003 (PER) view downstream towards ponded area south of earthen berm, facing north.





#### Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 



| August<br>2023    |
|-------------------|
|                   |
| IT) view<br>acing |
|                   |





#### Site Location: New Castle, Delaware

**Project No.** 60707136

PHOTOGRAPH LOG









#### Site Location: New Castle, Delaware

**Project No.** 60707136

PHOTOGRAPH LOG





#### Site Location: New Castle, Delaware

**Project No.** 60707136

PHOTOGRAPH LOG









Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 







Site Location: New Castle, Delaware

PHOTOGRAPH LOG Project No. 60707136







Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 







#### Site Location: New Castle, Delaware

**Project No.** 60707136

PHOTOGRAPH LOG

**APPENDIX B** 



### Photo No. 46 Description:

S-JRK-013 (PER) view south towards confluence with S-JRK-003 (INT).





Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 

**APPENDIX B** 





W-JRK-001 PEM1 view northeast towards wetland from north of wetland data point.





Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 

|              | Data         |
|--------------|--------------|
| Photo No.    | September    |
| 49           | 2023         |
| Description  | ו:           |
| -            |              |
| W-JRK-001    | PEM1 view    |
| towards data | a point soil |
| bonng.       |              |
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#### Site Location: New Castle, Delaware

**Project No.** 60707136

PHOTOGRAPH LOG





#### Site Location: New Castle, Delaware

**Project No.** 60707136

PHOTOGRAPH LOG









Site Location: New Castle, Delaware

Project No. 60707136

**PHOTOGRAPH LOG** 









### Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 



| Photo No.<br>58   | Date:<br>September<br>2023 |
|---|----------------------------|
| Description   |                            |
| W-JRK-001 PEM2 view<br>towards data point soil<br>boring. |                            |
|   |                            |
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## Site Location: New Castle, Delaware

**Project No.** 60707136

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Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 









Site Location: New Castle, Delaware

PHOTOGRAPH LOG Project No. 60707136

**APPENDIX B** 

 Photo No.
 Date:

 September
 2023

 Description:
 W.JRK-001 PFO3 view towards data point soil boring.





## Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 





Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 





Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 







Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 

**APPENDIX B** 



W-JRK-003 PEM view towards data point soil boring.





## Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 









Site Location: New Castle, Delaware

PHOTOGRAPH LOG Project No. 60707136









## Site Location: New Castle, Delaware

**Project No.** 60707136

**PHOTOGRAPH LOG** 

