



**ENVIRONMENTAL
RESTORATION
PROGRAM**

**Findings of the Wetland Survey
of the David Witherspoon, Inc.,
1630 Site, South Knoxville,
Knox County, Tennessee**

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DEPARTMENT OF ENERGY

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Energy Systems Environmental Restoration Program

**Findings of the Wetland Survey
of the David Witherspoon, Inc.,
1630 Site, South Knoxville,
Knox County, Tennessee**

B. A. Rosensteel

Date Issued—March 1997

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JAYCOR Environmental
Oak Ridge, Tennessee 37831
under subcontract 28B-99230C

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CONTENTS

EXECUTIVE SUMMARY	iii
1. INTRODUCTION	1
2. WETLAND DETERMINATION	1
2.1 U.S. ARMY CORPS OF ENGINEERS METHODOLOGY	1
2.2 ATYPICAL SITUATION WETLANDS	2
3. WETLAND SURVEY FINDINGS	2
3.1 THE LANDFILL CAP	2
3.2 THE RETENTION POND AREA	4
4. SUMMARY	5
5. REFERENCES	5
Appendix. WETLAND DETERMINATION DATA FORMS	A-1

FIGURES

1 Aerial Photo of David Witherspoon, Inc., Site 1630 Wetlands	3
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EXECUTIVE SUMMARY

Executive Order 11990, Protection of Wetlands, (May 24, 1977) requires that federal agencies avoid, to the extent possible, adverse impacts associated with the destruction and modification of wetlands, and that they avoid direct and indirect support of wetlands development when there is a practicable alternative. In accordance with Department of Energy (DOE) Regulations for Compliance with Floodplains and Wetlands Environmental Review Requirements (Subpart B, 10 CFR 1022.11), surveys for wetland presence or absence were conducted in September 1996 on the DWI-1630 site (Witherspoon Landfill) located in South Knoxville, Knox County, Tennessee. As required by the Energy and Water Development Appropriations Act of 1992, wetlands were identified using the criteria and methods set forth in the *Wetlands Delineation Manual* (Army Corps of Engineers, 1987). The wetlands identified in this survey were classified according to the system developed by Cowardin et al. (1979) for wetland and deepwater habitats of the United States.

The DWI-1630 site includes a closed, capped landfill area, areas of past disturbance adjacent to the capped area, and patches of hardwood forest. Wetlands were identified on the landfill cap and in a small bottomland that was formerly used for a retention pond in the southwest corner of the DWI-1630 site. The wetlands identified on the cap are man-induced, atypical situation wetlands. These areas have hydrophytic vegetation and wetland hydrology, but the soils do not have hydric characteristics. Wetland development appears to be due to a combination of the grading or subsidence of the clay landfill cap, the low permeability of the clay fill soil, and the absence of surface drainage outlets from the depressions. These atypical situation wetland areas may not be considered by the U.S. Army Corps of Engineers or the State of Tennessee to be jurisdictional wetlands. The wetland in the former retention pond area has hydrophytic vegetation, wetland hydrology, and hydric soils and is a jurisdictional wetland.

1. INTRODUCTION

A wetland survey was conducted on September 19, 1996 on the DWI-1630 site (D. Witherspoon Landfill) in South Knoxville, Knox County, Tennessee by JAYCOR Environmental assisted by staff of Jacobs Engineering. The DWI-1630 site includes the capped landfill area and adjacent areas of past disturbance, and patches of hardwood forest. The landfill was capped with clay soil in 1972. The capped area has stored on it many pieces of scrap metal, machinery, and equipment. The primary vegetation community on the cap and adjacent disturbed areas include many early successional plant species, such as lespedeza (*Lespedeza cuneata*), blackberry (*Rubus* sp.), and members of the *Asteraceae* family (i.e., goldenrods, asters), that readily colonize disturbed sites and old fields. There are numerous shallow topographic depressions on the capped area. These depressions were probably made during initial grading of the cap or subsequent landfill subsidence.

The areas surrounding the capped landfill include relatively undisturbed, second-growth oak forest on upland slopes to the east, west, and north; second-growth mesic forest on the slopes on the south end of the site; and disturbed, old-field areas adjacent to the capped area. These upland old field areas are dominated by red cedar (*Juniperus virginiana*), pines (*Pinus* sp.), hardwood saplings, Japanese honeysuckle (*Lonicera japonica*), and numerous herbaceous species common in old-field situations. Scrap metal and equipment are also stored in these areas.

Most of the site drains to the south into a small drainage that had been used as a runoff retention pond in the past. The area appears not to have functioned as a retention pond for some years because most of the drainage bottom and the adjacent uplands are vegetated with trees, shrubs, and herbaceous species.

2. WETLAND DETERMINATION

2.1 U.S. ARMY CORPS OF ENGINEERS METHODOLOGY

The wetland determination was performed using the U.S. Army Corps of Engineers methodology (USACE 1987). According to this methodology three parameters—hydrophytic vegetation, hydric soils, and wetland hydrology—must be present for an area to be identified as a wetland. With the exception of certain atypical or problem situations, an area must possess all of the following attributes to be positively identified as a wetland:

1. The vegetation community must be dominated by species classified as Obligate Wetland (OBL; estimated probability of occurring in a wetland is > 99%), Facultative Wetland (FACW; usually occur in wetlands, but occasionally found in nonwetlands), and/or Facultative (FAC; equally likely to occur in wetlands or nonwetlands) (Reed 1988);
2. The soil must be hydric. Several indicators, including soil color and presence of mottles, can be used to determine if a soil is hydric.

3. There must be evidence of wetland hydrology. All hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Evidence includes direct observations of inundation or soil saturation and indirect observations such as flood drift lines and silted leaf litter.

2.2 ATYPICAL SITUATION WETLANDS

The USACE (1987) addresses atypical situations in which one or more positive indicators of wetland presence may be absent in a wetland and describes procedures for determining if the area in question is a wetland. Atypical situations are those in which positive indicators of either hydrophytic vegetation, hydric soils, or wetland hydrology are absent because of effects of recent human activities or natural events. Atypical situations include areas in which there are unauthorized discharges requiring enforcement actions; natural events such as changing river courses, beaver dams, mudslides, and earthquakes; and human-induced wetlands that have been purposely or incidentally created by human activities.

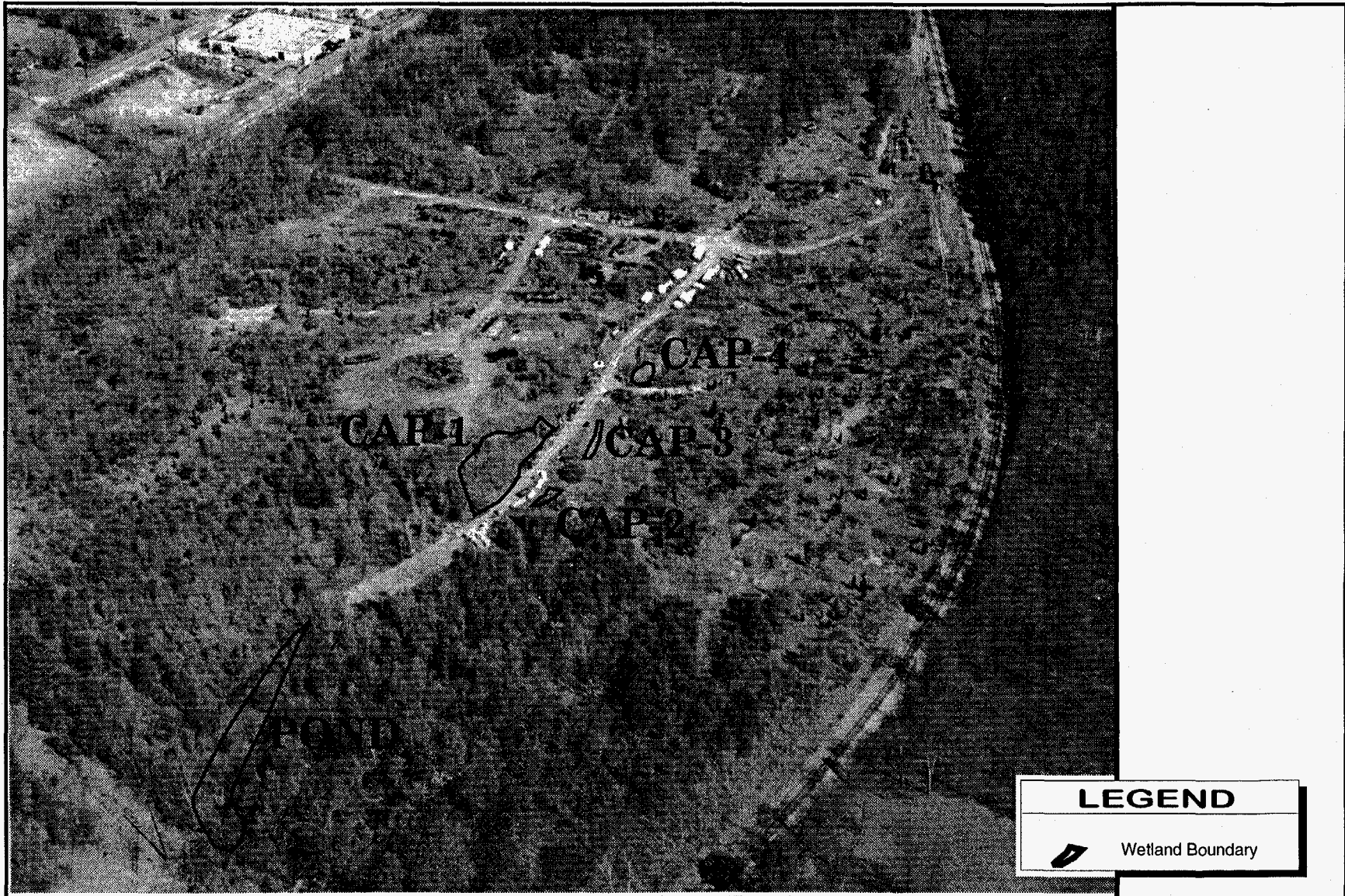
3. WETLAND SURVEY FINDINGS

Wetlands were identified in two areas on the DWI-1630 site. These areas are the landfill cap and the former retention pond area (Fig. 1). Routine wetland determination data sheets (USACE 1987) were filled out for each of the wetland sites (Appendix).

3.1 THE LANDFILL CAP

There are numerous areas on the cap in which initial site grading or subsequent subsidence has formed depressions ranging in size from a few square meters to roughly 250-300 square meters. Wetlands have developed in four of these depressions (CAP-1 through CAP-4; Appendix). These wetlands are man-induced atypical situation wetlands. Two of the three necessary parameters—hydrophytic vegetation and wetland hydrology—were present, but the soils were not hydric. The wetlands have formed as a direct result of the grading or subsidence of the clay landfill cap, the low permeability of the clay fill soil, and the absence of surface drainage outlets from the depressions. The USACE may not consider these man-induced, atypical situation wetlands to be jurisdictional due to their location and development on a landfill cap and their isolation from ground water and surface waters.

The cap consists of low-permeability clay soils that were imported to the site. Because of the low permeability of the clay cap and the absence of surface outlets, precipitation and runoff are retained in the depressions. One to several inches of standing water was observed throughout or in portions of the depressions. Hydrologic data were not available for these areas, however, it is likely that water is retained in these depressions for extended periods during the year, including during the growing season.



	<p>Fig. 1</p>	<p>Aerial Photo of David Witherspoon, Inc. Site 1630 Wetlands DOE - David Witherspoon, Inc. Site 1630 - Knoxville, Tennessee</p>	<p>DOCUMENT ID: 35H830 0098-30 / 1630ws</p>	<p>DRAWING ID: DWI-2.CDR</p>	<p>DRAWING DATE: FEBRUARY10, 1997 WM</p>
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Fig. 1. Aerial photo of David Witherspoon, Inc., Site 1630 Wetlands.

The presence of water for extended periods during the growing season has encouraged the growth of wetland vegetation. The depressions are dominated by hydrophytic vegetation, including woolgrass (*Scirpus cyperinus*; OBL), soft rush (*Juncus effusus*; FACW+), tickseed sunflower (*Bidens polylepis*; FACW), cattail (*Typha latifolia*; OBL), spikerush (*Eleocharis* sp.; OBL), fox sedge (*Carex vulpinodea*; OBL), Frank's sedge (*Carex frankii*; OBL), other sedges (*Carex* sp.), and saplings of black willow (*Salix nigra*; OBL) and sycamore (*Platanus occidentalis*; FACW-). These species are all early colonizers of wetlands that form in disturbed or recently cleared areas.

Although the surface soil in the depressions may be saturated for extended periods, characteristics of the clay soil, such as low organic matter content and low permeability, have inhibited the development of hydric characteristics. The matrix colors of the soils in the depressions included yellowish-brown (10YR5/6), dark red (2.5YR5/8), yellowish-red (5YR5/8), brown (10YR5/3), and dark grayish brown (10YR4/2). These high-chroma color clay soils (with the exception of the 10YR4/2, which contained a larger amount of partially degraded plant material) could require decades or more to acquire, through oxidation and reduction processes, the low-chroma colors and mottling of a hydric soil.

3.2 THE RETENTION POND AREA

At the foot of the landfill cap on the southwest end of the site is a small drainage that had been used in the past as a retention pond for site runoff. There is a low, earthen berm across the bottomland near the site boundary which detains water in the bottomland. The water drains from the site through a pipe at the pond outlet. The berm and the constricted outlet slows drainage of runoff from the bottomland, which is shallowly flooded during periods of high rainfall.

A wetland extends from the base of the fill to the berm within the level bottom area. At the base of the fill there is a small area dominated by trees and saplings. The midsection of the drainage is dominated by herbaceous species with scattered shrubs and saplings. The lower end of the wetland has sparse groundcover and is shaded by trees that grow on the edge of the bottom. Two locations were characterized for the wetland determination (POND 1 and POND 2; Appendix).

The dominant species include box elder (*Acer negundo*; FACW), black willow, green ash (*Fraxinus pennsylvanica*; FACW), and sycamore in the canopy and sapling strata, and false nettle (*Boehmeria cylindrica*; FACW+), cutgrass (*Leersia* sp.; OBL or FACW depending on species), and rough cocklebur (*Xanthium strumarium*; FAC). The soil is a gray (7.5YR5/1 and 10YR5/1) silty clay with mottles and manganese concretions. The soil was saturated to the surface and free water in the soil boring occurred at approximately 5 inches. The primary hydrologic source appears to be groundwater, however, surface runoff may also be an important contributor at certain times of year.

4. SUMMARY

A wetland survey of the DWI-1630 site in Knox County, Tennessee, was conducted on September 19, 1996, using the USACE wetland delineation methodology. Four man-induced, atypical situation, isolated wetlands, ranging in size from approximately 72 m² to 270 m² were identified on the clay cap of the landfill. These wetlands have hydrophytic vegetation and wetland hydrology, but lack hydric soils. These wetlands may not be considered jurisdictional by the USACE or the State of Tennessee because of their location and development on a landfill cap and their lack of a surface drainage outlet. A jurisdictional wetland was identified in a drainage bottom, formerly used as a retention pond area, in the southwest portion of the site. This wetland, which has groundwater as its primary hydrologic source, has hydrophytic vegetation, hydric soil, and wetland hydrology.

5. REFERENCES

- Reed, P.B. 1988. National List of Plant Species that Occur in Wetlands: Tennessee. USFWS Biological Report NERC-88/18.42.
- U.S. Army Corps of Engineers. 1987. Wetlands Delineation Manual. Technical Report Y-87-1. Waterways Experiment Station, Vicksburg, MS.

Appendix.

WETLAND DETERMINATION DATA FORMS

A-2
DATA FORM 1
WETLAND DETERMINATION

Applicant _____ Application _____ Project _____
 Name: _____ Number: _____ Name: DWL-1630
 State: TN County: KNOX Legal Description: _____ Township: _____ Range: _____
 Date: 19 Sept 1996 Plot No.: CAP-1 Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>
<u>Trees</u>		<u>Herbs</u>	
1.		7. <i>Scirpus cyperinus</i>	OBL
2. NONE		8. <i>Typha latifolia</i>	OBL
3.		9. <i>Juncus effusus</i>	FACW+
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4. <i>Salix nigra</i>	OBL	10.	
5. <i>Platanus occidentalis</i>	FACW-	11. NONE	
6.		12.	

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: _____.

Hydrophytic vegetation: Yes X No ____ . Basis: Dominance of OBL and FACW species

Soil

Series and phase: Fill clay soil On hydric soils list? Yes ____ ; No X .

Mottled: Yes >6"; No ____ . Mottle color: 2.5YR6/3; Matrix color: 10YR5/6 and 10YR5/8

Gleyed: Yes ____ No X Other indicators: _____.

Hydric soils: Yes ____ No X; Basis: Matrix color and fill clay .

Hydrology

Inundated: Yes X; No ____ . Depth of standing water: avg. 3" .

Saturated soils: Yes X; No ____ . Depth to saturated soil: at surface .

Other indicators: _____.

Wetland hydrology: Yes X; No ____ . Basis: Ponded water; surface saturation

Atypical situation: Yes X; No ____ .

Normal Circumstances? Yes ____ No X .

Wetland Determination: Wetland X ; Nonwetland ____ .

Comments: Man-induced Atypical Situation; Isolated depressions formed by capping a land-filled valley with clay soils. See Data Form 3

Determined by: B. ROSE/STEEL

Approx. size: 250 m² (0.025 ha)

JAYCOR ENVIRONMENTAL

WETLAND DETERMINATION

Applicant _____ Application _____ Project _____
 Name: _____ Number: _____ Name: DWI-1630
 State: TN County: KNOX Legal Description: _____ Township: _____ Range: _____
 Date: 19 SEPT 1996 Plot No.: CAP-2 Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>
<u>Trees</u>		<u>Herbs</u>	
1.		7. <i>Typha latifolia</i>	OBL
2. NONE		8. <i>Eleocharis</i> sp.	OBL
3.		9. <i>Juncus effusus</i>	FACW+
		<i>Bidens polylepis</i>	FACW
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4. <i>Salix nigra</i>	OBL	10.	
5.		11.	
6.		12.	

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: _____.
 Hydrophytic vegetation: Yes X No ____ Basis: OBL and FACW dominance

Soil

Series and phase: Clay fill soil On hydric soils list? Yes ____; No X.
 Mottled: Yes ____; No X. Mottle color: _____; Matrix color: 2.5YR4/6
 Gleyed: Yes ____ No X Other indicators: _____
 Hydric soils: Yes ____ No X; Basis: Lack of indicators; Fill soil

Hydrology

Inundated: Yes ____; No X. Depth of standing water: _____
 Saturated soils: Yes X; No ____ Depth to saturated soil: At surface
 Other indicators: Interspersion of unvegetated with vegetated substrate indicated recent ponding
 Wetland hydrology: Yes ____; No ____ Basis: _____
 Atypical situation: Yes X; No ____
 Normal Circumstances? Yes ____ No X.
 Wetland Determination: Wetland X; Nonwetland _____

Comments: Man-induced Atypical Situation; Isolated depressions in clay landfill cap.

Approx size: 72m² (0.0072 ha) See Data form 3

Determined by: B. ROSENSTEEL
 JAYCOR ENVIRONMENTAL

A-4
DATA FORM 1
WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: DWI-1630
 State: TN County: KNOX Legal Description: _____ Township: _____ Range: _____
 Date: 19 SEPT 1996 Plot No.: CAP-3 Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>
<u>Trees</u>		<u>Herbs</u>	
1.		7. <u>Typha latifolia</u>	<u>OBL</u>
2. <u>NONE</u>		8. <u>Bidens polylopis</u>	<u>FACW</u>
3.		9. <u>Scirpus cyperinus</u>	<u>OBL</u>
		<u>Carex frankii</u>	<u>OBL</u>
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4.		10. <u>Lonicera japonica</u>	<u>FAC</u>
5.		11.	
6.		12.	

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: _____
 Hydrophytic vegetation: Yes X No ____ Basis: OBL and FACW dominance

Soil *

Series and phase: Clay fill soil On hydric soils list? Yes ____; No X.
 Mottled: Yes 1"-5"; No ____ Mottle color: 2.5YR7/4; Matrix color: 5YR5/8-clay 1"-5"
 Gleyed: Yes FAINT No X Other indicators: 10YR5/3 gravelly clay 5"
 Hydric soils: Yes ____ No X; Basis: _____

Hydrology

Inundated: Yes X; No ____ Depth of standing water: 3"+ in part of area.
 Saturated soils: Yes X; No ____ Depth to saturated soil: At surface throughout area
 Other indicators: Interspersion of unvegetated and vegetated substrate indicated recent
 Wetland hydrology: Yes X; No ____ Basis: _____ flooding
 Atypical situation: Yes X; No ____
 Normal Circumstances? Yes ____ No X.
 Wetland Determination: Wetland X; Nonwetland _____

Comments: Man-induced Atypical Situation; Isolated depression in clay landfill cap
Approx. size: 270m² (0.027ha). See Data form 3
 Determined by: B. ROSENSTEEL

* A second soil boring had a layer of foundry sand

JAYCOR ENVIRONMENTAL

A-5
DATA FORM 1
WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: DWI-1630
 State: TN County: KNOX Legal Description: _____ Township: _____ Range: _____
 Date: 19 SEPT 1996 Plot No.: CAP-4 Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>
<u>Trees</u>		<u>Herbs</u>	
1.		7. <i>Bidens pylepis</i>	FACW
2. <u>NONE</u>		8. <i>Carex vulpinodea</i>	OBL
3.		9. <i>Carex frankii</i>	OBL
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4. <i>Cornus amomum</i>	FACW+	10.	
5.		11.	
6.		12.	

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: _____

Hydrophytic vegetation: Yes No . Basis: OBL and FACW dominance

Soil

Series and phase: Clay fill soil On hydric soils list? Yes _____; No . 0-4" silty clay; organic matter
 Mottled: Yes _____; No . Mottle color: _____; Matrix color: 10YR 4/2
 Gleyed: Yes _____ No Other indicators: 5YR 5/8 grav. clay 4"4
 Hydric soils: Yes _____ No ; Basis: Absence of hydric indicators; Fill soil

Hydrology

Inundated: Yes _____; No . Depth of standing water: ≈ 2-3"
 Saturated soils: Yes ; No _____. Depth to saturated soil: At surface
 Other indicators: _____
 Wetland hydrology: Yes ; No _____. Basis: Ponded water; surface saturation
 Atypical situation: Yes ; No _____.
 Normal Circumstances? Yes _____ No .
 Wetland Determination: Wetland ; Nonwetland _____

Comments: Man-induced Atypical Situation; Isolated depression in clay landfill cap.

Approx size: 113 m² (0.011 ha). Determined by: B. ROSENSTEEL
 See Data Form 3 JAYCOR ENVIRONMENTAL

A-6
DATA FORM 3
ATYPICAL SITUATIONS

Applicant Name: _____ Application Number: _____ Project Name: DWI-1630
Location: South Knoxville, Knox Co. TN Plot Numbers: CAP-1 through CAP-4 Date: 19 Sept. 1996

A. VEGETATION:

1. Type of Alteration: Original valley was used as a landfill/salvage storage site. Later was capped with clay soil.
2. Effect on Vegetation: Original vegetation has been covered with landfill contents and clay cap. Pioneer herbaceous species and woody vines have colonized dry areas. Pioneer emergent wetland species have colonized depressions
3. Previous Vegetation: No known documentation of previous vegetation. (S)
(Attach documentation) _____
4. Hydrophytic Vegetation? Yes X No _____

B. SOILS:

1. Type of Alteration: Original soil covered by tens of feet of landfill contents and fill soil
2. Effect on Soils: Landfill used from 19 - Capped in 198
3. Previous Soils: _____
(Attach documentation) _____
4. Hydric Soils? Yes _____ No X

C. HYDROLOGY:

1. Type of Alteration: Depressions in clay cap holds precipitation and runoff.
2. Effect on Hydrology: Minimal drainage through low permeability clay. No surface outlets from the depressions
3. Previous Hydrology: Unknown
(Attach documentation) _____
4. Wetland Hydrology? Yes X No _____

Characterized By: B. Rosensteel
JAYCOR Environmental

DATA FORM 1

WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: DWI-1630
 State: TN County: KNOX Legal Description: _____ Township: _____ Range: _____
 Date: 19 SEPT 1996 Plot No.: "POND" 1 Section: _____

AT BASE OF FILL

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>
<u>Trees</u>		<u>Herbs</u>	
1. <u>Acer negundo</u>	<u>FACW</u>	7.	
2. <u>Salix nigra</u>	<u>OBL</u>	8. <u>NONE</u>	
3. <u>Platanus occidentalis</u>	<u>FACW-</u>	9.	
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4. <u>Acer negundo</u>	<u>FACW</u>	10.	
5.		11. <u>NONE</u>	
6.		12.	

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: _____
 Hydrophytic vegetation: Yes X No ____ . Basis: _____

Soil

Series and phase: _____ On hydric soils list? Yes ____ ; No ____
 Mottled: Yes X ; No ____ . Mottle color: 7.5YR5/1 ; Matrix color: 7.5YR6/6 Clay 0"-6"
 Gleyed: Yes ____ No ____ Other indicators: 5YR4/4 ; 7.5YR5/1 Silty clay 6"+
 Hydric soils: Yes X No ____ ; Basis: Matrix color and mottles

Hydrology

Inundated: Yes ____ ; No X . Depth of standing water: _____
 Saturated soils: Yes ____ ; No X . Depth to saturated soil: Surface was wet; clay was no underlying
 Other indicators: Ground devoid of herbaceous vegetation; Pooled water observed Dec - Marc
 Wetland hydrology: Yes X ; No ____ . Basis: Absence of groundcover; Observed ponding
 Atypical situation: Yes ____ ; No X . It has not been determined if ponding occurred
Normal Circumstances? Yes X No ____ . in growing season
 Wetland Determination: Wetland X ; Nonwetland _____

Comments: Area was disturbed in the past - (was used as a site retention pond) but has not been recently cleared or disturbed. Clay layer perches precipitation but restricts groundwater discharge
 Determined by: B. ROSENSTEEL

JAYCOR ENVIRONMENTAL

WETLAND DETERMINATION

Applicant Name: _____ Application Number: _____ Project Name: DWI-1630
State: TN County: KNOX Legal Description: _____ Township: _____ Range: _____
Date: 19 SEPT 1996 Plot No.: "POND" 2 Section: _____

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>
<u>Trees</u>		<u>Herbs</u>	
1. <u>Acer negundo</u>	<u>FACW</u>	7. <u>Xanthium strumarium</u>	<u>FAC</u>
2. <u>Salix nigra</u>	<u>OBL</u>	8. <u>Leersia sp.</u>	<u>OBL or FACW</u>
3.		9. <u>Boehmeria cylindrica</u>	<u>FACW*</u>
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4. <u>Acer negundo</u>	<u>FACW</u>	10.	
5. <u>Fraxinus pennsylvanica</u>	<u>FACW</u>	11.	
6.		12.	

% of species that are OBL, FACW, and/or FAC: 100. Other indicators: _____.
Hydrophytic vegetation: Yes X No ____ . Basis: OBL, FACW Dominance

Soil

Series and phase: _____ On hydric soils list? Yes ____; No ____.
Mottled: Yes X; No ____ . Mottle color: 7.5YR5/6; Matrix color: 10YR5/1. Silty clay loam
Gleyed: Yes ____ No X Other indicators: _____.
Hydric soils: Yes ____ No ____; Basis: _____.

Hydrology

Inundated: Yes ____; No X . Depth of standing water: 5".
Saturated soils: Yes X; No ____ . Depth to saturated soil: Surface.
Other indicators: Patches of bare substrate indicate ponding.
Wetland hydrology: Yes X; No ____ . Basis: _____.
Atypical situation: Yes ____; No X.
Normal Circumstances? Yes X No ____.
Wetland Determination: Wetland X; Nonwetland ____.

Comments: Groundwater discharge wetland. Berm at site boundary probably aids in detention of runoff, also

Determined by: B. ROSENSTEEL
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contributed to the preparation of this document and should not be considered an eligible contractor for its review.