

Appendix D

USGS Maps

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U.S. Geological Survey Quaternary Faults



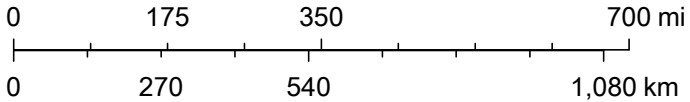
5/6/2019 2:30:33 PM

Quaternary faults

- unspecified age, well constrained location
- unspecified age, moderately constrained location
- unspecified age, inferred location
- undifferentiated Quaternary (< 130,000 years), well constrained location
- undifferentiated Quaternary (< 130,000 years), moderately constrained location

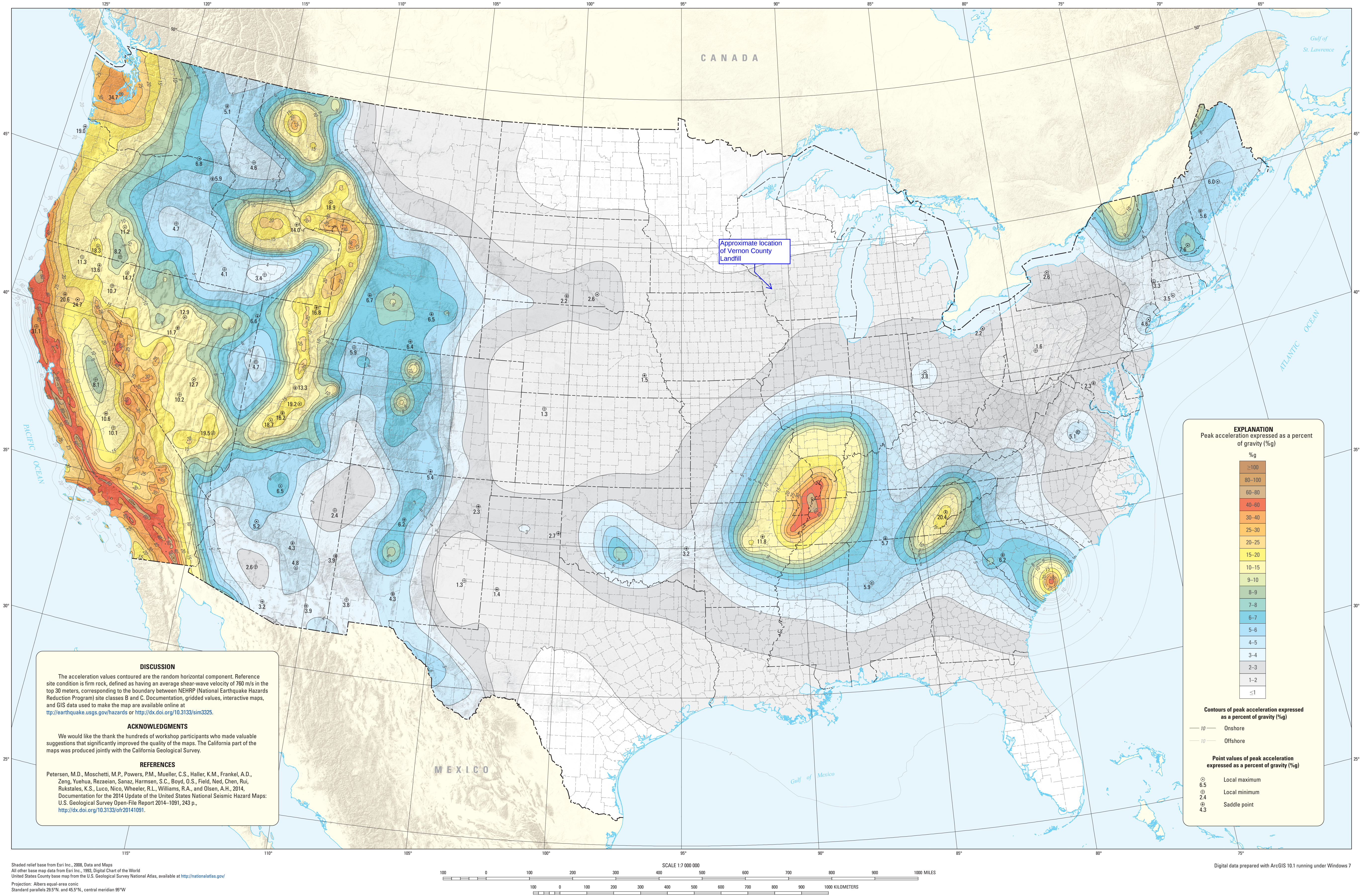
- undifferentiated Quaternary (< 130,000 years), inferred location
- middle and late Quaternary (< 1.6 million years), well constrained location
- middle and late Quaternary (< 1.6 million years), moderately constrained location
- middle and late Quaternary (< 1.6 million years), inferred location
- latest Quaternary (<15,000 years), well constrained location

1:18,489,298



USGS, National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

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Seismic-Hazard Maps for the Conterminous United States, 2014

Peak Horizontal Acceleration with 10 Percent Probability of Exceedance in 50 Years

By

Mark D. Petersen,¹ Morgan P. Moschetti,¹ Peter M. Powers,¹ Charles S. Mueller,¹ Kathleen M. Haller,¹ Arthur D. Frankel,¹ Yuehua Zeng,¹ Sanaz Rezaeian,¹ Stephen C. Harmsen,¹ Oliver S. Boyd,¹ Edward H. Field,¹ Rui Chen,² Nicolas Luco,¹ Russell L. Wheeler,¹ Robert A. Williams,¹ Anna H. Olsen,¹ and Kenneth S. Rukstales¹

2015

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Appendix B

Wetland Determination



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TECHNICAL MEMORANDUM

TO: Stacie Sanborn, Vernon County Solid Waste Department

FROM: Renee Wilde, PWS, CFM - SEH Wetland Scientist
WDNR Assured Wetland Delineator

DATE: June 4, 2021

RE: 2021 Expansion Planning – Evaluation for Wetlands
SEH No. VERSW 157634 14.00

This Memorandum summarizes SEH's site reconnaissance for the proposed expansion of the landfill area at the Vernon County Solid Waste and Recycling Facility, located at S3705 County Road LF, Viroqua, WI. SEH reviewed the natural vegetation and landscape conditions in the landfill expansion area to determine if any areas met the technical criteria of a wetland, as set forth in the U.S. Army Corps of Engineers *Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to Wetland Delineation Manual: Midwest Region* (USACE 2010) on May 4, 2021. The field reconnaissance was completed by Renee Wilde, PWS, CFM, Wisconsin Department of Natural Resources (WDNR) Assured Wetland Delineator.

The site is located in the southwest 1/4 of Section 15 in Township 13 North, Range 4 West in the Town of Viroqua, Vernon County, Wisconsin (**Figure 1**). In general, the property is located north of County Road LF, east of Bakkom Road, south of County Road Y, and west of Asbury Road.

The approximately 10.4-acre survey area is located north of the existing landfill footprint, as shown on **Figure 2**. The landfill facility is located along a ridgeline within the Western Coulee and Ridges ecological landscape. The landscape within the project area drains north towards the Seas Branch, which flows east to the West Fork of the Kickapoo River. The project site is approximately 160-180 feet higher in elevation than the waterway. In general, the current landfill operation and proposed expansion area sits high in the landscape. Representative photographs (**Appendix A**) of the area investigated are attached.

All three of the following criteria must be present in order to make a positive wetland determination, which are as follows: 1) Greater than 50% dominance of hydrophytic plant species, 2) Presence of hydric soil, and 3) Indicators of wetland hydrology observed. To document current site conditions, sample point data was collected and recorded on Wetland Determination Data Forms (**Appendix B**).

The WDNR Wisconsin Wetlands Inventory (WWI) does not identify wetlands within the survey limits, nor within the general vicinity. Soils within the project area are classified as "Valton silt loam," "Pepin silt loam," and "Mt. Carroll silt loam" by the Natural Resource Conservation Service (NRCS). These types of soils are classified as non-hydric, which is consistent with observations made during the site visit. Four "wet spots" were identified by the NRCS as areas that have the potential to be wetland (**Figure 2**). These areas were investigated to determine the presence or absence of wetlands.

A potential "wet spot" was identified by the NRCS in the southwest portion of the site. At this location, the area is a transition zone between an open field and forested, and the ground elevation slopes towards the northwest.

Engineers | Architects | Planners | Scientists

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Sample point data (SP1U) was collected to document site conditions. Vegetation was dominated by Kentucky bluegrass (*Poa pratensis* – FAC), Canadian goldenrod (*Solidago canadensis* – FACU), and Allegheny blackberry (*Rhubus allegheniensis* – FACU) in the herbaceous stratum, choke cherry (*Prunus virginiana* – FACU) in the shrub stratum, and black cherry and ash-leaf maple/boxelder (*Acer negundo* – FAC) in the tree stratum. Soils at SP1U are composed of 6 inches of dark yellowish brown (10YR 3/4) silty clay loam, underlain by 4 inches of dark yellowish brown (10YR 4/4) loam. This was followed by 4 inches of yellowish brown (10YR 5/4) loam with 5% redoximorphic concentrations (10YR 4/4), and at least 8 inches of yellowish brown (10YR 5/4) clay loam with 20% redoximorphic concentrations (10YR 4/4). The soil profile does not meet the technical criteria for hydric soils. No primary or secondary hydrology indicators were present. None of the three wetland criteria were met, therefore the area is non-wetland.

Within the forested area in the northwest portion of the site, multiple NRCS “wet spots” were mapped. The forested appears to have been selectively logged in the past. There are multiple old logging roads in this area that have overgrown with grasses. It is anticipated that these grassed roads appear “greener” on aerial photographs and is likely the reason potential “wet spots” were marked here. Topography in the forest slopes relatively steeply towards the east and northeast. Sample point data (SP2U) was collected in the vicinity of the marked “wet spots.” Vegetation within the forest was dominated by Spotted crane’s bill/wild geranium (*Geranium maculatum* – FACU), Kentucky bluegrass, Pennsylvania sedge (*Carex pensylvanica* – UPL), Virginia spring beauty (*Claytonia virginica* – FACU), creeping buttercup (*Ranunculus repens* – FAC), hooded blue violet (*Viola sororia* – FAC), and Shawnee-salad/Virginia waterleaf (*Hydrophyllum virginianum* – FAC) in the herbaceous stratum; the shrub stratum was dominated by American elm (*Ulmus americana* – FACW) and the tree stratum was dominated by American elm, red maple (*Acer rubrum* – FAC), and northern red oak (*Quercus rubra* – FACU). Soils at SP2U are composed of 3 inches of dark brown (10YR 3/3) silt loam, underlain by 8 inches of dark yellowish brown (10YR 3/4) silt loam. This was followed by 4 inches of dark yellowish brown (10YR 3/6) silt loam, and at least 7 inches of dark yellowish brown (10YR 4/4) silt loam. The soil profile does not meet the technical criteria for hydric soils. No primary or secondary hydrology indicators were present. Although the hydrophytic vegetation criteria was met, hydric soils and hydrology was not present, therefore the area does not meet wetland criteria.

The field visit was conducted under temperature that were normal and precipitation conditions that were drier than normal as compared to the historical average for the region according to USDA Field Office Climate Data WETS tables from the Viroqua, WI Station in Vernon County (**Appendix C**). The drier than normal conditions did not hinder the investigation for wetlands.

From this field visit, it was concluded that no areas meeting the technical criteria for wetland are present within the area investigated.

Thank you for the opportunity to provide wetland services to the Vernon County Solid Waste Department. Short Elliott Hendrickson Inc. (SEH®) is pleased to provide you with this information for your records. If you have any questions, please contact me directly at 715-720-6263 or via e-mail at rwilde@sehinc.com.

Attachments

Figure 1 – Site Location & Topographic Map

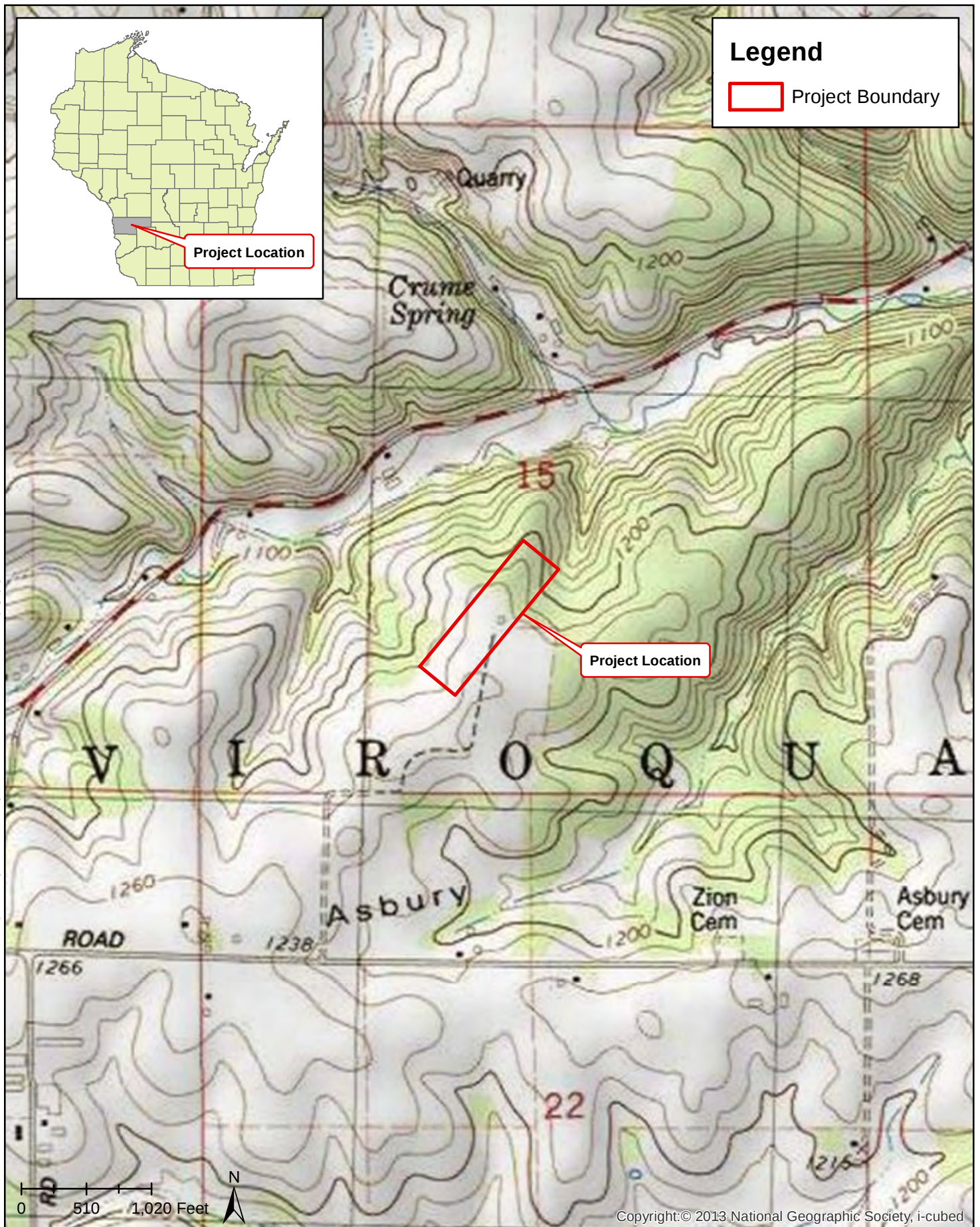
Figure 2 – Wisconsin Wetland Inventory & Vernon County Soil Survey

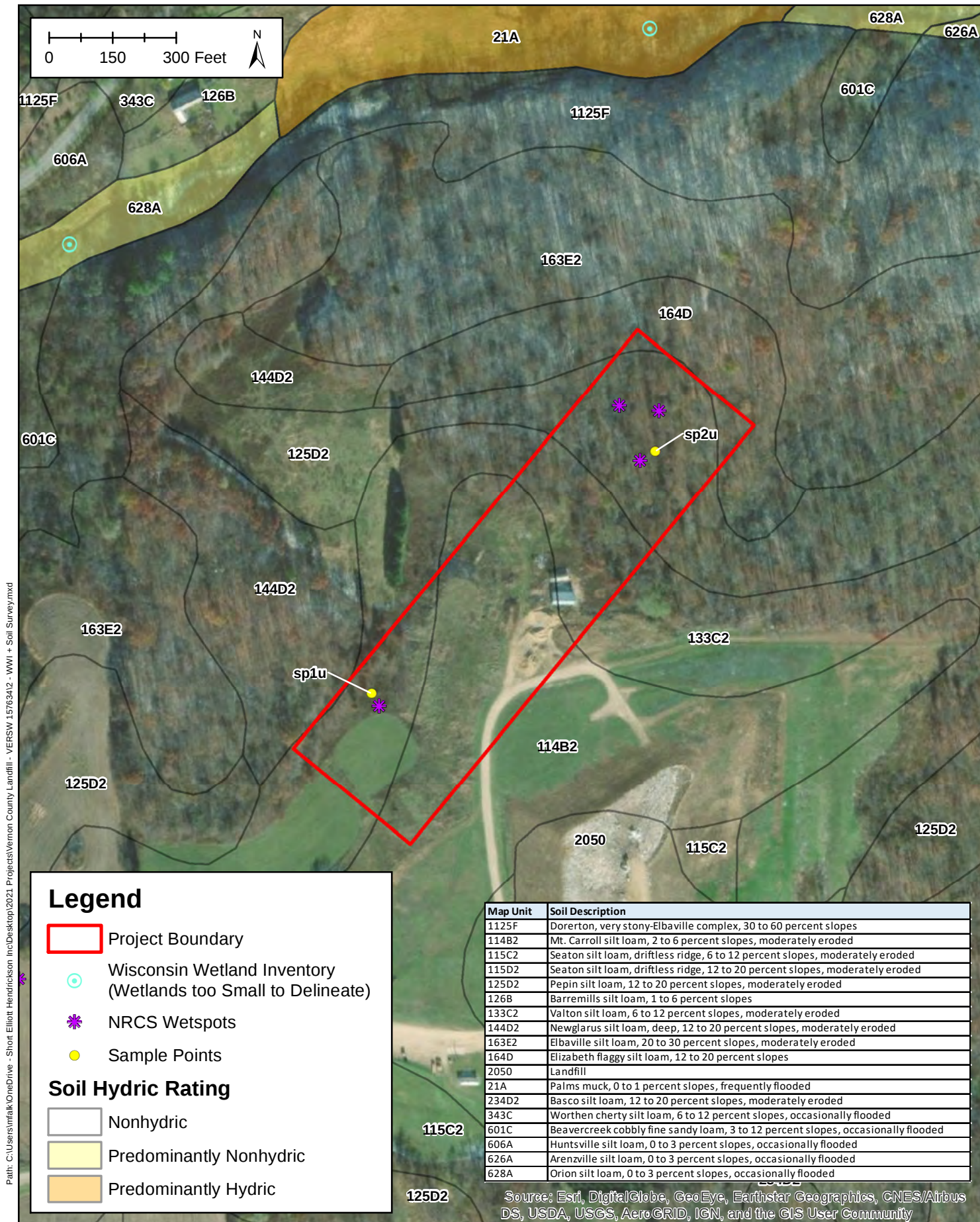
Appendix A – Site Photographs

Appendix B – Wetland Determination Data Forms

Appendix C – Climate Summary Data

Path: C:\Users\mfalk\OneDrive - Short Elliot Hendrickson Inc\Desktop\2021 Projects\Vernon County Landfill - VERSW 1576341 - Location and Topography.mxd





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Project: VERSW 157634
Print Date: 6/1/2021
Map by: mfalk
Prj: WISCERS, Vernon Co (ft)
Aerial Year: 2020
Source: WDNR, USDA

**Wisconsin Wetland Inventory and
Vernon County Soil Survey
2021 Expansion Planning
Town of Viroqua, Vernon County, WI**

**Figure
2**



Photo 1 Upland field dominated by dandelion and clover in the southwest corner of the survey limits, facing southwest from the northern edge of the field



Photo 2 Northern edge of upland field (same as above photo), facing northwest



Photo 3 Transition zone between shrub area and forest located north of the upland field (see Photo 1), facing north towards Sample Point 1U



Photo 4 Upland area adjacent to Sample Point 1U; area dominated by species of Kentucky bluegrass, Canada goldenrod, blackberry, and raspberry



Photo 5 Old logging road within woods that appears to have been selectively cut in the past. In the northern portion of the site, photo taken facing northeast and approximately 50 feet inside the tree line. Trail slopes downward, towards the northeast.



Photo 6 Old logging road overgrown with grasses; the road slopes towards the northeast



Photo 7 Intersection of two logging roads within the woods, facing south from the vicinity of Sample Point 2U. The topography slopes towards the northeast, with the landfill seen in the background.



Photo 8 Typical understory found within the forested area. The forest is high in the landscape and vegetation is dominated by upland species.

Project/Site	2021 Expansion Planning	City/County:	Vernon County	Sampling Date:	May 4, 2021
Applicant/Owner:	Vernon County Solid Waste Department	State:	Wisconsin	Sampling Point:	SP1U
Investigator(s):	Renee Wilde, SEH	Section, Township, Range:	SW 1/4 Sec 15, T13N R4W		
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex, none):	Convex		
Slope (%):	15%	Lat:	43° 35' 55.8" N	Long:	90° 50' 32.1" W
		Datum:	Vernon County Coordinates		
Soil Map Unit Name	Valton silt loam, 6-12% slopes, moderately eroded (133C2)		NWI Classification:	None	

Hydrophytic vegetation present?	<u>N</u>	Is the sampled area within a wetland? <u>N</u> If yes, optional wetland site ID: _____
Hydric soil present?	<u>N</u>	
Indicators of wetland hydrology present?	<u>N</u>	
Remarks: (Explain alternative procedures here or in a separate report.) Per National Weather Service precipitation data and WETS table, climate conditions are "drier than normal"		

Tree Stratum (Plot size: 30' Radius)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Prunus virginiana</i>	-- Choke Cherry	15	Y	FACU
2	<i>Acer negundo</i>	-- Ash-Leaf Maple	5	Y	FAC
3		--			
4		--			
5		--			
			20	= Total Cover	
Sapling/Shrub stratum (Plot size: 15' Radius)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Prunus virginiana</i>	-- Choke Cherry	15	Y	FACU
2	<i>Acer negundo</i>	-- Ash-Leaf Maple	5	N	FAC
3	<i>Rubus allegheniensis</i>	-- Allegheny Blackberry	5	N	FACU
4	<i>Lonicera tatarica</i>	-- Twinsisters	5	N	FACU
5		--			
			30	= Total Cover	
Herb stratum (Plot size: 5' Radius)			Absolute % Cover	Dominant Species	Indicator Status
1	<i>Poa pratensis</i>	-- Kentucky Blue Grass	40	Y	FAC
2	<i>Solidago canadensis</i>	-- Canadian Goldenrod	30	Y	FACU
3	<i>Rubus allegheniensis</i>	-- Allegheny Blackberry	15	N	FACU
4	<i>Taraxacum officinale</i>	-- Common Dandelion	10	N	FACU
5		--			
6		--			
7		--			
8		--			
9		--			
10		--			
			95	= Total Cover	
Woody vine stratum (Plot size: 30' Radius)			Absolute % Cover	Dominant Species	Indicator Status
1		--			
2		--			
			0	= Total Cover	

Remarks: (Include photo numbers here or on a separate sheet)

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 40.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	95	x 4 =	380
UPL species	0	x 5 =	0
Column totals	145 (A)		530 (B)

Prevalence Index = B/A = 3.66

Hydrophytic Vegetation Indicators:

☐ Rapid test for hydrophytic vegetation
☐ Dominance test is >50%
☐ Prevalence index is ≤3.0*
☐ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
☐ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

N

US Army Corps of Engineers

Midwest Region

SOIL

Sampling Point: SP1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-6	10YR 3/4	100					Silty Clay Loam	
6-10	10YR 4/4	100					Loam	
10-14	10YR 5/4	95	10YR 4/4	5	C	M	Loam	
14-22+	10YR 5/4	80	10YR 4/4	20	C	M	Clay Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Gleyed Matrix (S4) |
| ☐ Histic Epipedon (A2) | ☐ Sandy Redox (S5) |
| ☐ Black Histic (A3) | ☐ Stripped Matrix (S6) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Stratified Layers (A5) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ 2 cm Muck (A10) | ☐ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |

Indicators for Problematic Hydric Soils:

- | |
|---|
| ☐ Coast Prairie Redox (A16) (LRR K, L, R) |
| ☐ Dark Surface (S7) (LRR K, L) |
| ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| ☐ Iron-Manganese Masses (F12) (LRR K, L, R) |
| ☐ Very Shallow Dark Surface (TF12) |
| ☐ Other (explain in remarks) |

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____
Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:Primary Indicators (minimum of one is required; check all that apply)

- | |
|--|
| ☐ 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 (B7) |
| ☐ Sparsely Vegetated Concave Surface (B8) |
| ☐ Water-Stained Leaves (B9) |

- | |
|---|
| ☐ Aquatic Fauna (B13) |
| ☐ True Aquatic Plants (B14) |
| ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Presence of Reduced Iron (C4) |
| ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Thin Muck Surface (C7) |
| ☐ Gauge or Well Data (D9) |
| ☐ Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| ☐ Surface Soil Cracks (B6) |
| ☐ Drainage Patterns (B10) |
| ☐ Dry-Season Water Table (C2) |
| ☐ Crayfish Burrows (C8) |
| ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Stunted or Stressed Plants (D1) |
| ☐ Geomorphic Position (D2) |
| ☐ FAC-Neutral Test (D5) |

Field Observations:

Surface water present?	Yes ☐	No ☒	Depth (inches): _____
Water table present?	Yes ☐	No ☒	Depth (inches): _____
Saturation present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site 2021 Expansion Planning City/County: Vernon County Sampling Date: May 4, 2021
 Applicant/Owner: Vernon County Solid Waste Department State: Wisconsin Sampling Point: SP2U
 Investigator(s): Renee Wilde, SEH Section, Township, Range: SW 1/4 Sec 15, T13N R4W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex
 Slope (%): 25% Lat: 43° 36' 02.0" N Long: 90° 50' 23.1" W Datum: Vernon County Coordinates
 Soil Map Unit Name Pepin silt loam, 12-20% slopes, moderately eroded (125D2) NWI Classification: None
 Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation , soil , or hydrology significantly disturbed?
 Are vegetation , soil , or hydrology naturally problematic? Are "normal circumstances" present? Yes
SUMMARY OF FINDINGS (If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	<u>Y</u>	Is the sampled area within a wetland? <u>N</u> If yes, optional wetland site ID: <u> </u>
Hydric soil present?	<u>N</u>	
Indicators of wetland hydrology present?	<u>N</u>	

Remarks: (Explain alternative procedures here or in a separate report.)

Per National Weather Service precipitation data and WETS table, climate conditions are "drier than normal"

VEGETATION -- Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' Radius</u>)	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across all Strata: <u>11</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>63.64%</u> (A/B)
1	<u>Ulmus americana</u> -- <u>American Elm</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>	
2	<u>Acer rubrum</u> -- <u>Red Maple</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
3	<u>Quercus rubra</u> -- <u>Northern Red Oak</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>	
4	<u>Fraxinus pennsylvanica</u> -- <u>Green Ash</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
5	<u> </u> -- <u> </u>	<u> </u>	<u> </u>	<u> </u>	Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>45</u> x 2 = <u>90</u> FAC species <u>75</u> x 3 = <u>225</u> FACU species <u>50</u> x 4 = <u>200</u> UPL species <u>15</u> x 5 = <u>75</u> Column totals <u>185</u> (A) <u>590</u> (B) Prevalence Index = B/A = <u>3.19</u>
		<u>70</u>	<u>= Total Cover</u>		
Sapling/Shrub stratum	(Plot size: <u>15' Radius</u>)				
1	<u>Ulmus americana</u> -- <u>American Elm</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
2	<u> </u> -- <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3	<u> </u> -- <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4	<u> </u> -- <u> </u>	<u> </u>	<u> </u>	<u> </u>	Hydrophytic Vegetation Indicators: <u> </u> Rapid test for hydrophytic vegetation <u>X</u> Dominance test is >50% <u> </u> Prevalence index is ≤3.0* <u> </u> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
5	<u> </u> -- <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u>10</u>	<u>= Total Cover</u>		
Herb stratum	(Plot size: <u>5' Radius</u>)				
1	<u>Geranium maculatum</u> -- <u>Spotted Crane's-Bill</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
2	<u>Poa pratensis</u> -- <u>Kentucky Blue Grass</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	
3	<u>Carex pensylvanica</u> -- <u>Pennsylvania Sedge</u>	<u>15</u>	<u>Y</u>	<u>UPL</u>	
4	<u>Claytonia virginica</u> -- <u>Virginia Springbeauty</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
5	<u>Ranunculus repens</u> -- <u>Creeping Buttercup</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic vegetation present? <u>Y</u>
6	<u>Viola sororia</u> -- <u>Hooded Blue Violet</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
7	<u>Hydrophyllum virginianum</u> -- <u>Shawnee-Salad</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
8	<u>Ribes cynosbati</u> -- <u>Eastern Prickly Goosebe</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
9	<u>Anemone virginiana</u> -- <u>Tall Thimbleweed</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
10	<u>Trillium cernuum</u> -- <u>Whip-Poor-Will-Flower</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	Note: This data sheet has been adapted to use the 2018 National Wetland Plant List: U.S. Army Corps of Engineers 2018. National Wetland Plant List, version 3.4
		<u>105</u>	<u>= Total Cover</u>		
Woody vine stratum	(Plot size: <u>30' Radius</u>)				
1	<u> </u> -- <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2	<u> </u> -- <u> </u>	<u> </u>	<u> </u>	<u> </u>	
		<u>0</u>	<u>= Total Cover</u>		

Remarks: (Include photo numbers here or on a separate sheet)

Additional herbaceous species observed: Alliaria petiolata, Thalictrum dioicum, Sanguinaria canadensis

SOIL

Sampling Point: SP2U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-3	10YR 3/3	100					Silt Loam	
3-11	10YR 3/4	100					Silt Loam	
11-15	10YR 3/6	100					Silt Loam	
15-22+	10YR 4/4	100					Silt Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Gleyed Matrix (S4) |
| ☐ Histic Epipedon (A2) | ☐ Sandy Redox (S5) |
| ☐ Black Histic (A3) | ☐ Stripped Matrix (S6) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Stratified Layers (A5) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ 2 cm Muck (A10) | ☐ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |

Indicators for Problematic Hydric Soils:

- | |
|---|
| ☐ Coast Prairie Redox (A16) (LRR K, L, R) |
| ☐ Dark Surface (S7) (LRR K, L) |
| ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| ☐ Iron-Manganese Masses (F12) (LRR K, L, R) |
| ☐ Very Shallow Dark Surface (TF12) |
| ☐ Other (explain in remarks) |

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____
Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:Primary Indicators (minimum of one is required; check all that apply)

- | |
|--|
| ☐ 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 (B7) |
| ☐ Sparsely Vegetated Concave Surface (B8) |
| ☐ Water-Stained Leaves (B9) |

- | |
|---|
| ☐ Aquatic Fauna (B13) |
| ☐ True Aquatic Plants (B14) |
| ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Presence of Reduced Iron (C4) |
| ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Thin Muck Surface (C7) |
| ☐ Gauge or Well Data (D9) |
| ☐ Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- | |
|--|
| ☐ Surface Soil Cracks (B6) |
| ☐ Drainage Patterns (B10) |
| ☐ Dry-Season Water Table (C2) |
| ☐ Crayfish Burrows (C8) |
| ☐ Saturation Visible on Aerial Imagery (C9) |
| ☐ Stunted or Stressed Plants (D1) |
| ☐ Geomorphic Position (D2) |
| ☐ FAC-Neutral Test (D5) |

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):	_____

 (includes capillary fringe)
Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Field Visit Date: May 4, 2021

Long-term rainfall records									
	Month	3 yrs. in 10 less than	Normal	3 yrs. in 10 more than	Rain fall	Condition: dry, wet, normal	Condition value	Month weight value	Product of previous two columns
1st prior month*	April	2.56	3.72	4.44	0.62	1	Dry	3	3
2nd prior month*	March	0.92	1.77	2.16	1.86	2	Normal	2	4
3rd prior month*	February	0.51	1.02	1.23	0.79	2	Normal	1	2

* Compared to field date

**Monthly data prior to field date

Sum

9

"Drier than Normal"

Note: If sum is

6-9 then prior period has been
drier than normal
10-14 then prior period has been
normal
15-18 then prior period has been
wetter than normal

Condition value =

Dry =1
Normal =2
Wet =3

Monthly Data between Specific Months
VIROQUA (WI)
USC00478827

To sort multiple columns, hold SHIFT while clicking on the columns.

Monthly Sum/Averages					
Date	Precipitation (in)	Snowfall (in)	Avg. Max Temp (°F)	Avg. Min Temp (°F)	Avg. Mean Temp (°F)
Feb-2021	0.79	9.0	18.0	1.1	9.6
Mar-2021	1.86	3.4	47.5	28.4	38.0
Apr-2021	0.62	0.0	55.4	35.3	45.3
May-2021	M	M	M	M	M
Sum:	3.27	12.4			
Count:	3	3	3	3	3
Average:	1.09	4.1	40.3	21.6	31.0
Median:	0.79	3.4	47.5	28.4	38.0
Low Value:	0.62	0.0	18.0	1.1	9.6
High Value:	1.86	9.0	55.4	35.3	45.3

M = Missing

T = Trace

Midwestern Regional Climate Center

cli-MATE: MRCC Application Tools Environment

Generated at: 5/6/2021 3:49:22 PM CDT

WETS Station: VIROQUA, WI

Requested years: 1971 - 2020

Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	23.6	5.5	14.6	0.96	0.6	1.16	3	10.9
Feb	28.9	9.7	19.3	1.02	0.51	1.23	3	8.8
Mar	41.3	21.9	31.6	1.77	0.92	2.16	4	6.5
Apr	56.1	33.4	44.8	3.72	2.56	4.44	7	3.1
May	67.8	44.9	56.4	4.16	2.76	4.98	8	0
Jun	76.7	54.6	65.7	4.79	3.05	5.78	7	0
Jul	80.8	59	69.9	4.55	3.01	5.46	7	0
Aug	78.6	56.9	67.7	4.6	2.65	5.6	7	0
Sep	70.7	48.4	59.5	3.73	2.02	4.56	6	0
Oct	57.9	36.7	47.3	2.5	1.64	3.01	5	0.4
Nov	42	24.8	33.4	1.95	1.09	2.37	4	4.1
Dec	28.2	12.1	20.1	1.54	0.74	1.88	4	10.2
Annual:					31.23	39.5		
Average	54.4	34	44.2	-	-	-	-	-
Total	-	-	-	35.3			65	44.1

GROWING SEASON DATES

Years with missing data:	24 deg = 6	28 deg = 6	32 deg = 5
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 44	28 deg = 44	32 deg = 45
	24 F or	28 F or	32 F or
Probability	higher	higher	higher
	4/14 to	4/29 to	
	10/20: 189	10/9: 163	5/7 to 9/30:
50 percent *	days	days	146 days
	4/9 to	4/24 to	
	10/25: 199	10/14: 173	5/2 to 10/6:
70 percent *	days	days	157 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

Creation date: 2016-07-22

Appendix C

ISR Checklist

Initial Site Report Completeness Checklist Chapter NR 509, Wis. Adm. Code

Revised January 2018



Waste & Materials Management
P.O. Box 7921
Madison, WI 53707-7921

Instructions: This checklist is intended for use by department staff for the review of landfill initial site reports to determine completeness. The checklist may also be used by applicants and submitted with a landfill initial site report to facilitate department review. Refer to applicable statutes and codes for exact requirements.

General Information

Facility Name: Vernon County Landfill - Proposed Vertical and Horizontal Expansion

Facility Type: MSW Landfill

Initial Submittal: Date Received: / / Completeness Due: / / DNR Response: / / (Complete: yes no)

Addendum # Date Received: / / Completeness Due: / / DNR Response: / / (Complete: yes no)

Addendum # Date Received: / / Completeness Due: / / DNR Response: / / (Complete: yes no)

Proposed Waste Types: MSW, C&D, Special Waste, Industrial

Proposed Total Design Capacity: 450,000 CY (including daily and intermediate covers)

<u>Y</u>	<u>N</u>	Have office and work copies been designated?
<u>Y</u>	<u>N</u>	Has each copy been stamped with the date received?
<u>Y</u>	<u>N</u>	Has the initial submittal been entered into the FIST database?
<u>Y</u>	<u>N</u>	Have all additional information submittals been entered into FIST database?
<u>Y</u>	<u>N</u>	Have the acknowledgment letter and invoice been sent to the applicant? (if yes, date sent: <u> </u> / <u> </u> / <u> </u>)
<u>Y</u>	<u>N</u>	Has the invoiced plan review fee been paid? (if yes, date received: <u> </u> / <u> </u> / <u> </u>)

Facility Name: _____

				LOCATION	COMMENTS
Has the department completed an initial site inspection? Date of inspection: <u>09/30/2021</u> Date of ISI letter: <u>11/01/2021</u>	X			Appendix A	Site inspection also conducted on 11/18/2020 and ISI letter issued 12/15/2020
(1) Has the review fee specified in s. 520.04 been submitted? Note: The department sends an invoice for the plan review fee to the applicant upon receipt of the report. The applicant must send payment to the department within 30 days after receipt of the invoice.				Section 1.3.1	
(2) Has a cover letter detailing desired action been submitted?	X			Cover Letter	
(3) Have 3 paper copies been submitted to the regional office (and 1 additional paper and electronic copy submitted to the bureau office, unless otherwise specified by the department)?	X				See Distribution List in TOC
(4) Are the report and plan sheets submitted under seal of P.E. and P.G.?	X				
Note: Subsections (5), (6), (7), and (8) below are typically not applicable unless information from ch. NR 510 is included in the ISR.					
(5) TECHNICAL PROCEDURES: Were all test procedures specified in the report? Were all technical procedures used to investigate the facility considered current standard procedures (ASTM, USGS, etc.)? ____ yes ____ no If no, was explanation and reasoning provided for any deviation from a standard method? ____ yes ____ no			X		
(6) VISUALS: Do all maps, plan sheets, drawings, isometrics, cross-sections, and aerial photographs meet the following requirements: (a) No larger than 24 inches by 36 inches and no smaller than 8-1/2 x 11 inches? (b) Appropriate scale to show required detail? (c) Do the visuals meet the following requirements? ____ numbered ____ legends for all symbols ____ referenced in the narrative ____ horizontal/vertical scales ____ titled ____ drafting or origination dates (d) Were uniform scales used? (e) Were north arrows provided? (f) Was a USGS datum used as a basis for all elevations? (g) Do visuals contain a survey grid based on monuments established in the field that are referenced to state plane coordinates?					

COMPLETENESS REQUIREMENTS		COMPLETE?			LOCATION	COMMENTS
		Y	N	NA		
(h)	Are the original topography and a grid system contained on the plan sheets that show construction, operation or closure topography?					
(i)	Do the cross-sections meet the following requirements? _____ show survey grid locations _____ reference major plan sheets _____ provide a reduced diagram of a cross-section location map (plan view)					
(7)	Was a table of contents provided listing all sections of the submittal?					
(8)	Was an appendix provided listing names of all references, all raw data, testing and sampling procedures and calculations?					
NR 509.05(2)	Is the department's initial site inspection evaluation and all pertinent information submitted for the initial site inspection included in the report?					
NR 509.05(3)	Content - The ISR shall identify the following:					
(a)	Project title	X			Cover Page	
(b)	Name, address & phone number of primary contacts, including the landfill's owner, operator and any consultants	X			Section 2.1.1	
(c)	Present property owner	X			Section 2.1.1	
(d)	Proposed facility owner & operator	X			Section 2.1.1	
(e)	Proposed landfill location (by 1/4-1/4 section)	X			Section 2.1	
(f)	Total acreage of property and anticipated limits of filling	X			Sections 1.2 and 2.1	
(g)	Proposed landfill life and design capacity	X			Section 2.2	
(h)	Municipalities and industries to be served	X			Section 2.3	
(i)	Anticipated waste types and characteristics:	X			Section 2.4	
(j)	Anticipated volumes of each major waste stream and any seasonal fluctuations taking into account waste reduction, reuse, recycling, composting and the recovery of energy from solid waste	X			Section 2.4	
(k)	Anticipated cover frequency	X			Section 2.5	
(l)	Mode of operation	X			Section 2.6	
(m)	Anticipated sub-base, base and final grades				Section 2.7	
NR 509.06 LAND USE INFORMATION	- At a minimum, the land uses in the area within one mile of the anticipated limits of filling must be discussed in the report.					
Must discuss:						
	X land uses which may have an impact on the suitability of the property for waste disposal	X			Section 3.2	
	X land uses which may have an impact on groundwater quality				Section 3.3	
	X address all areas where land use may affect or be affected by the proposed landfill				Section 3.4	

Facility Name: _____

COMPLETENESS REQUIREMENTS				COMPLETE?			L
				Y	N	NA	
(1)	Does the report locate and identify all adjacent landowners whose property is contiguous to the proposed landfill's property boundaries and all residences within 1,200 feet of the anticipated limits of filling (may be presented on a plat map if it clearly and accurately shows current land ownership conditions).			X			Section 3.5, Appendix E Table 1, Fig 2
(2)	Does the report include a discussion of land use zoning. Note areas zoned as floodplain, conservancy, shoreland, or wetland.			X			Section 3.6
	Are zoning variances required? yes X no			X			Section 3.6
	If required, has an agricultural impact statement (AIS) been completed? yes X no Note: An AIS is required if a municipality or utility will need agricultural lands and have not yet purchased or obtained an option to purchase the land.			X			Section 3.6
(3)	Does the report include a description of present land uses including known recreational, historical, archaeological, critical habitat areas, county forest lands and state or local natural areas.			X			Section 3.1 Section 3.7
(4)	Does the report include all initial communications from FAA concerning any airports within five miles of the anticipated limits of filling if landfill owner proposes to accept municipal solid waste or other putrescible waste.			X			Section 3.8 Appendix F
(4)	Does the report discuss existing or proposed transportation routes and access roads (including any weight restrictions).			X			Section 3.9
NR 509.07 REGIONAL GEOTECHNICAL INFORMATION - Information may be limited to available publications. At a minimum, the regional setting within one mile of the anticipated limits of filling must be discussed, and when available, supplemented with maps of regional bedrock and glacial geology, along with USGS topographical maps, NRCS soil maps and regional water table maps.							
(1)	Topography (the existing topography including predominant topographic features)			X			Section 4.1
(2)	Hydrology (surface water drainage patterns and significant hydrologic features, including surface waters, springs, surface water drainage basins, divides, and wetlands)			X			Section 4.2
(3)	Geology (origin, nature and distribution of bedrock; origin, texture, thickness and distribution of the unconsolidated units; and texture and classification of surficial soils)			X			Section 4.3
(4)	Hydrogeology: depth to groundwater — aquifer(s) groundwater flow directions — principal aquifers used by water supply wells groundwater divides —			X			Section 4.4
(5)	Water quality (information on groundwater and surface water quality available from the USGS, WSGNHS, DNR, UW-Extension, and regional planning commissions)			X			Section 4.5

Facility Name: _____

Legal Note: This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.