



Emerald Park Landfill Western Expansion
ADS
December 10, 2014

Wetland Delineation Report
City of Muskego, Waukesha County, Wisconsin
Stantec Project # 193702557

APPENDIX F

SITE PHOTOGRAPHS

(Date of Photos October 14, 2013, October 17, 2014 and October 23, 2014)



S-1 V. N



W1-wet meadow community



W1-1u V. NE



W1-1u V. SW



W1-1w V. N



W1-2u V. W



W1-2w V. S



W1-2w V. SE



W1-4w V. W of shrub carr community



W1-6w V. N



W1-6w V. S



W2 - V. N of wet meadow community



W2 - V. S of wet meadow community



W2-1u V. S



W2-1w V. N



W2-2u V. S



W2-2w V. N



W2-3u V. E



W2-3u V. SW



W2-3w V. E of wet meadow



W2-4w V. N



W2-5w V. N



W3 V. E



W4 V. E from berm



W4



5-1 V. N



S-1, view East



S-1, view North



S-1, view North



S-1, view Southwest



S-1, view West



W-2, photo depicting the Reed Canary Grass monoculture, view West



W-2 culvert near W2-6w



W2-6w, view North



W2-5w, view South



W2-7w, view South



W3 and culvert connection to W2, view Northwest



W3, view South



W5-1w, view North



W5-1w, view South



W6-1u, view East with W2 in the background



W6-1u, view South



W6-1w, view South



W7-1u, view South



W7-1u, view Southeast



W7-1w, view Southeast



W2-7u (foreground) W2-7w (background), view East



W2-9u (foreground) W2-9w (background), view East



W2-9u (foreground) W2-9w (background), view Northwest towards W2 partly farmed



W9-1u (left) W9-1w (right), view Southwest



W2-10u (foreground) W2-10w (background), view Southeast



W8-1u (foreground) W8-1w (background), view North



W10-1u (foreground) W10-1w (background), view Northwest



W11-1u (foreground) W11-1w (background), view West



W11-2u, View South of upland shrub ticket



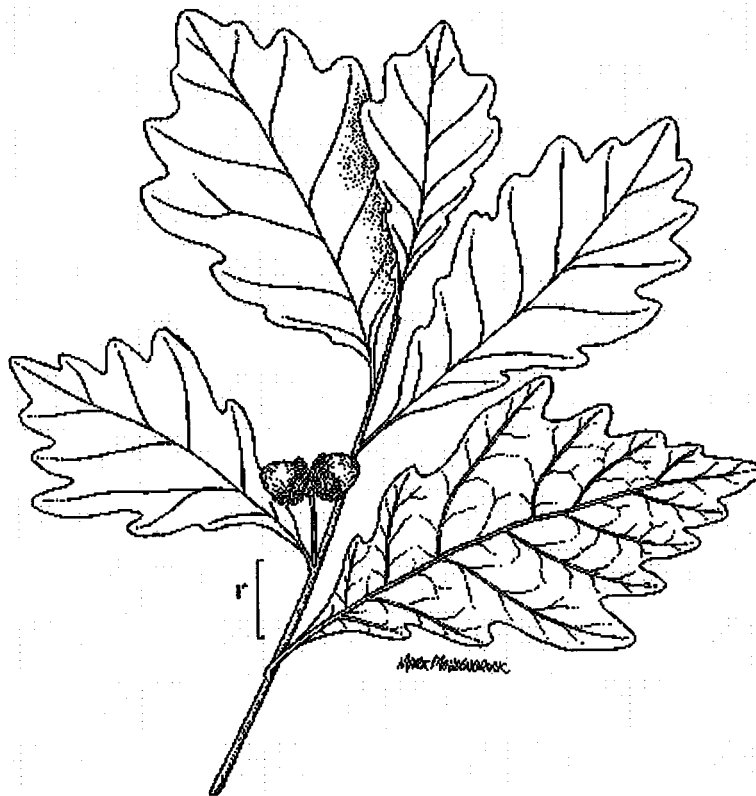
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APPENDIX G PREVIOUS REPORTS

WETLAND DELINEATION REPORT
VEOLIA ES EMERALD PARK LANDFILL
CITY OF MUSKEGO, WAUKESHA COUNTY, WISCONSIN

December 1, 2005
Revised December 8, 2008



NRC Project # 05-235

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WETLAND DETERMINATION AND DELINEATION REPORT

**Veolia ES EMERALD PARK LANDFILL
CITY OF MUSKEGO
WAUKESHA COUNTY, WISCONSIN**

**December 1, 2005
Revised December 8, 2008**

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NRC Project # 05-235



for

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INTRODUCTION

Natural Resources Consulting (NRC) conducted a wetland determination and delineation on the Veolia ES Emerald Park Landfill Property (the "Property") on October 25-28, 2005 and November 29, 2005. The Property includes approximately 395 acres in Section 36, Township 5 North, Range 20 East, Waukesha County, Wisconsin. The Property lies in the southeastern part of the City of Muskego, Wisconsin (Figure 1).

The objective of the wetland determination and delineation was to provide an estimate of the extent and spatial arrangement of wetlands within the Property. Most wetlands are considered waters of the U.S. and are therefore subject to regulation under the Clean Water Act (CWA). Specifically, non-isolated wetlands are regulated under Section 404 of the CWA and the jurisdictional regulatory authority lies with the United States Army Corps of Engineers (USACE). Additionally, the Wisconsin Department of Natural Resources (WDNR) has regulatory authority over wetlands, navigable waters, and adjacent lands under Chapter 30 Wisconsin State Statutes, Act 6, and NR 103 Wisconsin Administrative Code. The City of Muskego and/or Waukesha County may have additional regulatory authority through shoreland or wetland zoning ordinances.

NRC understands the requested services to include:

1. Complete wetland determinations within the Property.
2. Flag wetland/upland boundaries within the Property.
3. Survey wetland boundaries with a GPS.

METHODS

Wetland Delineation

The initial steps in the wetland determination and delineation process included a review of the following documents:

- Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS), excerpts from *Soil Survey of Milwaukee and Waukesha Counties, Wisconsin*;
- NRCS list of hydric soils for Waukesha County;
- U.S. Geological Survey 7.5 minute Wisconsin quadrangle map; and
- The Wisconsin Wetland Inventory (WWI) Map for the area.

These documents provide information on where wetlands have been previously identified or areas that possess a high likelihood of wetlands occurring. These initially identified areas were then visited to make on-site determinations, and where necessary, complete delineations of the uppermost wetland boundary.

Wetland determinations were made using the criteria and methods outlined in the USACE Manual (USACE 1987), subsequent guidance documents (USACE 1991, 1992), Guidelines for Submitting Wetland Delineations in Wisconsin to the St. Paul District Corps of Engineers (USACE 1996), and the Basic Guide to Wisconsin's Wetlands and their Boundaries (Wisconsin Department of Administration Coastal Management Program 1995). The U.S. Army Corps of Engineers and U.S. Environmental Protection Agency wetland definition is included below.

“Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions.”

The State of Wisconsin wetland definition differs slightly; however, their code also cites the usage of the 1987 Manual.

Wetland determinations were made using the three criteria of assessment approach defined in the 1987 Manual. According to procedures described in this Manual, areas that under normal circumstances reflect a predominance of hydrophytic (water loving) vegetation, hydric soils, and wetland hydrology (e.g., inundated or saturated soils) are considered wetlands. Since the wetland boundaries at the Property were relatively abrupt, the Routine Method for Small Areas was employed.

A preliminary reconnaissance of the Property was used to determine the general topography and plant communities at the Property and to identify suitable locations for sampling transects. In general, transects are linear features aligned perpendicular to site contours such that they cross representative locations of wetlands and adjacent uplands. The three criteria were evaluated by placing an observation point within a representative location of each plant community encountered along the transect.

At each observation point:

1. The presence or absence of normal circumstances was determined.
2. The plant community was characterized by identifying dominant plant species using the "50/20" rule. For each stratum in the plant community, dominant species are the most abundant (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50% of the total dominance measure for the stratum, plus any additional species comprising 20% or more of the total dominance measure for the stratum.

Wetland indicator status is ranked by percent probability of the species occurrence in wetlands as follows:

OBL = Obligate Wetland, occurs with an estimated 99 percent probability of occurrence in wetlands

FACW = Facultative Wetland, estimated 67 to 99 percent probability of occurrence in wetlands

FAC = Facultative equally likely to occur in wetlands and non-wetlands (34 to 66 percent probability)

FACU = Facultative upland, 67 to 99 percent probability in non-wetlands, 1 to 33 percent in wetlands

UPL = Obligate Upland, greater than 99 percent probability in non-wetlands in this region

NI = No indicator, insufficient information available to determine an indicator status

Wetland indicator status can be modified with a positive sign (+) to indicate a frequency toward the higher end of the category, while a minus sign (-) indicates a frequency toward the lower end of the category (Resource Management Group, 1995);

3. Soil pits were dug to a depth of at least 18 inches when possible, and the soil was evaluated for hydric soil characteristics; and
4. Hydrology was assessed by observing for primary (i.e., inundation, saturation within the root zone, water marks, etc.) and secondary (i.e., oxidized pore linings, water stained leaves, etc.) indicators of wetland hydrology.

The transects were initiated at a representative location within each wetland to first complete the wetland determination. The uppermost wetland boundary was identified once an upland site was encountered along the transect. The uppermost wetland boundary was flagged using consecutively numbered surveyors flagging and mapped with Global Positioning System (GPS) equipment. Subject to weathering, the flagging will remain in the field for use during a USACE / WDNR site visit and for a guide during construction.

RESULTS

Table 1 is a list of the soils mapped in the *Soil Survey of Milwaukee and Waukesha Counties, Wisconsin*, for the Property (Figure 2). Soils listed as hydric within Waukesha County are shown in **bold print**.

Table 1. Soil Map Units Identified at the Property.

SYMBOL	SOIL MAP UNIT	CLASSIFICATION	DRAINAGE CLASS	HYDRIC PART
AsA	Ashkum silty clay loam, 0-3% slopes	Typic Haplaquolls	poorly drained	whole soil unit
EsA	Elliott silt loam, 1-3% slopes	Aquic Argiudolls	somewhat poorly drained	inclusions for Ashkum soils
FoB	Fox loam, 2-6% slopes	Typic Hapludalfs	well drained	none
HeB	Hebron loam, 2-6% slopes	Typic Hapludalfs	well drained	none
HeC2	Hebron loam, 6-12% slopes, eroded	Typic Hapludalfs	well drained	none
MeB	Markham silt loam, 2-6% slopes	Mollic Hapludalfs	well drained	none
MgA	Martinton silt loam, 1-3% slopes	Aquic Argiudolls	somewhat poorly drained	inclusions for Montgomery soils
Mzb	Montgomery silty clay loam	Typic Haplaquolls	poorly drained	whole soil unit
MzdB	Morley silt loam, 2-6% slopes	Typic Hapludalfs	well drained	none
MzdB2	Morley silt loam, 2-6% slopes, eroded	Typic Hapludalfs	well drained	none
MzdC2	Morley silt loam, 6-12% slopes, eroded	Typic Hapludalfs	well drained	none
Mzg	Muskego muck	Limnic Medisaprists	very poorly drained	whole soil unit
Na	Navan silt loam	Typic Argiaquolls	poorly drained	whole soil unit
Oc	Ogden muck	Terric Hapludalfs	poorly drained	whole soil unit
ShB	Saylesville silt loam, 2-6% slopes	Typic Hapludalfs	well drained	none
ShB2	Saylesville silt loam, 2-6% slopes, eroded	Typic Hapludalfs	well drained	none
ShC2	Saylesville silt loam, 6-12% slopes, eroded	Typic Hapludalfs	well drained	none

The Wisconsin Wetland Inventory (WWI) shows wetlands south, southwest, and west of the active landfill (Figure 3). Three large areas are labeled as a mixed vegetation community of scrub-shrub/emergent wetland on wet soils (S3/E2K). An additional large area is marked as emergent wet meadow with either wet soil or standing water (E2H, E2K). Three smaller areas northwest and southwest of the active landfill are also marked as wet meadow (E2H, E2K, E2Kf).

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The topography in the vicinity of the Property is generally flat, with natural topographic highs of greater than 800 feet above mean sea level (MSL) in the southeastern corner and the northeastern side of the Property. Surface water drainage is to the northwestern corner of the Property, and is accomplished by sheet flow and agricultural drainage ditches. Surface water leaving the Property is by an unnamed drainageway that discharges to Big Muskego Lake approximately 1.5 miles downstream of the Property. Big Muskego Lake is part of the Illinois-Fox drainage basin, which drains to the Mississippi River by way of the Illinois River.

An onsite wetland determination and delineation was completed on October 25-27, 2005 by Jerry Kelly and Rachel Veltman of NRC, on October 28, 2005 by Jerry Kelly and Allison Oberc of NRC, and Jerry Kelly on November 29, 2005. USACE data sheets were completed for sample points along transects through the wetland boundary plant communities, and are included in Appendix A. The transect and sample point locations were chosen within representative plant communities and at various landscape positions.

NRC determined boundaries for eight jurisdictional wetlands on the Property (Figure 4). Numbering of wetlands was kept consistent with that of a previous wetland delineation performed at the Property (JJR, Inc., 1996). Wetlands 1 and 2 described in that report have since been enhanced as entrance ponds to the Veolia ES Emerald Park Landfill and are not classified as jurisdictional wetlands. The area of Wetland 5 was investigated as part of the current project, but evidence of a wetland was not observed (data form for W5-P1 in Appendix A). Wetland 8, formerly separated from Wetland 9 by property belonging to others, is included as part of Wetland 9 because the client now possesses additional lands.

Wetlands additional to those described in the 1996 report are included in this report. Wetland 6A, west of Wetland 6, appears to have resulted from a change in land use activities. Wetlands 10 and 11 are on lands not owned by Veolia ES Emerald Park Landfill at the time of the earlier investigation.

Wetland 3

Wetland 3 is a large wet meadow and scrub-shrub complex in the southeastern part of the Property. A reed canary grass (*Phalaris arundinacea*) monoculture dominates most of the wet meadow parts of this wetland. Other wet meadow areas support prairie cordgrass (*Spartina pectinata*) and forbs, such as giant goldenrod (*Solidago gigantea*) and grassleaf goldenrod (*Euthamia graminifolia*). A pond in the northeastern part of Wetland 3 is surrounded by mature hardwood trees, especially silver maple (*Acer saccharinum*). Scrub-shrub areas are dominated by sandbar willow (*Salix exigua*) and gray and red osier dogwoods (*Cornus racemosa*, *C. stolonifera*). Indicators of hydric soils include a thick dark surface layer (Indicator A12 in National Technical Committee for Hydric Soils, *Field Indicators of Hydric Soils in the United States*, Version 5.9, 2003) and a loamy gleyed matrix (Indicator F2). Indicators of wetland hydrology are limited to secondary indicators, including the FAC-neutral test and local soil survey data.

Uplands adjacent to Wetland 3 are generally on noticeably higher ground, including landfill areas, U.S. Highway 45, and active and fallow fields. Active fields are currently (October 2005) planted in winter wheat (*Triticum aestivum*). Plant communities of fallow fields and landfill slopes are dominated by Kentucky bluegrass (*Poa pratensis*) and forbs such as Canada goldenrod (*Solidago canadensis*) and dandelion (*Taraxacum officinale*). Generally, soils at upland sampling locations did not exhibit indicators of hydric soils. Wetland hydrology indicators were not observed at upland sampling locations.

Wetland 4

Wetland 4 is a large wet meadow and scrub-shrub complex in the south-central part of the Property. Reed canary grass dominates the plant community in much of the wet meadow parts of Wetland 4. Prairie cordgrass and prairie forbs, including grassleaf goldenrod and sawtooth sunflower (*Helianthus grosseserratus*) dominate a wet meadow on the northern part of Wetland 4. The scrub-shrub plant community includes sandbar willow, dogwoods, and cockspur hawthorn (*Crataegus crus-galli*). Indicators of hydric soils include a depleted matrix and thick dark surface layer (Indicators A12 and F3) and the presence of muck soils (Indicator A1). Indicators of wetland hydrology are limited to secondary indicators, including the FAC-neutral test and local soil survey data.

Uplands adjacent to Wetland 4 generally grade downward to the wetland boundaries. Lands adjacent to Wetland 4 include agricultural fields planted in winter wheat and soybeans (*Glycine max*), landfill slopes, and fallow fields dominated by oldfield vegetation, including Canada and giant goldenrod, Kentucky bluegrass, tall fescue (*Festuca arudinacea*), reed canary grass, and dandelion. Generally, soils at upland sampling locations did not exhibit indicators of hydric soils. Wetland hydrology indicators were not observed at upland sampling locations.

Wetland 6

Wetland 6 is a small, isolated depression in an agricultural field. The plant community is a wet meadow dominated by reed canary grass and saplings of sandbar willow. Indicators of hydric soils include a loamy gleyed matrix (Indicator F2). Indicators of wetland hydrology are limited to secondary indicators, including the FAC-neutral test and local soil survey data.

Wetland 6 is surrounded by an agricultural field most recently planted in soybeans. Weeds in the field are indicative of upland conditions, and include dandelions and Queen Anne's lace (*Daucus carota*). Soils at upland sampling locations did not exhibit indicators of hydric soils, nor were wetland hydrology indicators observed.

Wetland 6A

Wetland 6A is a small depression at the edge of an agricultural field. The plant community is a wet meadow dominated by hybrid cattail (*Typha x glauca*) and barnyard grass (*Echinochloa crusgalli*). Forbs in Wetland 6A are also indicative of wetland conditions, and include swamp tickseed (*Bidens comosus*) and water plantain (*Alisma subcordatum*). Indicators of hydric soils include a depleted layer below a dark surface soil layer (Indicator A11). Indicators of wetland hydrology are limited to secondary indicators, including the FAC-neutral test and local soil survey data.

Wetland 6A is bordered on the west, south, and east by agricultural fields formerly planted in soybeans and alfalfa (*Medicago sativa*). Weeds in the field are indicative of upland conditions, and include dandelions and Queen Anne's lace. Soils at upland sampling locations did not exhibit indicators of hydric soils, nor were wetland hydrology indicators observed.

Wetland 7

Wetland 7 is a small, isolated depression at the edge of an agricultural field. The plant community is a wet meadow dominated by river bulrush (*Scirpus fluviatilis*) and field nutsedge (*Cyperus esculentus*), although remnants of soybean plants are present to indicate that most of this wetland was farmed in 2005. Indicators of hydric soils include a depleted layer below a dark surface soil layer (Indicator A11). Indicators of

wetland hydrology are limited to secondary indicators, including the presence of water-stained leaves, the FAC-neutral test and local soil survey data.

Wetland 6 is bordered by an agricultural field most recently planted in soybeans on the west and south. Weeds in the field are indicative of upland conditions, and include dandelions and Queen Anne's lace. The northern and eastern sides of Wetland 7 support oldfield vegetation, including squirreltail grass (*Hordeum jubatum*), heath aster (*Aster ericoides*), and dandelions. Soils at upland sampling locations did not exhibit indicators of hydric soils, nor were wetland hydrology indicators observed.

Wetland 9

Wetland 9 covers much of the northwestern part of the Property. This wetland supports an extensive wet meadow plant community, much of which is a reed canary grass monoculture. In places, sedge species (*Carex stricta*, *C. lacustris*) and sawtooth sunflower are supported with the reed canary grass. A large wooded hill forms an upland island in the center of Wetland 9. The hill is topographically distinct from the surrounding wetland and supports northern pin and bur oaks (*Quercus ellipsoidalis*, *Q. macrocarpa*), with a perimeter band of shrubs that includes cockspur hawthorn and prickly ask (*Xanthoxylum americanum*). Indicators of hydric soils in the wetland include a depleted layer below a dark surface soil layer or a thick dark surface layer (Indicators A11, A12). Indicators of wetland hydrology are limited to secondary indicators, including the presence of water-stained leaves, the FAC-neutral test and local soil survey data.

The southern part of Wetland 9 has been farmed for soybeans in 2005. Weeds growing among the soybean plants are reed canary grass. This part of Wetland 9 has a muck soil (Indicator A1, Histosol). Indicators of wetland hydrology are limited to secondary indicators, including the FAC-neutral test and local soil survey data.

Wetland 9 is bordered by agricultural fields and lawn areas. The agricultural fields are planted in soybeans, and the lawns in Kentucky bluegrass. Weeds in the fields and lawns are indicative of upland conditions, and include Canada goldenrod, dandelions, and Queen Anne's lace. Soils at upland sampling locations did not exhibit indicators of hydric soils, nor were wetland hydrology indicators observed.

Wetland 10

Wetland 10 is a large wet meadow and scrub-shrub area in the southwestern part of the Property. The wet meadow plant communities, which comprise most of the wetland, are dominated by reed canary grass, with few other plant species present. A scrub-shrub plant community, centered along a drainageway that extends through a part of the wetland, is dominated by red osier and gray dogwoods and sandbar willows. The wetland soils are characterized by a thick dark surface layer (Indicator A12). Indicators of wetland hydrology are limited to secondary indicators, including the FAC-neutral test and local soil survey data.

Uplands adjacent to Wetland 10 include agricultural and fallow fields. The agricultural fields are planted in winter wheat, although remnants of an earlier soybean crop remain. Fallow field areas are dominated by Kentucky bluegrass and Canada goldenrod. Soils at upland sampling locations did not exhibit indicators of hydric soils, nor were wetland hydrology indicators observed.

Wetland 11

Wetland 11 is a wet meadow on the western side of the Property surrounded by an agricultural field. The wet meadow plant community is dominated by prairie cordgrass, hummock sedge, and wetland forbs, such as giant and Riddell's goldenrods (*Solidago gigantean*, *S. riddellii*), sawtooth sunflower, and side-flowering

aster (*Aster lateriflorus*). Indicators of hydric soils in the wetland include a depleted layer below a dark surface soil layer (Indicator A11). Indicators of wetland hydrology are limited to secondary indicators, including the FAC-neutral test and local soil survey data.

The upland surrounding Wetland 11 is planted in winter wheat, although remnants of an earlier soybean crop remain. Soils at upland sampling locations did not exhibit indicators of hydric soils, nor were wetland hydrology indicators observed.

Wetland 12

Wetland 12 is a large wet meadow and shallow marsh area in the southwestern part of the Property. The wet meadow plant communities, which comprise most of the wetland, are dominated by reed canary grass, with few other plant species present. The wet meadow is a plant community dominated by hybrid cattail in a low area of the western part of the wetland. Small areas of scrub-shrub plant communities are scattered in the wetland, and are dominated by red osier and gray dogwoods and sandbar willows and young green ash trees (*Fraxinus pennsylvanica*). The wetland soils are characterized by a thick dark surface layer (Indicator A12). Indicators of wetland hydrology are limited to secondary indicators, including the FAC-neutral test and local soil survey data.

Uplands adjacent to Wetland 12 include agricultural fields and wooded mounds. The agricultural fields are planted in winter wheat and alfalfa, although remnants of an earlier soybean crop remain. The wooded topographically high areas contain plant communities dominated by oak trees, including black oak (*Quercus velutina*), northern pin oaks, and bur oaks. Soils at upland sampling locations did not exhibit indicators of hydric soils, nor were wetland hydrology indicators observed.

WDNR Field Meeting

Minutes from the meeting between Mr. Jay Warzinski and Mr. James Dunham; Veolia ES Emerald Park Landfill, LLC, Mr. Brian Karczewski, Natural Resources Consulting, Inc., Mr. Doug Genthe and Mr. Mark Torresani; RMT, Inc. and Ms. Pamela Schense of the Wisconsin Department of Natural Resources held on November 12, 2007 are included in Appendix B. The purpose of the meeting was to review

- 1) The wetland boundaries within and adjacent to the proposed expansion footprint; and
- 2) The farm ditches within and adjacent to the proposed expansion footprint.

General concurrence regarding the wetland boundaries was obtained. Small changes to the north side of wetland W-4 needed to be made. These changes are provided on Figure 4. Questions regarding a previously delineated area, wetland W-5, were addressed in the field. Ms. Schense agreed that there did not appear to be any indicators of wetland in the area. However, she requested that a farm service agency crop slide review be completed to show that the area was consistently farmed and that signatures were not present on a consistent basis. If so, she will consider the area upland.

Ms. Schense agreed with determinations presented in the field that Pond P-6 is not wetland. This area is now considered non-navigable and non-wetland and does not require further evaluation during the practical alternatives analysis process under NR 103.

Ms. Schense agreed to previously marked locations of navigability for ag-ditch D-4, and NRC's professional opinion of where navigability starts for D-2 (approximately 240 feet south of the 90 degree bend in D-2). These points of beginning of navigability are shown on figure 4.

FSA Aerial Review

At the request of Ms. Pamela Schense, an FSA slide review was completed for the site with particular attention placed on the area previously defined as wetland W-5. The results of this review are provided in Appendix C.

In summary, significant indicators of wetness signature were viewed on every aerial collected from 1990 through 2002. No signatures of wetness were observed in aerials taken after 2002. The construction of a compost facility to the west of wetland W-5 in 2000 (please refer to the 2000 aerial) caused a "new normal circumstance" in site drainage that caused the recent shift in wetness signatures observed on aerials taken from 2002 through 2006.

Other Environmental Considerations

This report is limited to the identification of state and/or federally regulated wetlands. In addition, there may be other regulated environmental features within the Property. These environmental features may include but are not limited to historical or archeological features, endangered or threatened species, designated environmental corridors, floodplains, and/or navigable waters.

Prior to beginning work at this site or disturbing or altering wetlands, waterways, or adjacent lands in any way, NRC strongly recommends that the owner obtain the necessary permits or other agency regulatory review and concurrence with regard to the proposed work in order to comply with applicable regulations. NRC would be happy to assist with any additional resources inventory or identification work at your request, to the extent that the work is within our range of expertise.

CONCLUSIONS

Natural Resources Consulting (NRC) conducted a wetland determination and delineation on the Veolia ES Emerald Park Landfill Property (the "Property") on October 25-28, 2005 and November 29, 2005. The Property includes approximately 395 acres in Section 36, Township 5 North, Range 20 East, Waukesha County, Wisconsin. The Property lies in the southeastern part of the City of Muskego, Wisconsin.

The objective of the wetland determination and delineation was to provide an estimate of the extent and spatial arrangement of wetlands within the Property.

NRC identified and surveyed by GPS nine wetlands on the Property. Wetlands 3, 4, 10, and 12 are large wet meadows, dominated by reed canary grass, with scrub-shrub areas. Wetland 9 is a large wet meadow dominated by a reed canary grass monoculture. Wetlands 6, 6A, and 7 are small (each less than ¼-acre) isolated depressions in an agricultural field. Wetland 11 is a wet meadow with a diverse plant community in an agricultural field.

This delineation identified the wetland boundary according to current federal and state guidelines. The city or county may restrict land use in close proximity to the wetlands through setbacks, zoning, buffers or environmental corridors.

The information provided regarding wetland boundaries is an estimate of the wetland boundary and the opinions presented are best estimates of the conditions at the time the wetlands were viewed. The ultimate decision on the boundaries defining regulatory jurisdiction over wetlands rests with the USACE and, in some cases, the WDNR, or a local unit of government. As a result, there may be adjustments to boundaries based upon review of a regulatory agency. An agency determination can vary from time to time depending on various factors including, but not limited to precipitation patterns and the season of the year. In addition, the physical characteristics of the site can change with time, depending on the weather, vegetation patterns, drainage, activities on adjacent parcels, or other events. Any of these factors can change the nature and extent of wetlands on the site. It is recommended the Client obtain an opinion and authority from regulating government agencies before proceeding with any development or utilization of the Property. If the Client proceeds to change, modify or utilize the Property in question without obtaining authorization from the regulating governmental agency, it will be done at the Client's own risk and Natural Resources Consulting, Inc. will not be responsible or liable for any resulting damages.

REFERENCES

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Veolia ES Emerald Park Landfill
December 1, 2005
Revised December 8, 2008

Wetland Determination and Delineation
City of Muskego, Waukesha County, Wisconsin
NRC Project # 05-235

REPORT FIGURES

Natural Resources Consulting, Inc.

Specializing in wetland, biological and environmental permitting services

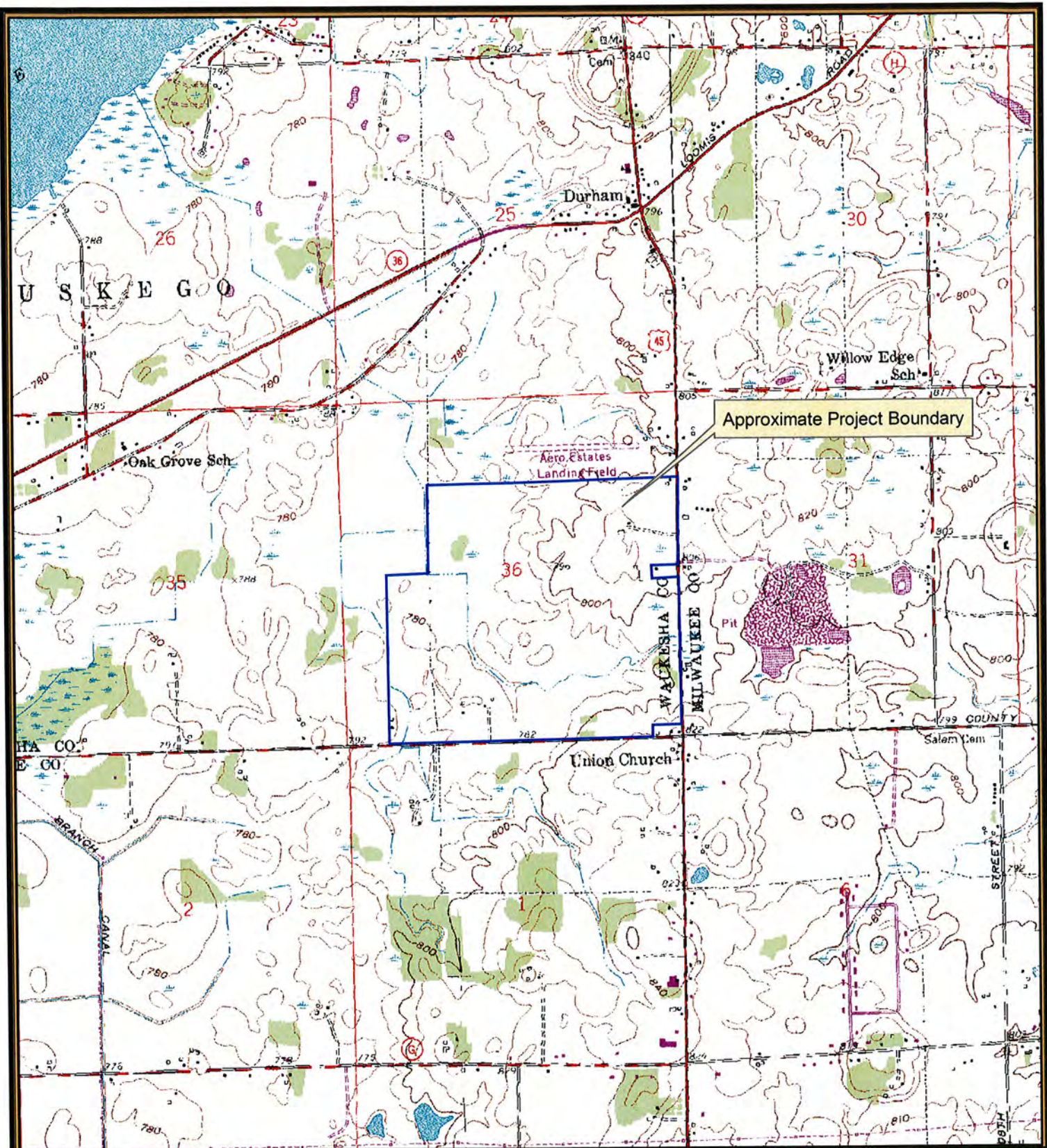


FIGURE 1. PROJECT LOCATION & TOPOGRAPHY
Emerald Park



Map Area Shown in Red

Location
Section 36, T5N, R20E
City of Muskego, Waukesha County, WI

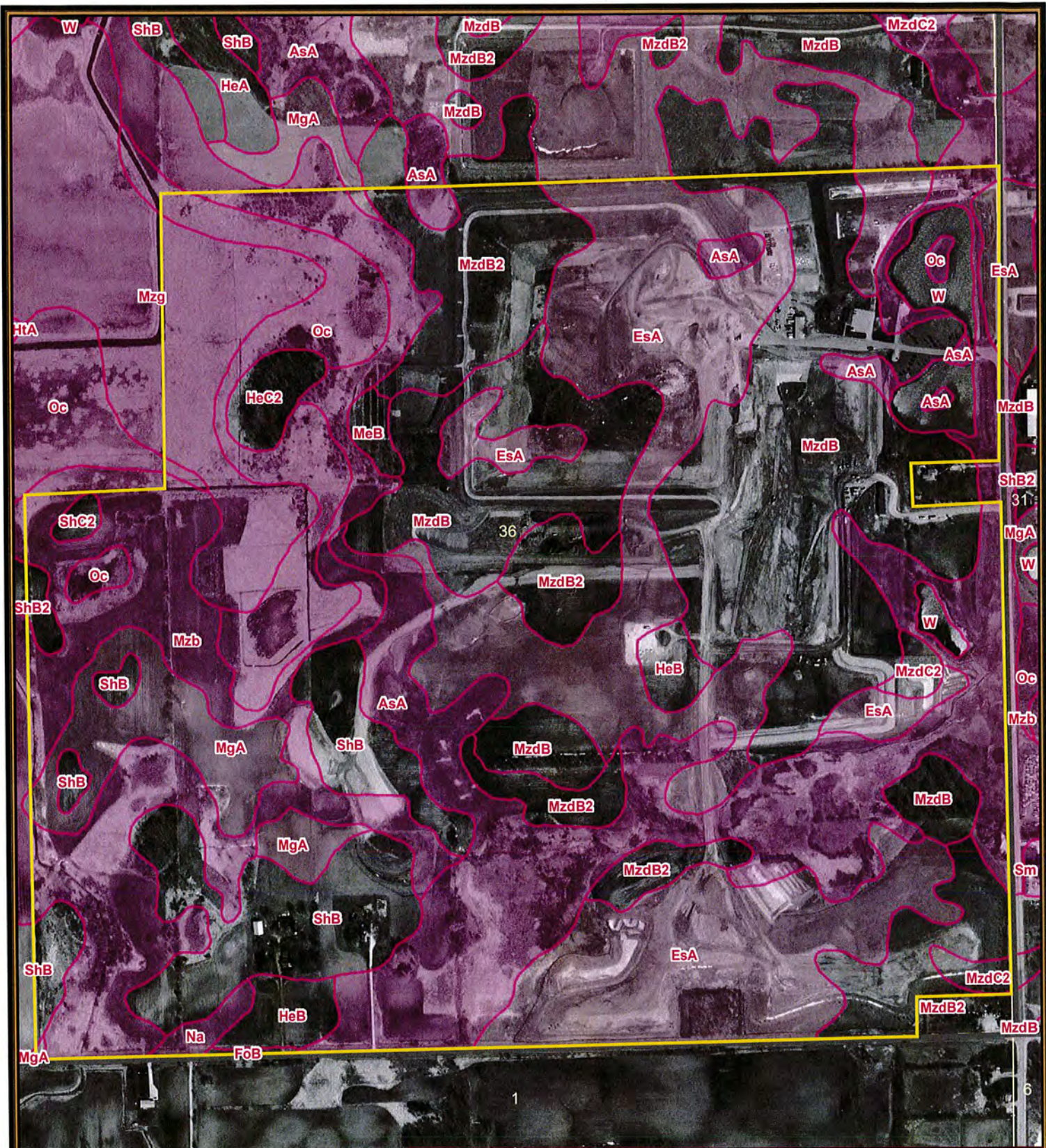
Project Information
NRC Project Number #: 05-235
Modified November 4, 2005

0 1,000 2,000 Feet

Legend

Approximate Project Boundary

NRC
Natural Resources Consulting, Inc.
119 South Main Street
P.O. Box 128
Cottage Grove, WI 53527-0128
phone: 608-839-1998
fax: 608-839-1995
www.nrc-inc.net



**FIGURE 2. PROJECT LOCATION & NRCS SOIL SURVEY DATA
Emerald Park**



Location
Section 36, T5N, R20E
City of Muskego, Waukesha County, WI

Project Information
NRC Project Number #: 05-235
Modified November 4, 2005

0 300 600 Feet

NRCS Soil Survey Data

- Hydric Soils
- Poss. Hydric Inclusions
- Non-Hydric Soils
- Approximate Project Boundary
- Section Line

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fax: 608-839-1995
www.nrc-inc.net



FIGURE 3. PROJECT LOCATION & WWI DATA
Emerald Park



Map Area Shown in Red

Location
 Section 36, T5N, R20E
 Town of Muskego, Waukesha County, WI

Project Information
 NRC Project Number #: 05-235
 Modified October 31, 2005

0 300 600 Feet

Legend

- Approximate Project Boundary
- Waukesha WWI

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FIGURE 1. EMERALD PARK WETLANDS OVERVIEW
 Veolia - Emerald Park



Location Section 36, T5N, R20E City of Muskego, Waukesha County, WI	
Project Information NRC Project Number : 007-0264-01 Modified December 11, 2008	
0 250 500 Feet	

Legend	
	Approximate Project Boundary
	Field Delineated Wetland
	Navigable Waterway

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