

**YELLOWBUD SOLAR, LLC'S OCTOBER 2, 2020 RESPONSES
TO STAFF'S AUGUST 28, 2020 DATA REQUESTS**

In the Matter of the Application of	)	
Yellowbud Solar, LLC for a	)	
Certificate of Environmental	)	Case No. 20-0972-EL-BGN
Compatibility and Public Need	)	

1. Please provide the jurisdictional determination received from the USACE.

Response: The approved JD form is attached.

2. It appears from Table 6-1 of the ecological assessment that there are several category 3 wetlands in the project area, including wetlands W202, W203, W204, and W212. Please be advised that staff would recommend the 120 foot setback be maintained except where fill has been permitted through the US Army Corps of Engineers and/or OEPA for all of these wetlands.

Response: Yellowbud recently completed a Vegetation Index of Biotic Integrity Survey of wetlands W202, W203, and W204. A memorandum from Cardno summarizing the results are attached. This additional effort determined the wetlands to be modified category 2 wetlands. W212 was not further evaluated.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, HUNTINGTON DISTRICT
502 8TH STREET
HUNTINGTON, WV 25701

September 8, 2020

Regulatory Division
North Branch
LRH-2020-562-SCR-Wolf Run

APPROVED JURISDICTIONAL DETERMINATION

Mr. William Risse
Yellowbud Solar, LLC
8400 Normandale Lake Boulevard, Suite 1200
Bloomington, Minnesota 55437

Dear Mr. Risse:

I refer to the jurisdictional determination (JD) report entitled *Regulated Waters Delineation Report, Yellowbud Solar, Pickaway and Ross Counties, Ohio* completed by Cardno and received in this office on July 21, 2020. You have requested an approved JD for the aquatic resources located on the approximate 2,038-acre site. The property is located generally west of Westfall Road, east of State Route 104, north of Williamsport Pike, and south of Yellowbud Creek in Pickaway and Ross Counties, Ohio at approximately 39.496676 latitude, -83.04672 longitude. Your JD request has been assigned the following file number: LRH-2020-562-SCR-Wolf Run. Please reference this number on all future correspondence related to this JD request.

The United States Army Corps of Engineers' (Corps) authority to regulate waters of the United States is based on the definitions and limits of jurisdiction contained in 33 CFR 328, including the amendment to 33 CFR 328.3 (85 Federal Register 22250), and 33 CFR 329. Section 404 of the Clean Water Act (Section 404) requires a Department of the Army (DA) permit be obtained prior to the discharge of dredged or fill material into waters of the United States, including wetlands. Section 10 of the Rivers and Harbors Act of 1899 requires a DA permit be obtained for any work in, on, over or under navigable water.

The Navigable Waters Protection Rule, which became effective on June 22, 2020, was followed in this verification of Section 404 jurisdiction for the features located within the approved JD boundary. A total of 60 wetlands and two (2) streams were delineated within the approved JD area of interest as depicted on the enclosed map titled "Figure 5: Delineation Overview Map and Delineation Set" submitted with the JD report dated May 2020. These aquatic resources are also listed in the enclosed Table 1.

It has been determined that S101 is an (a)(2) perennial tributary that contributes surface water flow directly or indirectly to an (a)(1) water in a typical year, and S201 is an (a)(2) intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.. It has been determined that W110 directly abuts S101; therefore, W110 is an (a)(4) wetland that

abuts an (a)(1)-(a)(3) water. Therefore, S101, S102, and W110 are subject to regulation under Section 404.

It has been determined that W001-W029, W101-W109, and W201-W221 do not abut a water identified in 33 CFR 328.3(a)(1), (2), or (3), are not inundated by flooding from a water identified in 33 CFR 328.3(a)(1), (2), or (3) in a typical year, are not physically separated from a water identified in 33 CFR 328.3(a)(1), (2), or (3) only by a natural berm, bank, dune, or similar natural feature, and are not physically separated from a water identified in 33 CFR 328.3(a)(1), (2), or (3) only by an artificial dike, barrier, or similar artificial structure. W001-W029, W101-W109, and W201-W221 are not considered waters of the United States per 33 CFR 328.3(b)(1) and are not subject to regulation under Section 404. However, you should contact the Ohio Environmental Protection Agency, Division of Surface Water, at (614) 664-2001 to determine state permit requirements.

This jurisdictional verification is valid for a period of five (5) years from the date of this letter unless new information warrants revision of the delineation prior to the expiration date. This letter contains an approved jurisdictional determination for the subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the Great Lakes and Ohio River Division Office at the following address:

Appeal Review Officer
U.S. Army Corps of Engineers
Great Lakes and Ohio River Division
550 Main Street Room 10-714
Cincinnati, OH 45202-3222
TEL (513) 684-7261; FAX (513) 684-2460

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **November 7, 2020**. **It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.**

The determination included herein has been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for purposes of the Clean Water Act for the particular site identified in this request. This jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are United States Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

A copy of this letter will be provided to the Ohio Environmental Protection Agency at Lazarus Government Building, Post Office Box 1049 Columbus, Ohio 43216-3669 and your agent, Mr. Bruce Moreira with Cardno at 3901 Industrial Boulevard, Indianapolis, Indiana 46254. If you have any questions concerning the above, please contact Kayla Adkins of the North Branch at 304-399-5850, by mail at the above address, or by email at kayla.n.adkins@usace.army.mil.

Sincerely,

Laurie Moore

Laurie Moore
Regulatory Project Manager
North Branch

Enclosures

Table 1. Jurisdictional and non-jurisdictional features associated with the Yellowbud Solar Approved JD, LRH-2020-562-SCR-Wolf Run					
Aquatic Resources	Latitude & Longitude (°N) (°W)		Cowardin Class	Linear feet and/or Acres in review area	Regulatory Authority
S101	39.51383	-83.06424	Perennial	1,700 linear feet	Section 404 under 33 CFR 328.3(a)(1)
S201	39.50688	-83.03216	Intermittent	661 linear feet	Section 404 under 33 CFR 328.3(a)(1)
W001	39.50422	-83.04913	Forested	0.21 acre	None; Excluded under (b)(1)
W002	39.50329	-83.04927	Forested	0.15 acre	None; Excluded under (b)(1)
W003	39.50307	-83.04985	Forested	0.92 acre	None; Excluded under (b)(1)
W004	39.50295	-83.05067	Emergent	0.92 acre	None; Excluded under (b)(1)
W005	39.50240	-83.05147	Emergent	3.70 acres	None; Excluded under (b)(1)
W006	39.50393	-83.05172	Emergent	4.75 acres	None; Excluded under (b)(1)
W007	39.50527	-83.05013	Emergent	2.43 acres	None; Excluded under (b)(1)
W008	39.50984	-83.05215	Emergent	0.68 acre	None; Excluded under (b)(1)
W009	39.51027	-83.05304	Emergent	0.33 acre	None; Excluded under (b)(1)
W010	39.50866	-83.05822	Emergent	0.21 acre	None; Excluded under (b)(1)
W011	39.50854	-83.05980	Emergent	1.12 acres	None; Excluded under (b)(1)
W012	39.50807	-83.06022	Emergent	0.62 acre	None; Excluded under (b)(1)
W013	39.50770	-83.05917	Emergent	1.90 acres	None; Excluded under (b)(1)
W014	39.50769	-83.05655	Emergent	0.80 acre	None; Excluded under (b)(1)
W015	39.50403	-83.06520	Emergent	0.55 acre	None; Excluded under (b)(1)
W016	39.50350	-83.06354	Emergent	2.80 acres	None; Excluded under (b)(1)
W017	39.50326	-83.06256	Emergent	0.24 acre	None; Excluded under (b)(1)
W018	39.50325	-83.06164	Emergent	0.18 acre	None; Excluded under (b)(1)
W019	39.50058	-83.05710	Emergent	0.36 acre	None; Excluded under (b)(1)
W020	39.50011	-83.05593	Emergent	0.78 acre	None; Excluded under (b)(1)
W021	39.50117	-83.05453	Emergent	0.12 acre	None; Excluded under (b)(1)
W022	39.50099	-83.05381	Emergent	2.19 acres	None; Excluded

Table 1. Jurisdictional and non-jurisdictional features associated with the Yellowbud Solar Approved JD, LRH-2020-562-SCR-Wolf Run					
Aquatic Resources	Latitude & Longitude (°N) (°W)		Cowardin Class	Linear feet and/or Acres in review area	Regulatory Authority
					under (b)(1)
W023	39.49895	-83.05983	Emergent	0.11 acre	None; Excluded under (b)(1)
W024	39.50403	-83.06460	Emergent	0.06 acre	None; Excluded under (b)(1)
W025	39.50150	-83.06732	Emergent	0.07 acre	None; Excluded under (b)(1)
W026	39.50026	-83.06690	Emergent	0.14 acre	None; Excluded under (b)(1)
W027	39.49896	-83.06678	Emergent	0.44 acre	None; Excluded under (b)(1)
W028	39.50048	-83.06361	Emergent	0.11 acre	None; Excluded under (b)(1)
W029	39.49841	-83.06717	Emergent	0.04 acre	None; Excluded under (b)(1)
W101	39.49104	-83.04789	Emergent	0.18 acre	None; Excluded under (b)(1)
W102	39.49062	-83.04519	Emergent	0.18 acre	None; Excluded under (b)(1)
W103	39.49043	-83.04310	Forested	0.03 acre	None; Excluded under (b)(1)
W104	39.49000	-83.06194	Emergent	0.63 acre	None; Excluded under (b)(1)
W105	39.49106	-83.06541	Forested	0.20 acre	None; Excluded under (b)(1)
W106	39.49157	-83.07227	Emergent	0.84 acre	None; Excluded under (b)(1)
W107	39.50740	-83.06505	Emergent	0.08 acre	None; Excluded under (b)(1)
W108	39.50981	-83.06656	Emergent	0.07 acre	None; Excluded under (b)(1)
W109	39.51348	-83.06291	Emergent	0.10 acre	None; Excluded under (b)(1)
W110	39.51132	-83.06480	Emergent	0.29 acre	Section 404 under 33 CFR 328.3(a)(4)
W201	39.50282	-83.04461	Emergent	1.30 acres	None; Excluded under (b)(1)
W202	39.49916	-83.05382	Emergent	7.92 acres	None; Excluded under (b)(1)
W203	39.50140	-83.05765	Emergent	17.28 acres	None; Excluded under (b)(1)
W204	39.49931	-83.04630	Emergent	6.47 acres	None; Excluded under (b)(1)
W205	39.50440	-83.04554	Emergent	0.34 acre	None; Excluded under (b)(1)
W206	39.50477	-83.04621	Emergent	0.19 acre	None; Excluded under (b)(1)
W207	39.50491	-83.04707	Emergent	0.15 acre	None; Excluded

Table 1. Jurisdictional and non-jurisdictional features associated with the Yellowbud Solar Approved JD, LRH-2020-562-SCR-Wolf Run					
Aquatic Resources	Latitude & Longitude (°N) (°W)		Cowardin Class	Linear feet and/or Acres in review area	Regulatory Authority
					under (b)(1)
W208	39.50556	-83.04740	Emergent	0.08 acre	None; Excluded under (b)(1)
W209	39.50585	-83.04523	Emergent	0.17 acre	None; Excluded under (b)(1)
W210	39.50397	-83.04412	Forested	0.02 acre	None; Excluded under (b)(1)
W211	39.50102	-83.04508	Emergent	0.26 acre	None; Excluded under (b)(1)
W212	39.49809	-83.04473	Forested	0.07 acre	None; Excluded under (b)(1)
W213	39.49960	-83.04577	Emergent	0.09 acre	None; Excluded under (b)(1)
W214	39.50627	-83.06299	Emergent	0.52 acre	None; Excluded under (b)(1)
W215	39.50760	-83.06166	Emergent	0.32 acre	None; Excluded under (b)(1)
W216	39.50712	-83.06108	Emergent	1.02 acres	None; Excluded under (b)(1)
W217	39.50763	-83.06083	Emergent	0.17 acre	None; Excluded under (b)(1)
W218	39.50702	-83.05987	Emergent	0.31 acre	None; Excluded under (b)(1)
W219	39.50732	-83.05938	Emergent	0.09 acre	None; Excluded under (b)(1)
W220	39.50623	-83.05590	Emergent	0.26 acre	None; Excluded under (b)(1)
W221	39.50439	-83.06016	Emergent	0.96 acre	None; Excluded under (b)(1)



September 22, 2020

Cardno

Mr. William Risse
Geronimo Energy
8400 Normandale Lake Boulevard
Suite 1200
Bloomington, MN 55437

11121 Canal Road
Cincinnati, Ohio 45241
USA

Phone 513 489 2402
Fax 513 489 2404

www.cardno.com

**Subject: *Yellowbud Solar Project
Vegetation Index of Biotic Integrity Survey
Ross County, OH***

Dear Mr. Risse:

Cardno completed a Regulated Waters Delineation Report in May 2020 in support of the Yellowbud Solar Project (herein "the Project") located in Ross County, Ohio (Figure 1). Three delineated wetlands (Wetlands 202, 203, and 204), were categorized in the "gray zone" between a Category 2 and Category 3 wetland (scoring between 60 and 64.9) utilizing the Ohio Rapid Assessment Method 5.0 (ORAM). A Vegetation Index of Biotic Integrity "Floristic Quality" (VIBI-FQ) survey was conducted to clarify the wetland categorizations for Wetlands 202, 203, and 204. The VIBI-FQ provides a more accurate depiction of categorical status of the wetlands by evaluating wetlands for differences in ecological region, landscape position (HGM class), as well as dominant plant communities.

Methods and Summary

Cardno botanists performed the VIBI-FQ survey on September 8 - 9, 2020. Two VIBI-FQ plots were placed within Wetland 202, three VIBI-FQ plots were placed in Wetland 203, and one VIBI-FQ plot was placed in Wetland 204 (Figure 2). Each VIBI-FQ plot was categorized as either a reference plot or an impact plot. The Wetland 204 VIBI-FQ plot served as both the reference and impact plot as the impact location was representative of the overall wetland quality. Reference plots were qualitatively selected by the investigator based on site characteristics and rules for plot location. Impact plots were identified by the project plan set as areas where disturbance may be necessary during construction or operation of the Project.

The standard 20 meter by 50 meter plot layout was utilized across all wetland VIBI-FQ locations except for Wetland 203-Impact Area South which utilized a 10 meter by 100 meter plot layout due to the narrow condition of the wetland. Protocol for the VIBI-FQ survey followed the methodology outlined in the Ohio Environmental Protection Agency's



"Field Manual for the Vegetation of Biotic Integrity for Wetlands v. 1.5.". The assessment was performed for permit purposes only and to minimize/avoid potentially high quality wetlands.

Summary of Findings

Cardno conducted a VIBI-FQ survey of Wetlands 202, 203, and 204 on September 8 - 9, 2020. Scores ranged from 32 to 57. All six (6) VIBI-FQ plots were classified as Restorable Wetland Habitat (RWLH), Modified Category 2 habitats. Table 1 depicts the associated VIBI-FQ scores for each evaluated wetland.

Table 1. Yellowbud Solar Project VIBI-FQ Assessment Results

Wetland Name		Class	VIBI- FQ Score	TALU ²	Category
Wetland 202	Impact Area	PEM	46	RWLH	Modified Category 2
	Reference Area	PEM	36	RWLH	Modified Category 2
Wetland 203	Impact Area North	PEM/PFO	32	RWLH	Modified Category 2
	Impact Area South	PEM	55	RWLH	Modified Category 2
	Reference Area	PEM	57	RWLH	Modified Category 2
Wetland 204	Impact Area ¹	PEM	36	RWLH	Modified Category 2

¹ Wetland 204 Impact Area exhibits ecological function representative of the entire Wetland.

² Tiered Aquatic Life Uses (TALU) for wetlands and equates these uses to wetland regulatory categories.

a) RWLH : Restorable Wetland Habitat

RWLH wetlands are characterized as degraded but have a reasonable potential for regaining the capability of supporting and maintaining a balanced, integrated, adaptive community of vascular plants having a species composition, diversity, and functional organization (Mack, J. J. and M. Micacchion. 2007). Ohio Administrative Code Rule 3745-1-54(C) states that wetlands that are assigned to Category 2 constitute the broad middle category that "...support moderate wildlife habitat, or hydrological or recreational functions," but also include "...wetlands which are degraded but have a reasonable potential for reestablishing lost wetland functions" creating an implied fourth category of wetlands (modified Category 2 wetlands). Modified Category 2 wetlands include wetlands in "fair" ecological condition (Micacchion, M. and B. Gara. 2008).

Recommendations

Wetlands 202, 203, and 204 were originally categorized using the ORAM 5.0, a level 2 assessment, and scored within the gray zone between a Category 2 and Category 3 wetland. The VIBI-FQ, a level 3 assessment, determined that all three wetlands are modified Category 2 wetlands and should not be considered Category 3 wetlands. Based on the species composition, diversity, and functional organization, Cardno botanists believe the VIBI-FQ data as depicted in Table 1 reflects the appropriate Categorization for Wetlands 202, 203, and 204.

While this report represents Cardno's best professional judgment based on our knowledge and experience, it is important to note that the Ohio EPA has final discretionary authority over isolated 'waters of the State' including all wetlands and their ultimate habitat categorization.



Thank you for this opportunity to provide wetland consultation in support of this Project. Please contact me if you have any questions or concerns regarding these findings or recommendations.

Sincerely,

A handwritten signature in blue ink that reads "Cori Jansing".

Cori Jansing, PWS
Regulatory Specialist, Botanist
Cardno, Inc.
Phone: 513-833-6392
Email: cori.jansing@cardno.com

Exhibit 1: Figures

Exhibit 2: VIBI-FQ Datasheets

File: E320300600

References:

Mack, John J. 2004. Integrated Wetland Assessment Program. Part 4: Vegetation Index of Biotic Integrity (VIBI) and Tiered Aquatic Life Uses (TALUs) for Ohio wetlands. Ohio EPA Technical Report WET/2004-4. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Mack, J. J. and M. Micacchion. 2007. An ecological and functional assessment of urban wetlands in central Ohio. Volume 1: condition of urban wetlands using rapid (level 2) and intensive (level 3) assessment methods. Ohio EPA Technical Report WET/2007-3A. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

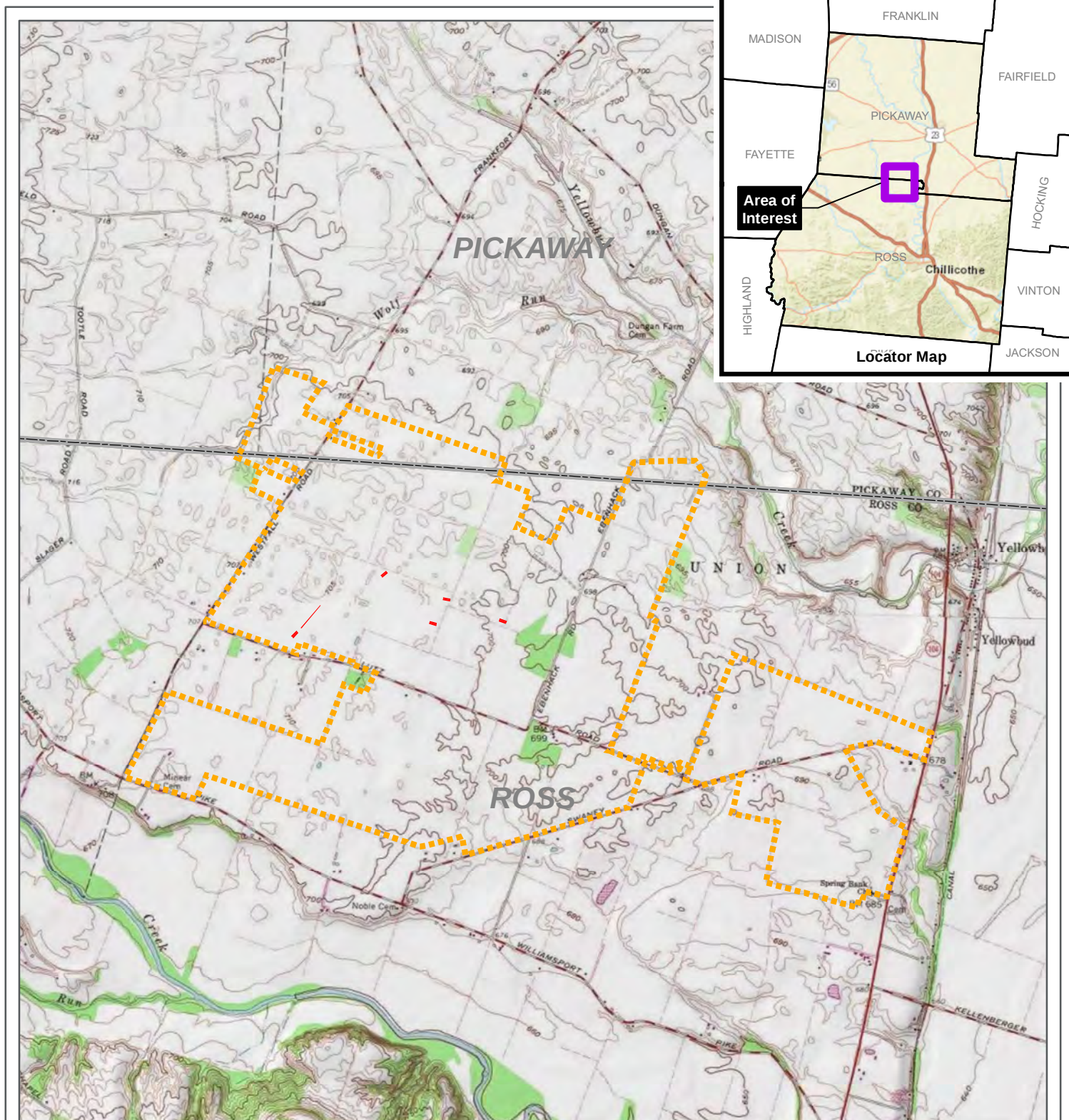
Mack, John J. and Brian D. Gara. 2015. Integrated Wetland Assessment Program. Part 9: Field Manual for the Vegetation Index of Biotic Integrity for Wetlands v. 1.5. Ohio EPA Technical Report WET/2015-2. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Micacchion, M. and B. Gara. 2008. An ecological and functional assessment of urban wetlands in central Ohio. Volume 3: Comparisons of the Amphibian Communities of Urban and Reference Wetlands Using Level 1, 2 and 3 Assessment Tools. Ohio EPA Technical Report WET/2008-1. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Vegetation Index of Biotic Integrity "Floristic Quality" Survey
Yellowbud Solar Project

EXHIBIT 1

FIGURES



 Project Location  VIBI Plots

N
W E
S
7.5' Quadrangle:
Andersonville &
Williamsport

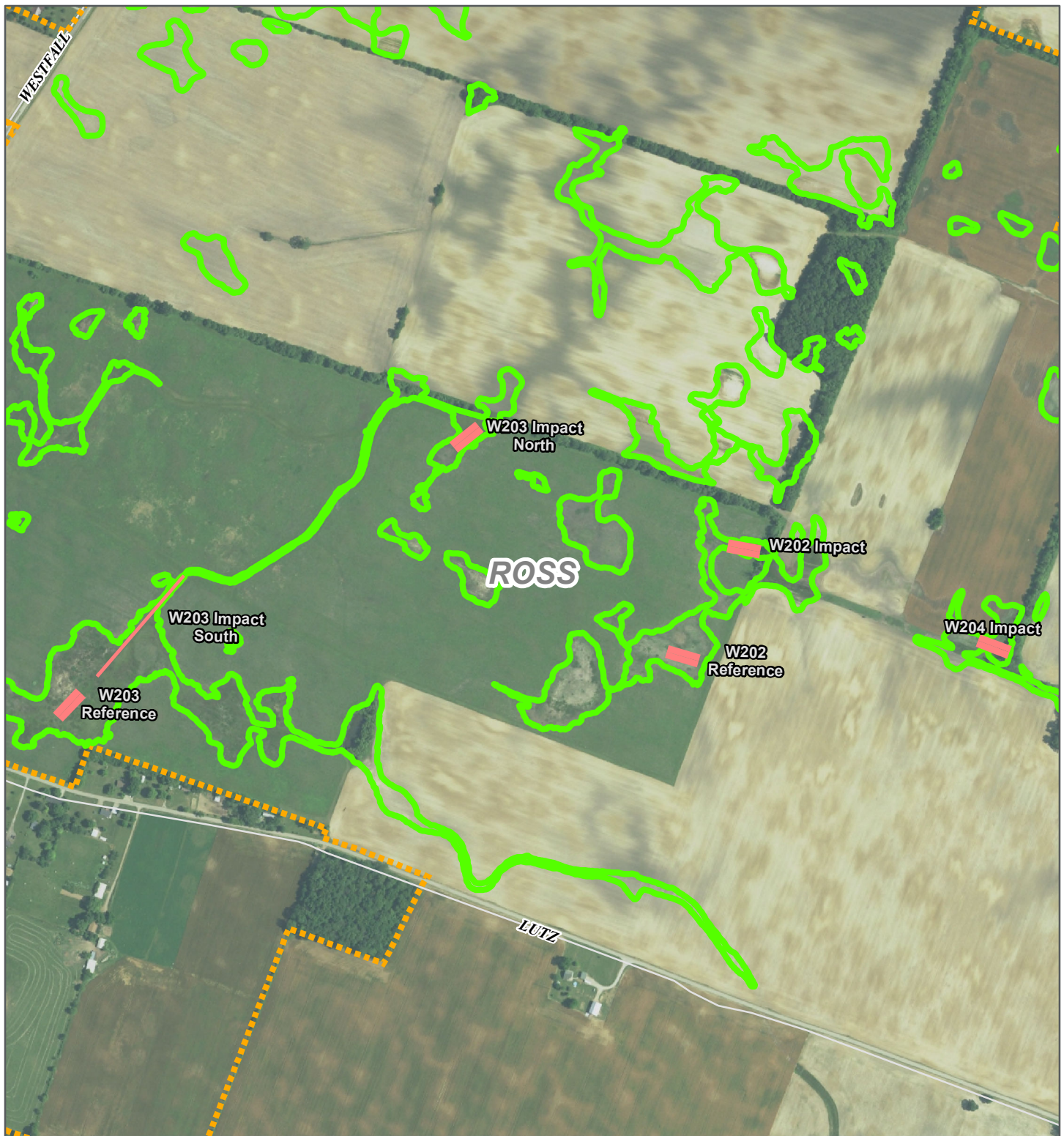
Project No.
e320200600

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Figure 1: Project Location
Yellowbud Solar
Vegetation Index of Biotic Integrity Survey
Yellowbud Solar LLC
Ross County, Ohio



3901 Industrial Blvd., Indianapolis, IN 46254
Phone (+1) 317-388-1982 Fax (+1) 317-388-1986
www.cardno.com



0 425 850 1,700 Feet

Study Area Delineated Wetland
 VIBI Plots

7.5' Quadrangle:
 Andersonville &
 Williamsport
 Project No.
 e320200600

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Figure 2: VIBI Plot Location & Orientation Map

Yellowbud Solar Vegetation Index of Biotic Integrity Survey Yellowbud Solar LLC Ross County, Ohio

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Date Created: 9/18/2020
 Basemap:

File Path: R:\Projects\QF121 Client Folders\e320200600_Yellowbud\GIS\MXD\VIBI\F2_Delineation_overview.mxd

Saved By: Christine.Dittmar

Vegetation Index of Biotic Integrity "Floristic Quality" Survey
Yellowbud Solar Project

EXHIBIT 2

VIBI-FQ Datasheets

Wetland 202-Impact

Site Information					
Site Name:		Yellowbud Solar Farm W202 Impact		Site Code:	
County:		Ross	Sampling date(s):		9/10/2020
Collector(s):		Ben Hess, Kaitlin Hillier, and Macenzie Reed		Affiliation: Cardno Inc	
Phone number:		440-343-1148	email address:		kaitlin.hillie@cardno.com
Create Summary Report					

Plot Information	
General Plot Information	
Monitoring Type	VIBI & VIBI FQ
Monitor Event	1st
Total Modules	10
Intensive Modules	4
Plot Configuration	VIBI-Std (2x5)
Area (ha)	0.10
Latitude	39.500420
Longitude	-83.050660
Centerline	290
Army Corps Region	MW
Plant Community Information	
VEG Class	EMERGENT
1st Plant Community	
Veg. Group	Wet meadow
Veg. Modifier	sedge meadow (misc. Cyperaceae dominants)
2nd Plant Community	
VEG Class	
Veg. Group	
Veg. Modifier	
Other	
HGM Information	
Primary HGM Class	DEPRESSION
Sub class	Surface water
Secondary HGM Class	
Sub class	
Sub or Super Sample	NO
% Sub or Super Sample	100%
Total plot canopy closure %	
Total plot herbaceous cover %	

VIBI Calculation Summary Information								
Metric	Value		VIBI - Metric Score		VIBI FQ			
	Statewide	ACOE Region	Statewide	ACOE Region	Metric Score			
Carex	4	4	7	7	NA			
Cyperaceae	7	7	NA	NA	NA			
Dicot	32	32	10	10	NA			
Shade	4	4	NA	NA	NA			
Shrub	0	0	0	0	NA			
Hydrophyte	25	24	7	7	NA			
Seedless Vascular Plant	0	0	NA	NA	NA			
Annual/Perennial ratio	0.44	0.44	3	3	NA			
FQAI	14.07	14.07	3	3	10.18			
Weighted C of C	2.25	2.25	NA	NA	18.75			
%bryophyte	0.00%	0.00%	NA	NA	NA			
%hydrophyte	51.28%	44.34%	NA	NA	NA			
%sensitive	2.49%	2.49%	0	0	NA			
%tolerant	41.03%	41.03%	3	3	NA			
%invasive graminoids	0.23%	0.23%	10	10	NA			
Pole timber (small tree)	0.00	0.00	NA	NA	NA			
Subcanopy IV	0.00	0.00	NA	NA	NA			
Canopy IV	0.22	0.22	NA	NA	NA			
Biomass	571	571	3	3	NA			
%unvegetated	NA	NA	NA	NA	NA			
Informational Parameters								
stems/ha wetland trees	2860.00	2860.00						
stems/ha wetland shrubs	0.00	0.00						
%buttonbush	0.00%	0.00%						
%perennial native hydrophytes	52.03%	52.18%						
%perennial native	58.15%	58.15%						
%perennial	70.14%	70.14%						
%adventives	20.89%	20.89%						
%open water	0.00%	0.00%						
%unvegetated open water	0.00%	0.00%						
%bare ground	0.00%	0.00%						
Wetness Index	0.57	0.57						
VIBI Total Score:						46	46	29
Average %Cover of Plot:						165.80%		

* If total %cover is < 75% for non-forested veg classes, then weighted CofC VIBI-FQ metric score is proportioned.

VIBI-TEMPLATE VERSION: 2015.2

Datasheet 1

	Module			Module			Module			Module			Module			Residual
	2			3			8			9			Total			
	Corner	Corner	Cover Class	Corner	Corner	Cover Class	Corner	Corner	Cover Class	Corner	Corner	Cover Class	Corner	Corner	Cover Class	
	2	4		2	4		2	4		2	4		2	4		
species	Level	Level		Level	Level		Level	Level		Level	Level		Level	Level		Cover Class
%open water	1		0	1		0	1		0	1		0	1			
%unvegetated open water	1		0	1		0	1		0	1		0	1			
%bare ground	1		0	1		0	1		0	1		0	1			
%litter cover	1		0	1		0	1		0	1		0	1			
Carex frankii		4	3		1	2		3	3	2		3				
Carex vulpinoidea	3	4	7													
Fraxinus pennsylvanica	3	4	7	2		3	4	2	6	4	3	8				
Sida spinosa	2	4	5	3	4	4		4	5	2	3	5				
Leersia oryzoides		4	4													
Morus alba		3	3		2	2					2	2				
Bidens comosa	3	3	5	3	4	5	2	2	5		1	4				
Typha angustifolia		3	2	2		1		2	2		4	2				
Symphyotrichum lanceolatum	4	3	5		1	4	4	2	6	2	4	6				
Asclepias incarnata	2	2	3	2	2	3	2		2	4	3	3				
Chamaecrista fasciculata	2	2	6		4	8		3	4		4	3				
Xanthium strumarium	3	2	4	4	2	5	3	2	6	3	2	3				
Ambrosia artemisiifolia		2	2	4	2	4		3	5	2		2				
Solanum carolinense	3	2	2	2		3	4	4	4		3	2				
Ipomoea lacunosa	4	2	2	2		2	4	3	2	2		2				
Symphyotrichum ericoides		2	4	4	2	5					1	2				
Festuca elatior	3	2	7	2	3	4	2		5	3	4	6				
Eleocharis erythropoda	4		6	4		5	1	3	6	4		5				
Toxicodendron radicans	4		5													
Solidago canadensis	3		2	4	2	3	4	2	3		1	2				
Campsis radicans	3		3	2	4	2	2		3	2		3				
Ulmus americana	2		3		1	2		1	3	2		3				
Andropogon gerardii	2		5	2	3	6		4	4							
Apocynum cannabinum	2		4	3	2	4		1	1		1	2				
Lythrum alatum	2		3	4	3	5		4	5							
Rumex crispus	2		2	3		2		1	2	2	2	3				
Physalis heterophylla		1	3					2	2	2		2				
Abutilon theophrasti		1	2				2		2	2		2				
Desmanthus illinoensis		1	2					1	2		1	2				
Phyla lanceolata		1	4							4		2				
Bidens frondosa		1	4	3	4	4	2	2	4		1	3				
Juncus dudleyi		1	2													
Scirpus pendulus		1	3		1	1										
Panicum virgatum		1	2													
Calystegia sepium		1	2		4	2	3		2	3		2				
Euphorbia maculata				2	2	2		4	2							
Lycopus americanus				4		4		2	3							
Symphyotrichum pilosum				3		5		4	5							
Juncus torreyi					1	2										
Setaria faberi					1	2		3	2							
Trifolium hybridum					1	1										
Echinochloa crus-galli								3	2							
Acalypha rhomboidea								3	1							
Eleocharis obtusa								1	2							
Populus deltoides								1	2							
Samolus floribundus								1	1							
Persicaria pensylvanica								1	1	2		2				
Panicum dichotomiflorum										2		1				
Cirsium arvense											1	2				
Acer negundo											1	2				
Erigeron strigosus																1
Daucus carota																1
Juncus marginatus																1
Asclepias syriaca																1
Carex tribuloides																1
Epilobium coloratum																1
Ratibida pinnata																1
Sorghastrum nutans																1
Carex lupulina																1
Rudbeckia hirta																1

Datasheet 2

			size class (cm) woody stems >1m tall																				
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
mod #	Veg Species	%sub	clump	0<1	1<2.5	2.5<5	5<10	10 - <15	15 - <20	20 - <25	25 - <30	30 - <35	35 - <40	>40-1	>40-2	>40-3	>40-4	>40-5	>40-6	>40-7	>40-8	>40-9	>40-10
1	Fraxinus pennsylvanica	1.00		55																			
1	Ulmus americana	1.00		3																			
2	Fraxinus pennsylvanica	1.00		80																			
2	Ulmus americana	1.00		1																			
2	Morus alba	1.00	1																				
3	Fraxinus pennsylvanica	1.00	2																				
7	Fraxinus pennsylvanica	1.00	12																				
7	Populus deltoides	1.00		1																			
8	Populus deltoides	1.00	2																				
8	Fraxinus pennsylvanica	1.00	2																				
9	Fraxinus pennsylvanica	1.00	40																				
9	Acer negundo	1.00	1																				
9	Ulmus americana	1.00	1																				
10	Fraxinus pennsylvanica	1.00		75																			
10	Ulmus americana	1.00	8																				
10	Populus deltoides	1.00		1																			
10	Acer negundo	1.00		2																			

Biomass

Bio Mass Collected	YES
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Sample Area (m^2)	0.1
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Module	Corner	Sample Number	Area Sample (m2)	Weight w/bag (g)	Bag Weight (g)	Actual or Derived	Net Weight (g)	g/m2
2	2	1	0.1	105	55	A	50.0	500
2	4	2	0.1	127	55	A	72.0	720
3	2	3	0.1	121	55	A	66.0	660
3	4	4	0.1	109	55	A	54.0	540
8	2	5	0.1	111	55	A	56.0	560
8	4	6	0.1	97	55	A	42.0	420
9	2	7	0.1	115	55	A	60.0	600
9	4	8	0.1	112	55	A	57.0	570
		9	0.1			A	0.0	ND
		10	0.1			A	0.0	ND

Species summary

Species	Common Name	CofC	Tolerance	Nativity	Form	Shade	Type	WET	Habit	EMP	MW	NCNE	Relative Cover	Weighted CofC
Abutilon theophrasti	VELVETLEAF		0 tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0.002261829	0
Acalypha rhomboidea	RHOMBIC THREE-S. MERCURY		0 tolerant	native	forb	partial	DI	FACU-	AN	FACU	FACU	FACU	1.50789E-05	0
Acer negundo	BOX ELDER		3 midrange	native	tree	tree	DI	FAC+	W	FAC	FAC	FAC	0.000753943	0.002261829
Ambrosia artemisiifolia	COMMON RAGWEED		0 tolerant	native	forb	full	DI	FACU	AN	FACU	FACU	FACU	0.018094635	0
Andropogon gerardii	BIG BLUESTEM		5 midrange	native	grass	full	MO	FAC	PE	FAC	FAC	FACU	0.042974758	0.21487379
Apocynum cannabinum	INDIAN HEMP		1 tolerant	native	forb	full	DI	FACU	PE	FACU	FAC	FAC	0.011324226	0.011324226
Asclepias incarnata	SWAMP MILKWEED		4 midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.007539431	0.030157725
Asclepias syriaca	COMMON MILKWEED		1 tolerant	native	forb	full	DI	FACU-	PE	FACU	FACU	UPL	1.50789E-05	1.50789E-05
Bidens comosa	SWAMP TICKSEED		3 midrange	native	forb	full	DI	FACW	AN	FACW	OBL	FACW	0.039205042	0.117615127
Bidens frondosa	DEVIL'S BEGGAR'S-TICK		2 tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.018094635	0.03618927
Calystegia sepium	HEDGE BINDWEED		1 tolerant	native	forb	full	DI	FAC-	PE	FAC	FAC	FAC	0.003015772	0.003015772
Campsis radicans	TRUMPET-CREEPER		1 tolerant	native	vine	full	DI	FAC	W	FAC	FACU	FAC	0.007539431	0.007539431
Carex frankii	FRANK'S SEDGE		2 tolerant	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.007539431	0.015078862
Carex lupulina	HOP SEDGE		3 midrange	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	1.50789E-05	4.52366E-05
Carex tribuloides	BLUNT BROOM SEDGE		4 midrange	native	sedge	partial	MO	FACW+	PE	FACW	OBL	FACW	1.50789E-05	6.03154E-05
Carex vulpinoidea	FOX SEDGE		1 tolerant	native	sedge	full	MO	OBL	PE	OBL	FACW	OBL	0.056545734	0.056545734
Chamaecrista fasciculata	PARTRIDGE-PEA		3 midrange	native	forb	full	DI	FACU	AN	FACU	FACU	FACU	0.128170331	0.384510992
Cirsium arvense	CANADA THISTLE		0 tolerant	adventive	forb	advent	DI	FACU	PE	FACU	FACU	FACU	0.000753943	0
Daucus carota	QUEEN-ANNE'S-LACE		0 tolerant	adventive	forb	advent	DI	(UPL)	BI	UPL	UPL	UPL	1.50789E-05	0
Desmanthus illinoensis	PRAIRIE BUNDLE-FLOWER		3 midrange	native	forb	full	DI	FAC	PE	FAC	FACU	FACU	0.002261829	0.006785488
Echinochloa crus-galli	BARNYARD GRASS		0 tolerant	adventive	grass	advent	MO	FACU	AN	FAC	FACW	FAC	0.000753943	0
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH		4 midrange	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.075394312	0.301577249
Eleocharis obtusa	BLUNT SPIKE-RUSH		1 tolerant	native	sedge	full	MO	OBL	AN	OBL	OBL	OBL	0.000753943	0.000753943
Epilobium coloratum	PURPLE-LEAVED WILLOW-HERB		1 tolerant	native	forb	full	DI	OBL	PE	FACW	OBL	OBL	1.50789E-05	1.50789E-05
Erigeron strigosus	ROUGH FLEABANE		1 tolerant	native	forb	full	DI	FACU+	AN	FACU	FACU	FACU	1.50789E-05	1.50789E-05
Euphorbia maculata	SPOTTED SPURGE		0 tolerant	native	forb	full	DI	FACU-	AN	FACU	FACU	FACU	0.001507886	0
Festuca elatior	TALL FESCUE		0 tolerant	adventive	grass	advent	MO	FACU	PE	FACU	FACU	FACU	0.099520492	0
Fraxinus pennsylvanica	GREEN ASH		3 midrange	native	tree	tree	DI	FACW	W	FACW	FACW	FACW	0.179438463	0.538315389
Ipomoea lacunosa	WHITE MORNING-GLORY		4 midrange	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.003015772	0.01206309
Juncus dudleyi	DUDLEY'S RUSH		3 midrange	native	forb	full	MO	(FACW-)	PE	FACW	FACW	FACW	0.000753943	0.002261829
Juncus marginatus	GRASS-LEAVED RUSH		4 midrange	native	forb	full	MO	FACW	PE	FACW	FACW	FACW	1.50789E-05	6.03154E-05
Juncus torreyi	TORREY'S RUSH		3 midrange	native	forb	full	MO	FACW	PE	FACW	FACW	FACW	0.000753943	0.002261829
Leersia oryzoides	RICE CUT GRASS		1 tolerant	native	grass	full	MO	OBL	PE	OBL	OBL	OBL	0.005277602	0.005277602
Lycopus americanus	AMERICAN WATER-HOREHOUND		3 midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.007539431	0.022618294
Lythrum alatum	WINGED LOOSESTRIFE		6 sensitive	native	forb	full	DI	FACW+	PE	FACW	OBL	OBL	0.024880123	0.149280738
Morus alba	WHITE MULBERRY		0 tolerant	adventive	tree	advent	DI	UPL	W	UPL	FAC	FACU	0.003769716	0
Panicum dichotomiflorum	FALL PANIC GRASS		0 tolerant	native	grass	full	MO	FACW-	AN	FACW	FACW	FACW	1.50789E-05	0
Panicum virgatum	SWITCH GRASS		4 midrange	native	grass	full	MO	FAC	PE	FAC	FAC	FAC	0.000753943	0.003015772
Persicaria pensylvanica	PINKWEED		0 tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.000769022	0
Phyla lanceolata	FOG-FRUIT		3 midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.006031545	0.018094635
Physalis heterophylla	CLAMMY GROUND-CHERRY		1 tolerant	native	forb	partial	DI	(UPL)	PE	(UPL)	(UPL)	(UPL)	0.003769716	0.003769716
Populus deltoides	EASTERN COTTONWOOD		3 midrange	native	tree	tree	DI	FAC	W	FAC	FAC	FAC	0.000753943	0.002261829
Ratibida pinnata	GRAY-HEADED CONEFLOWER		5 midrange	native	forb	full	DI	(UPL)	PE	(UPL)	(UPL)	(UPL)	1.50789E-05	7.53943E-05
Rudbeckia hirta	BLACK-EYED SUSAN		1 tolerant	native	forb	full	DI	FACU-	PE	FACU	FACU	FACU	1.50789E-05	1.50789E-05
Rumex crispus	CURLY DOCK		0 tolerant	adventive	forb	advent	DI	FACU	PE	FAC	FAC	FAC	0.004523659	0
Samolus floribundus	WATER-PIMPERNEL		4 midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	1.50789E-05	6.03154E-05
Scirpus pendulus	DROOPING BULRUSH		2 tolerant	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.002276908	0.004553816
Setaria faberi	GIANT FOXTAIL GRASS		0 tolerant	adventive	grass	advent	MO	UPL	AN	UPL	FACU	FACU	0.001507886	0
Sida spinosa	PRICKLY SIDA		0 tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0.039205042	0
Solanum carolinense	HORSE NETTLE		0 tolerant	adventive	forb	advent	DI	UPL	PE	FACU	FACU	FACU	0.009047317	0
Solidago canadensis	CANADA GOLDENROD		1 tolerant	native	forb	full	DI	FACU	PE	FACU	FACU	FACU	0.006031545	0.006031545
Sorghastrum nutans	INDIAN GRASS		5 midrange	native	grass	full	MO	UPL	PE	FACU	FACU	FACU	1.50789E-05	7.53943E-05
Symphyotrichum ericoides	WHITE HEATH ASTER		2 tolerant	native	forb	full	DI	FACU	PE	FACU	FACU	FACU	0.017340692	0.034681384
Symphyotrichum lanceolatum	EASTERN LINED ASTER		3 midrange	native	forb	full	DI	(FACW)	PE	FACW	FAC	FACW	0.069362767	0.208088302
Symphyotrichum pilosum	AWL ASTER		1 tolerant	native	forb	full	DI	UPL	PE	FAC	FACU	FACU	0.022618294	0.022618294
Toxicodendron radicans	POISON-IVY		1 tolerant	native	vine	partial	DI	FAC	W	FAC	FAC	FAC	0.011309147	0.011309147
Trifolium hybridum	ALSIKE CLOVER		0 tolerant	adventive	forb	advent	DI	FACU-	PE	FACU	FACU	FACU	1.50789E-05	0
Typha angustifolia	NARROW-LEAVED CAT-TAIL		0 tolerant	adventive	forb	advent	MO	OBL	PE	OBL	OBL	OBL	0.002276908	0
Ulmus americana	AMERICAN ELM		2 tolerant	native	tree	tree	DI	FACW-	W	FACW	FACW	FACW	0.007539431	0.015078862
Xanthium strumarium	COMMON COCKLEBUR		0 tolerant	adventive	forb	advent	DI	FAC	AN	FAC	FAC	FAC	0.045236587	0

Wetland 202-Reference

Plot Information	
General Plot Information	
Monitoring Type	VIBI & VIBI FQ
Monitor Event	1st
Total Modules	10
Intensive Modules	4
Plot Congituration	VIBI-Std (2x5)
Area (ha)	0.10
Latitude	39.498880
Longitude	-83.051690
Centerline	268
Army Corps Region	MW
Plant Community Information	
VEG Class	EMERGENT
1st Plant Community	
Veg. Group	Wet meadow
Veg. Modifier	other (specify dominants)
Other	cocklebur, ricecut grass, fogfruit
2nd Plant Community	
VEG Class	
Veg. Group	
Veg. Modifier	
Other	
HGM Information	
Primary HGM Class	DEPRESSION
Sub class	Surface water
Secondary HGM Class	
Sub class	
Sub or Super Sample	NO
% Sub or Super Sample	100%
Total plot canopy closure %	0%
Total plot herbaceous cover %	100%

VIBI-TEMPLATE VERSION: 2015.2

VIBI Calculation Summary Information					
Metric	Value		VIBI - Metric Score		VIBI FQ
	Statewide	ACOE Region	Statewide	ACOE Region	Metric Score
Carex	3	3	3	3	NA
Cyperaceae	5	5	NA	NA	NA
Dicot	22	22	7	7	NA
Shade	0	0	NA	NA	NA
Shrub	0	0	0	0	NA
Hydrophyte	25	25	7	7	NA
Seedless Vascular Plant	0	0	NA	NA	NA
Annual/Perennial ratio	0.61	0.61	0	0	NA
FQAI	14.06	14.06	3	3	10.14
Weighted C of C	1.88	1.88	NA	NA	15.68
%bryophyte	0.00%	0.00%	NA	NA	NA
%hydrophyte	71.39%	68.92%	NA	NA	NA
%sensitive	1.40%	1.40%	0	0	NA
%tolerant	57.29%	57.29%	3	3	NA
%invasive graminoids	2.17%	2.17%	10	10	NA
Pole timber (small tree)	0.00	0.00	NA	NA	NA
Subcanopy IV	0.00	0.00	NA	NA	NA
Canopy IV	0.26	0.26	NA	NA	NA
Biomass	571	571	3	3	NA
%unvegetated	NA	NA	NA	NA	NA
Informational Parameters					
stems/ha wetland trees	270.00	270.00			
stems/ha wetland shrubs	0.00	0.00			
%buttonbush	0.00%	0.00%			
%perennial native hydrophytes	79.83%	71.31%			
%perennial native	81.31%	81.31%			
%perennial	83.56%	83.56%			
%adventives	16.98%	16.98%			
%open water	0.00%	0.00%			
%unvegetated open water	0.00%	0.00%			
%bare ground	0.00%	0.00%			
Wetness Index	0.83	0.83			
VIBI Total Score:					
Average %Cover of Plot:	161.30%				
* If total %cover is < 75% for non-forested veg classes, then weighted CofC VIBI-FQ metric score is proportioned.					

Datasheet 1

	Module			Module			Module			Module			Module			Residual
	2			3			8			9			T _{total}			
	Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner		
	2	4		2	4		2	4		2	4					
species	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Cover Class
%open water	1		0	1		0	1		0	1		0	1			
%unvegetated open water	1		0	1		0	1		0	1		0	1			
%bare ground	1		0	1		0	1		0	1		0	1			
%litter cover	1		0	1		0	1		0	1		0	1			
Alisma subcordatum	4	4	6		3	4	4	4	5	3	4	4				
Leersia oryzoides	4	4	7	4	4	8	4	1	6	4	4	7				
Asclepias incarnata	2	4	4		3	5		2	4	2	3	4				
Xanthium strumarium	4	4	6	4	4	7	4	4	6	3	3	6				
Phyla lanceolata	4	4	7	4	4	8	4	4	8	4	4	7				
Apocynum cannabinum		3	3													
Campsis radicans		3	3				2		6	2	4	7				
Polygonum pensylvanicum	3	2	2		3	2	3		2		1	2				
Populus deltoides		2	3					1	1	2		3				
Symphyotrichum lanceolatum		2	4	4	4	5	3		4		1	3				
Ludwigia polycarpa	3		1		1	1										
Typha angustifolia	3		4	2		3	3		3	2		5				
Abutilon theophrasti	2		2		2	2	3		2		1	2				
Symphyotrichum ericoides	2		3		1	3	2	2	3	2	3	4				
Cuscuta indecora	2		3	4		3	2	3	3	2		3				
Carex frankii	2		2		2	2		1	3		1	3				
Eleocharis erythropoda	2		4	2	2	4	2		5		1	5				
Sida spinosa	2		2		1	2	2		2	3		3				
Fraxinus pennsylvanica		1	2					1	2		1	3				
Bidens frondosa		1	2		1	1				2		2				
Hibiscus laevis		1	2		2	3	2		2		1	2				
Ipomoea lacunosa		1	2	3		2		1	2	2		2				
Lycopus americanus					1	3				4		3				
Bidens comosa					1	1										
Solanum carolinense								4	2							
Rumex crispus											1	1				
Ambrosia artemisiifolia											1	1				
Carex lupulina																1
Setaria faberi																1
Echinochloa muricata																1
Solidago canadensis																1
Lythrum alatum																1
Carex vulpinoidea																1
Epilobium coloratum																1
Juncus dudleyi																1
Panicum dichotomiflorum																1
Echinochloa crus-galli																1
Schoenoplectus tabernaemontani																1
Alisma triviale																1
Amaranthus tuberculatus																1
Ulmus americana																1

Datasheet 2

			size class (cm) woody stems >1m tall																				
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
mod #	Veg Species	%sub	clump	0<1	1<2.5	2.5<5	5<10	10 <15	15 <20	20 <25	25 <30	30 <35	35 <40	>40-1	>40-2	>40-3	>40-4	>40-5	>40-6	>40-7	>40-8	>40-9	>40-10
1	Populus deltoides	1.00	2																				
1	Fraxinus pennsylvanica	1.00	2																				
1	Ulmus americana	1.00	1																				
2	Populus deltoides	1.00	4																				
2	Fraxinus pennsylvanica	1.00	1																				
4	Populus deltoides	1.00	1																				
6	Fraxinus pennsylvanica	1.00	1																				
6	Populus deltoides	1.00		3																			
8	Populus deltoides	1.00		1																			
8	Fraxinus pennsylvanica	1.00	1																				
9	Fraxinus pennsylvanica	1.00	2																				
9	Populus deltoides	1.00	4																				
10	Populus deltoides	1.00	1																				
10	Fraxinus pennsylvanica	1.00	1																				
10	Ulmus americana	1.00	2																				

Biomass

Bio Mass Collected	YES
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Sample Area (m^2)	0.1
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Module	Corner	Sample Number	Area Sample (m2)	Weight w/bag (g)	Bag Weight (g)	Actual or Derived	Net Weight (g)	g/m2
2	2	1	0.1	108	55	A	53.0	530
2	4	2	0.1	111	55	A	56.0	560
3	2	3	0.1	125	55	A	70.0	700
3	4	4	0.1	130	55	A	75.0	750
8	2	5	0.1	118	55	A	63.0	630
8	4	6	0.1	102	55	A	47.0	470
9	2	7	0.1	97	55	A	42.0	420
9	4	8	0.1	106	55	A	51.0	510
		9	0.1			A	0.0	ND
		10	0.1			A	0.0	ND

Species Summary

Species	Common Name	CofC	Tolerance	Nativity	Form	Shade	Type	WET	Habit	EMP	MW	NCNE	Relative Cover	Weighted CofC
Abutilon theophrasti	VELVETLEAF	0	tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0.003099766	0
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	2	tolerant	native	forb	full	MO	OBL	PE	OBL	OBL	OBL	0.049596255	0.099192511
Alisma triviale	NORTHERN WATER-PLANTAIN	6	sensitive	native	forb	full	MO	(OBL)	PE	OBL	OBL	OBL	1.54988E-05	9.2993E-05
Amaranthus tuberculatus	TUBERCLED AMARANTH	1	tolerant	native	forb	full	DI	FACW	AN	FACW	OBL	OBL	1.54988E-05	1.54988E-05
Ambrosia artemisiifolia	COMMON RAGWEED	0	tolerant	native	forb	full	DI	FACU	AN	FACU	FACU	FACU	1.54988E-05	0
Apocynum cannabinum	INDIAN HEMP	1	tolerant	native	forb	full	DI	FACU	PE	FACU	FAC	FAC	0.002324824	0.002324824
Asclepias incarnata	SWAMP MILKWEED	4	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.027897894	0.111591575
Bidens comosa	SWAMP TICKSEED	3	midrange	native	forb	full	DI	FACW	AN	FACW	OBL	FACW	1.54988E-05	4.64965E-05
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	2	tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.001565382	0.003130764
Campsis radicans	TRUMPET-CREEPER	1	tolerant	native	vine	full	DI	FAC	W	FAC	FACU	FAC	0.087568389	0.087568389
Carex frankii	FRANK'S SEDGE	2	tolerant	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.006199532	0.012399064
Carex lupulina	HOP SEDGE	3	midrange	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	1.54988E-05	4.64965E-05
Carex vulpinoidea	FOX SEDGE	1	tolerant	native	sedge	full	MO	OBL	PE	OBL	FACW	OBL	1.54988E-05	1.54988E-05
Cuscuta indecora	PRETTY DODDER	8	sensitive	native	forb	full	DI	(FAC)	AN	(FAC)	(FAC)	(FAC)	0.009299298	0.074394383
Echinochloa crus-galli	BARNYARD GRASS	0	tolerant	adventive	grass	advent	MO	FACU	AN	FAC	FACW	FAC	1.54988E-05	0
Echinochloa muricata	ROUGH BARNYARD GRASS	3	midrange	native	grass	full	MO	FACW+	AN	FACW	OBL	OBL	1.54988E-05	4.64965E-05
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	4	midrange	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.034097426	0.136389703
Epilobium coloratum	PURPLE-LEAVED WILLOW-HERB	1	tolerant	native	forb	full	DI	OBL	PE	FACW	OBL	OBL	1.54988E-05	1.54988E-05
Fraxinus pennsylvanica	GREEN ASH	3	midrange	native	tree	tree	DI	FACW	W	FACW	FACW	FACW	0.003874707	0.011624122
Hibiscus laevis	HALBERD-LEAVED ROSE-MALLOW	7	sensitive	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.004649649	0.032547543
Ipomoea lacunosa	WHITE MORNING-GLORY	4	midrange	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.003099766	0.012399064
Juncus dudleyi	DUDLEY'S RUSH	3	midrange	native	forb	full	MO	(FACW-)	PE	FACW	FACW	FACW	1.54988E-05	4.64965E-05
Leersia oryzoides	RICE CUT GRASS	1	tolerant	native	grass	full	MO	OBL	PE	OBL	OBL	OBL	0.240231862	0.240231862
Ludwigia polycarpa	FALSE LOOSESTRIFE	5	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	3.09977E-05	0.000154988
Lycopus americanus	AMERICAN WATER-HOREHOUND	3	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.004649649	0.013948947
Lythrum alatum	WINGED LOOSESTRIFE	6	sensitive	native	forb	full	DI	FACW+	PE	FACW	OBL	OBL	1.54988E-05	9.2993E-05
Panicum dichotomiflorum	FALL PANIC GRASS	0	tolerant	native	grass	full	MO	FACW-	AN	FACW	FACW	FACW	1.54988E-05	0
Phyla lanceolata	FOG-FRUIT	3	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.309976597	0.92992979
Polygonum pensylvanicum	PINKWEED	0	tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.003099766	0
Populus deltoides	EASTERN COTTONWOOD	3	midrange	native	tree	tree	DI	FAC	W	FAC	FAC	FAC	0.004665148	0.013995443
Rumex crispus	CURLY DOCK	0	tolerant	adventive	forb	advent	DI	FACU	PE	FAC	FAC	FAC	1.54988E-05	0
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	2	tolerant	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	1.54988E-05	3.09977E-05
Setaria faberi	GIANT FOXTAIL GRASS	0	tolerant	adventive	grass	advent	MO	UPL	AN	UPL	FACU	FACU	1.54988E-05	0
Sida spinosa	PRICKLY SIDA	0	tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0.004649649	0
Solanum carolinense	HORSE NETTLE	0	tolerant	adventive	forb	advent	DI	UPL	PE	FACU	FACU	FACU	0.000774941	0
Solidago canadensis	CANADA GOLDENROD	1	tolerant	native	forb	full	DI	FACU	PE	FACU	FACU	FACU	1.54988E-05	1.54988E-05
Symphyotrichum ericoides	WHITE HEATH ASTER	2	tolerant	native	forb	full	DI	FACU	PE	FACU	FACU	FACU	0.012399064	0.024798128
Symphyotrichum lanceolatum	EASTERN LINED ASTER	3	midrange	native	forb	full	DI	(FACW)	PE	FACW	FAC	FACW	0.024798128	0.074394383
Typha angustifolia	NARROW-LEAVED CAT-TAIL	0	tolerant	adventive	forb	advent	MO	OBL	PE	OBL	OBL	OBL	0.021698362	0
Ulmus americana	AMERICAN ELM	2	tolerant	native	tree	tree	DI	FACW-	W	FACW	FACW	FACW	1.54988E-05	3.09977E-05
Xanthium strumarium	COMMON COCKLEBUR	0	tolerant	adventive	forb	advent	DI	FAC	AN	FAC	FAC	FAC	0.139489469	0

Wetland 203-Impact North

Site Information			
Site Name:	Yellowbud W0203- Impact - North		Site Code:
County:	Ross	Sampling date(s):	9/8/2020
Collector(s):	C.Jansing, K. Hillier, B.Hess, M. Reed		Affiliation: Cardno Inc.
Phone number:	513-833-6392	email address:	cori.jansing@cardno.com
Create Summary Report			

Plot Information	
General Plot Information	
Monitoring Type	VIBI & VIBI FQ
Monitor Event	1st
Total Modules	10
Intensive Modules	4
Plot Configuration	VIBI-Std (2x5)
Area (ha)	0.10
Latitude	39.501980
Longitude	-83.055610
Centerline	205
Army Corps Region	MW
Plant Community Information	
VEG Class	EMERGENT
1st Plant Community	
Veg. Group	Wet meadow
Veg. Modifier	other (specify dominants)
Other	
2nd Plant Community	
VEG Class	
Veg. Group	
Veg. Modifier	
Other	
HGM Information	
Primary HGM Class	DEPRESSION
Sub class	Surface water
Secondary HGM Class	
Sub class	
Sub or Super Sample	NO
% Sub or Super Sample	100%
Total plot canopy closure %	0%
Total plot herbaceous cover %	100%

VIBI Calculation Summary Information					
Metric	Value		VIBI - Metric Score		VIBI FQ
	Statewide	ACOE Region	Statewide	ACOE Region	Metric Score
Carex	1	1	0	0	NA
Cyperaceae	3	3	NA	NA	NA
Dicot	18	18	7	7	NA
Shade	5	5	NA	NA	NA
Shrub	0	0	0	0	NA
Hydrophyte	13	13	3	3	NA
Seedless Vascular Plant	0	0	NA	NA	NA
Annual/Perennial ratio	0.55	0.55	0	0	NA
FQAI	13.32	13.32	3	3	8.29
Weighted C of C	2.15	2.15	NA	NA	2.20
%bryophyte	0.00%	0.00%	NA	NA	NA
%hydrophyte	24.78%	23.40%	NA	NA	NA
%sensitive	2.74%	2.74%	3	3	NA
%tolerant	58.86%	58.86%	3	3	NA
%invasive graminoids	0.00%	0.00%	10	10	NA
Pole timber (small tree)	0.00	0.00	NA	NA	NA
Subcanopy IV	0.00	0.00	NA	NA	NA
Canopy IV	0.29	0.29	NA	NA	NA
Biomass	529	529	3	3	NA
%unvegetated	NA	NA	NA	NA	NA
Informational Parameters					
stems/ha wetland trees	380.00	380.00			
stems/ha wetland shrubs	0.00	0.00			
%buttonbush	0.00%	0.00%			
%perennial native hydrophytes	30.24%	30.22%			
%perennial native	66.98%	66.98%			
%perennial	83.45%	83.45%			
%adventives	17.88%	17.88%			
%open water	0.00%	0.00%			
%unvegetated open water	0.00%	0.00%			
%bare ground	0.00%	0.00%			
Wetness Index	0.51	0.51			
VIBI Total Score:			32	32	10
Average %Cover of Plot:	9.20%				
* If total %cover is < 75% for non-forested veg classes, then weighted CofC VIBI-FQ metric score is proportioned.					

VIBI-TEMPLATE VERSION: 2015.2

Datasheet 1

	Module			Module			Module			Module			Module			Residual
	2			3			8			9			T _{mod}			
	Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner		
	2	4		2	4		2	4		2	4					
species	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Cover Class
%open water	1		0	1		0	1		0	1		0	1			
%unvegetated open water	1		0	1		0	1		0	1		0	1			
%bare ground	1		0	1		0	1		0	1		0	1			
%litter cover	1		0	1		0	1		0	1		0	1			
Morus alba	2		1							2		1				
Ambrosia trifida	2		1		2	1		3	2		1	2				
Solanum carolinense		1	2		1	1				3	2	3				
Asclepias incarnata		1	1		1	1	2		1		1	1				
Fraxinus pennsylvanica		1	1													
Ambrosia artemisiifolia		1	1	3	2	1	2		2		2	2				
Toxicodendron radicans		1	2		2	3					4	2				
Panicum capillare		1	1													
Aster pilosus		1	3		4	3		2	3		2	4				
Poa pratensis		1	4													
Hordeum jubatum		1	2													
Schizachyrium scoparium					2	3		1	4							
Echinochloa crus-galli				4		1										
Carex tribuloides				4		4	2		3							
Chamaecrista fasciculata				2		3		1	2							
Asclepias syriaca					1	1										
Symphyotrichum lanceolatum					1	1		1	1	4		2				
Sorghastrum nutans					1	1										
Rudbeckia hirta					1	2										
Allium vineale					1	1										
Platanus occidentalis							2		1							
Cyperus acuminatus							2		2							
Persicaria pensylvanica								2	2		3	2				
Eupatorium maculatum								1	2							
Vernonia gigantea								1	2		1	2				
Lysimachia ciliata											1	3				
Vitis riparia											1	1				
Panicum virgatum											1	1				
Campsis radicans											1	1				
Setaria glauca											1	2				
Cirsium arvense																1
Ludwigia polycarpa																1
Phleum pratense																1
Eleocharis obtusa																1
Abutilon theophrasti																1
Panicum flexile																1
Juncus torreyi																1

Datasheet 2

			size class (cm) woody stems >1m tall																				
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
mod #	Veg Species	%sub	clump	0<-1	1<-2.5	2.5<-5	5<-10	10 <-15	15 <- 20	20 <-25	25 <-30	30 <-35	35 <-40	>40-1	>40-2	>40-3	>40-4	>40-5	>40-6	>40-7	>40-8	>40-9	>40-10
10	Gleditsia triacanthos	1.00	11																				
10	Morus alba	1.00		3																			
10	Ulmus americana	1.00		3																			
1	Gleditsia triacanthos	1.00	20																				
1	Morus alba	1.00		2																			
2	Ulmus americana	1.00		3																			
2	Gleditsia triacanthos	1.00	1																				
4	Morus alba	1.00		1																			
5	Morus alba	1.00		1																			
7	Morus alba	1.00		1																			
9	Morus alba	1.00		2																			

Biomass

Bio Mass Collected	YES
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Sample Area (m^2)	0.1
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Module	Corner	Sample Number	Area Sample (m2)	Weight w/bag (g)	Bag Weight (g)	Actual or Derived	Net Weight (g)	g/m2
2	2	1	0.1	105	55	A	50.0	500
2	4	2	0.1	120	55	A	65.0	650
3	2	3	0.1	98	55	A	43.0	430
3	4	4	0.1	110	55	A	55.0	550
8	2	5	0.1	123	55	A	68.0	680
8	4	6	0.1	102	55	A	47.0	470
9	2	7	0.1	106	55	A	51.0	510
9	4	8	0.1	99	55	A	44.0	440
		9	0.1			A	0.0	ND
		10	0.1			A	0.0	ND

Species Summary

Species	Common Name	CofC	Tolerance	Nativity	Form	Shade	Type	WET	Habit	EMP	MW	NCNE	Relative Cover	Weighted CofC
Abutilon theophrasti	VELVETLEAF	0	tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0.000271739	0
Allium vineale	FIELD GARLIC	0	tolerant	adventive	forb	advent	MO	FACU-	PE	FACU	FACU	FACU	0.000271739	0
Ambrosia artemisiifolia	COMMON RAGWEED	0	tolerant	native	forb	full	DI	FACU	AN	FACU	FACU	FACU	0.027717391	0
Ambrosia trifida	GIANT RAGWEED	0	tolerant	native	forb	full	DI	FAC	AN	FAC	FAC	FAC	0.027717391	0
Asclepias incarnata	SWAMP MILKWEED	4	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.001086957	0.004347826
Asclepias syriaca	COMMON MILKWEED	1	tolerant	native	forb	full	DI	FACU-	PE	FACU	FACU	UPL	0.000271739	0.000271739
Aster pilosus	AWL ASTER	1	tolerant	native	forb	full	DI	UPL	PE	FAC	FACU	FACU	0.217391304	0.217391304
Campsis radicans	TRUMPET-CREEPER	1	tolerant	native	vine	full	DI	FAC	W	FAC	FACU	FAC	0.000271739	0.000271739
Carex tribuloides	BLUNT BROOM SEDGE	4	midrange	native	sedge	partial	MO	FACW+	PE	FACW	OBL	FACW	0.135869565	0.543478261
Chamaecrista fasciculata	PARTRIDGE-PEA	3	midrange	native	forb	full	DI	FACU	AN	FACU	FACU	FACU	0.054347826	0.163043478
Cirsium arvense	CANADA THISTLE	0	tolerant	adventive	forb	advent	DI	FACU	PE	FACU	FACU	FACU	0.000271739	0
Cyperus acuminatus	PALE UMBRELLA-SEDGE	8	sensitive	native	sedge	full	MO	OBL	AN	OBL	OBL	OBL	0.013586957	0.108695652
Echinochloa crus-galli	BARNYARD GRASS	0	tolerant	adventive	grass	advent	MO	FACU	AN	FAC	FACW	FAC	0.000271739	0
Eleocharis obtusa	BLUNT SPIKE-RUSH	1	tolerant	native	sedge	full	MO	OBL	AN	OBL	OBL	OBL	0.000271739	0.000271739
Eupatorium maculatum	SPOTTED JOE-PYE WEED	6	sensitive	native	forb	full	DI	FACW	PE	FACW	OBL	OBL	0.013586957	0.081521739
Fraxinus pennsylvanica	GREEN ASH	3	midrange	native	tree	tree	DI	FACW	W	FACW	FACW	FACW	0.000271739	0.000815217
Hordeum jubatum	SQUIRREL-TAIL BARLEY	0	tolerant	adventive	grass	advent	MO	FAC	PE	FAC	FAC	FAC	0.013586957	0
Juncus torreyi	TORREY'S RUSH	3	midrange	native	forb	full	MO	FACW	PE	FACW	FACW	FACW	0.000271739	0.000815217
Ludwigia polycarpa	FALSE LOOSESTRIFE	5	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.000271739	0.001358696
Lysimachia ciliata	FRINGED LOOSESTRIFE	4	midrange	native	forb	shade	DI	FACW	PE	FACW	FACW	FACW	0.04076087	0.163043478
Morus alba	WHITE MULBERRY	0	tolerant	adventive	tree	advent	DI	UPL	W	UPL	FAC	FACU	0.000543478	0
Panicum capillare	WITCH GRASS	1	tolerant	native	grass	full	MO	FAC-	AN	FAC	FAC	FAC	0.000271739	0.000271739
Panicum flexile	FLEXUOUS PANIC GRASS	5	midrange	native	grass	partial	MO	FACU	AN	FACU	FACW	FACW	0.000271739	0.001358696
Panicum virgatum	SWITCH GRASS	4	midrange	native	grass	full	MO	FAC	PE	FAC	FAC	FAC	0.000271739	0.001086957
Persicaria pensylvanica	PINKWEED	0	tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.027173913	0
Phleum pratense	TIMOTHY	0	tolerant	adventive	grass	advent	MO	FACU	PE	FACU	FACU	FACU	0.000271739	0
Platanus occidentalis	SYCAMORE	7	sensitive	native	tree	tree	DI	FACW-	W	FACW	FACW	FACW	0.000271739	0.001902174
Poa pratensis	KENTUCKY BLUEGRASS	0	tolerant	adventive	grass	advent	MO	FACU	PE	FACU	FAC	FACU	0.095108696	0
Rudbeckia hirta	BLACK-EYED SUSAN	1	tolerant	native	forb	full	DI	FACU-	PE	FACU	FACU	FACU	0.013586957	0.013586957
Schizachyrium scoparium	LITTLE BLUESTEM	5	midrange	native	grass	full	MO	FACU-	PE	FACU	FACU	FACU	0.135869565	0.679347826
Setaria glauca	YELLOW FOXTAIL GRASS	0	tolerant	adventive	grass	advent	MO	FAC	AN	FAC	FAC	FAC	0.013586957	0
Solanum carolinense	HORSE NETTLE	0	tolerant	adventive	forb	advent	DI	UPL	PE	FACU	FACU	FACU	0.054619565	0
Sorghastrum nutans	INDIAN GRASS	5	midrange	native	grass	full	MO	UPL	PE	FACU	FACU	FACU	0.000271739	0.001358696
Symphotrichum lanceolatum	EASTERN LINED ASTER	3	midrange	native	forb	full	DI	(FACW)	PE	FACW	FAC	FACW	0.014130435	0.042391304
Toxicodendron radicans	POISON-IVY	1	tolerant	native	vine	partial	DI	FAC	W	FAC	FAC	FAC	0.067934783	0.067934783
Vernonia gigantea	TALL IRONWEED	2	tolerant	native	forb	full	DI	FAC	PE	FAC	FAC	FAC	0.027173913	0.054347826
Vitis riparia	RIVERBANK GRAPE	3	midrange	native	vine	partial	DI	FACW	W	FACW	FACW	FAC	0.000271739	0.000815217

Wetland 203-Impact South

Site Information						
Site Name:	Yellowbud-W0203 Impact South				Site Code:	
County:	Ross	Sampling date(s):	9/8/2020			
Collector(s):	C.Jansing, B. Hess, K. Hillier, M. Reed		Affiliation:	Cardno Inc		
Phone number:	513-833-6392	email address:	cori.jansing@cardno.com		Create Summary Report	
Plot Information		VIBI Calculation Summary Information				
General Plot Information		Metric	Value		VIBI - Metric Score	
			Statewide	ACOE Region	Statewide	ACOE Region
Monitoring Type	VIBI & VIBI FQ	Carex	4	4	7	7
Monitor Event	1st	Cyperaceae	6	6	NA	NA
Total Modules	10	Dicot	28	28	10	10
Intensive Modules	4	Shade	5	5	NA	NA
Plot Configuration	VIBI-Std (2x5)	Shrub	0	0	0	0
Area (ha)	0.10	Hydrophyte	28	27	7	7
Latitude	39.498490	Seedless Vascular Plant	0	0	NA	NA
Longitude	-83.062190	Annual/Perennial ratio	0.21	0.21	7	7
Centerline	53	FQAI	15.49	15.49	7	7
Army Corps Region	MW	Weighted C of C	2.30	2.30	NA	NA
Plant Community Information		%bryophyte	0.00%	0.00%	NA	NA
VEG Class	EMERGENT	%hydrophyte	66.88%	66.82%	NA	NA
1st Plant Community		%sensitive	0.17%	0.17%	0	0
Veg. Group	Wet meadow	%tolerant	39.33%	39.33%	7	7
Veg. Modifier	other (specify dominants)	%invasive graminoids	4.32%	4.32%	7	7
Other		Pole timber (small tree)	0.00	0.00	NA	NA
2nd Plant Community		Subcanopy IV	0.19	0.19	NA	NA
VEG Class		Canopy IV	0.16	0.16	NA	NA
Veg. Group		Biomass	503	503	3	3
Veg. Modifier		%unvegetated	NA	NA	NA	NA
Other		Informational Parameters				
HGM Information		stems/ha wetland trees	120.00	120.00		
Primary HGM Class	DEPRESSION	stems/ha wetland shrubs	40.00	40.00		
Sub class	Surface water	%buttonbush	0.00%	0.00%		
Secondary HGM Class		%perennial native hydrophytes	68.38%	67.99%		
Sub class		%perennial native	81.69%	81.69%		
		%perennial	98.11%	98.11%		
Sub or Super Sample	NO	%adventives	17.86%	17.86%		
% Sub or Super Sample	100%	%open water	0.00%	0.00%		
Total plot canopy closure %		%unvegetated open water	0.00%	0.00%		
Total plot herbaceous cover %		%bare ground	0.00%	0.00%		
		Wetness Index	0.80	0.80		
		VIBI Total Score:		55	55	33
		Average %Cover of Plot:	225.44%			
VIBI-TEMPLATE VERSION: 2015.2		* If total %cover is < 75% for non-forested veg classes, then weighted CofC VIBI-FQ metric score is proportioned.				

Datasheet 1

	Module			Module			Module			Module			Module			Residual
	2			3			8			9			T _{max}			
	Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner		
	2	4		2	4		2	4		2	4		2	4		
species	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Cover Class
%open water	1		0	1		0	1		0	1		0	1			
%unvegetated open water	1		0	1		0	1		0	1		0	1			
%bare ground	1		0	1		0	1		0	1		0	1			
%litter cover	1		0	1		0	1		0	1		0	1			
Aster pilosus	4	4	8		2	5	3		5	4	3	3				
Phyla lanceolata	4	1	9	4	4	9	4	2	8	3	4	8				
Aster ericoides	4	3	5	3		6	2	2	5	2		5				
Sparganium eurycarpum	4		2													
Eleocharis erythropoda	4	4	8	2	4	6	4		4		4	7				
Asclepias incarnata	3	2	4	4		5		1	3		1	2				
Populus deltoides	2		3		1	3		1	3		1	2				
Carex frankii	2		3		3	4	4		5	3	3	4				
Alisma subcordatum	2		4	2	2	5	2		4							
Lycopus americanus	2	2	6	4		5	2		3	2		3				
Lythrum alatum	2		1													
Leersia oryzoides		4	4	4	4	6	2	2	5							
Rumex crispus		2	3		2	5	3		5	2		5				
Festuca elatior		2	3	4	4	5	4	4	7	4	4	7				
Typha angustifolia		1	7				2		3							
Xanthium strumarium		1	5	3	3	4	3		2	3	2	3				
Juncus torreyi		1	5	4		6		3	5	2		4				
Mentha arvensis		1	4	2		2										
Campsis radicans		1	4		1	1		1	1							
Morus alba		1	1					1	1							
Mimulus ringens		1	1													
Fraxinus pennsylvanica		1	1													
Ludwigia alternifolia		1	1													
Abutilon theophrasti				3												
Carex tribuloides			2				2	2	2		2					
Carex vulpinoidea			2					2	2	3	2					
Ambrosia artemisiifolia			1							2						
Polygonum pensylvanicum			2													
Carex lupuliformis			1					1	3							
Sida spinosa							2		1							
Penthorum sedoides							2		2							
Scirpus pedicellatus							2	3	7	2	4					
Bidens frondosa							2	2	4	3						
Andropogon gerardii								4	5		2					
Trifolium hybridum								4	2							
Symphyotrichum pilosum								3	2		1					
Echinochloa muricata								2	1							
Ludwigia polycarpa								2	2	2	2					
Vernonia gigantea							2		3							
Trifolium pratense								1	2							
Daucus carota								1	1							
Vitis riparia								1	1							
Solidago canadensis								1	2	2	4					
Aster lanceolatus								1	2	4						
Asclepias syriaca											1					
Juncus marginatus											1					
Solanum carolinense											1					
Toxicodendron radicans											1					
Ipomoea purpurea												1				
Medicago lupulina												1				
Sorghastrum nutans												1				
Apocynum cannabinum												1				
Convolvulus arvensis																
Agrostis gigantea																1
Cornus drummondii																1
Phleum pratense																1
Robinia pseudoacacia																1
Dactylis glomerata																1
Juncus nodosus																1
Butomus umbellatus																1
Panicum virgatum																1
Acer saccharinum																1

Datasheet 2

			size class (cm) woody stems >1m tall																				
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
mod #	Veg Species	%sub	clump	0<1	1<2.5	2.5<5	5<10	10 <15	15 <20	20 <25	25 <30	30 <35	35 <40	>40-1	>40-2	>40-3	>40-4	>40-5	>40-6	>40-7	>40-8	>40-9	>40-10
10	Cornus drummondii	1.00	4																				
10	Robinia pseudoacacia	1.00		2																			
9	Populus deltoides	1.00	1																				
8	Populus deltoides	1.00	1																				
3	Populus deltoides	1.00		1																			
2	Populus deltoides	1.00	2	2																			
2	Fraxinus pennsylvanica	1.00		1																			
1	Acer saccharinum	1.00		2																			

Biomass

Bio Mass Collected	YES
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Sample Area (m^2)	0.1
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Module	Corner	Sample Number	Area Sample (m2)	Weight w/bag (g)	Bag Weight (g)	Actual or Derived	Net Weight (g)	g/m2
2	2	1	0.1	97	55	A	42.0	420
2	4	2	0.1	102	55	A	47.0	470
3	2	3	0.1	95	55	A	40.0	400
3	4	4	0.1	115	55	A	60.0	600
8	2	5	0.1	117	55	A	62.0	620
8	4	6	0.1	106	55	A	51.0	510
9	2	7	0.1	99	55	A	44.0	440
9	4	8	0.1	111	55	A	56.0	560
		9	0.1			A	0.0	ND
		10	0.1			A	0.0	ND

Species Summary

Species	Common Name	CofC	Tolerance	Nativity	Form	Shade	Type	WET	Habit	EMP	MW	NCNE	Relative Cover	Weighted CofC
Abutilon theophrasti	VELVETLEAF		0 tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0	0
Acer saccharinum	SILVER MAPLE		3 midrange	native	tree	tree	DI	FACW	W	FACW	FACW	FACW	1.10893E-05	3.32679E-05
Agrostis gigantea	REDTOP		0 tolerant	adventive	grass	advent	MO	FACW	PE	FACW	FACW	FACW	1.10893E-05	0
Alisma subcordatum	SOUTHERN WATER-PLANTAIN		2 tolerant	native	forb	full	MO	OBL	PE	OBL	OBL	OBL	0.016079488	0.032158976
Ambrosia artemisiifolia	COMMON RAGWEED		0 tolerant	native	forb	full	DI	FACU	AN	FACU	FACU	FACU	1.10893E-05	0
Andropogon gerardii	BIG BLUESTEM		5 midrange	native	grass	full	MO	FAC	PE	FAC	FAC	FACU	0.008316977	0.041584883
Apocynum cannabinum	INDIAN HEMP		1 tolerant	native	forb	full	DI	FACU	PE	FACU	FAC	FAC	1.10893E-05	1.10893E-05
Asclepias incarnata	SWAMP MILKWEED		4 midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.014416093	0.057664371
Asclepias syriaca	COMMON MILKWEED		1 tolerant	native	forb	full	DI	FACU-	PE	FACU	FACU	UPL	0	0
Aster ericoides	WHITE HEATH ASTER		2 tolerant	native	forb	full	DI	FACU	PE	FACU	FACU	FACU	0.044357209	0.088714417
Aster lanceolatus	EASTERN LINED ASTER		3 midrange	native	forb	full	DI	(FACW)	PE	FACW	FAC	FACW	0.000554465	0.001663395
Aster pilosus	AWL ASTER		1 tolerant	native	forb	full	DI	UPL	PE	FAC	FACU	FACU	0.087605487	0.087605487
Bidens frondosa	DEVIL'S BEGGAR'S-TICK		2 tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.003881256	0.007762512
Butomus umbellatus	FLOWERING-RUSH		0 tolerant	adventive	forb	full	MO	OBL	PE	OBL	OBL	OBL	1.10893E-05	0
Campsis radicans	TRUMPET-CREEPER		1 tolerant	native	vine	full	DI	FAC	W	FAC	FACU	FAC	0.003903434	0.003903434
Carex frankii	FRANK'S SEDGE		2 tolerant	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.017742883	0.035485767
Carex lupuliformis	FALSE HOP SEDGE		9 sensitive	native	sedge	partial	MO	FACW+	PE	FACW	OBL	OBL	0.001674485	0.015070362
Carex tribuloides	BLUNT BROOM SEDGE		4 midrange	native	sedge	partial	MO	FACW+	PE	FACW	OBL	FACW	0.00110893	0.004435721
Carex vulpinoidea	FOX SEDGE		1 tolerant	native	sedge	full	MO	OBL	PE	OBL	FACW	OBL	0.00110893	0.00110893
Convolvulus arvensis	FIELD BINDWEED		0 tolerant	adventive	forb	advent	DI	(UPL)	PE	(UPL)	(UPL)	(UPL)	0	0
Cornus drummondii	ROUGH-LEAVED DOGWOOD		3 midrange	native	shrub	partial	DI	FAC	W	FAC	FAC	FAC	1.10893E-05	3.32679E-05
Dactylis glomerata	ORCHARD GRASS		0 tolerant	adventive	grass	advent	MO	FACU	PE	FACU	FACU	FACU	1.10893E-05	0
Daucus carota	QUEEN-ANNE'S-LACE		0 tolerant	adventive	forb	advent	DI	(UPL)	BI	UPL	UPL	UPL	1.10893E-05	0
Echinochloa ruyricata	ROUGH BARNYARD GRASS		3 midrange	native	grass	full	MO	FACW+	AN	FACW	OBL	OBL	1.10893E-05	3.32679E-05
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH		4 midrange	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.134180556	0.536722224
Festuca elatior	TALL FESCUE		0 tolerant	adventive	grass	advent	MO	FACU	PE	FACU	FACU	FACU	0.093150138	0
Fraxinus pennsylvanica	GREEN ASH		3 midrange	native	tree	tree	DI	FACW	W	FACW	FACW	FACW	1.10893E-05	3.32679E-05
Ipomoea purpurea	COMMON MORNING-GLORY		0 tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	1.10893E-05	0
Juncus marginatus	GRASS-LEAVED RUSH		4 midrange	native	forb	full	MO	FACW	PE	FACW	FACW	FACW	0	0
Juncus nodosus	KNOTTED RUSH		5 midrange	native	forb	full	MO	OBL	PE	OBL	OBL	OBL	1.10893E-05	5.54465E-05
Juncus torreyi	TORREY'S RUSH		3 midrange	native	forb	full	MO	FACW	PE	FACW	FACW	FACW	0.039921488	0.119764463
Leersia oryzoides	RICE CUT GRASS		1 tolerant	native	grass	full	MO	OBL	PE	OBL	OBL	OBL	0.031604511	0.031604511
Ludwigia alternifolia	SEEDBOX		3 midrange	native	forb	full	DI	FACW+	PE	FACW	OBL	OBL	1.10893E-05	3.32679E-05
Ludwigia polycarpa	FALSE LOOSESTRIFE		5 midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.000554465	0.002772326
Lycopus americanus	AMERICAN WATER-HOREHOUND		3 midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.031050046	0.093150138
Lythrum alatum	WINGED LOOSESTRIFE		6 sensitive	native	forb	full	DI	FACW+	PE	FACW	OBL	OBL	1.10893E-05	6.65358E-05
Medicago lupulina	BLACK MEDICK		0 tolerant	adventive	forb	advent	DI	UPL	AN	FACU	FACU	FACU	1.10893E-05	0
Mentha arvensis	FIELD MINT		2 tolerant	native	forb	full	DI	FACW	PE	FACW	FACW	FACW	0.004435721	0.008871442
Mimulus ringens	COMMON MONKEY-FLOWER		4 midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	1.10893E-05	4.43572E-05
Morus alba	WHITE MULBERRY		0 tolerant	adventive	tree	advent	DI	UPL	W	UPL	FAC	FACU	2.21786E-05	0
Panicum virgatum	SWITCH GRASS		4 midrange	native	grass	full	MO	FAC	PE	FAC	FAC	FAC	1.10893E-05	4.43572E-05
Penthorum sedoides	DITCH-STONECROP		2 tolerant	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.000554465	0.00110893
Phleum pratense	TIMOTHY		0 tolerant	adventive	grass	advent	MO	FACU	PE	FACU	FACU	FACU	1.10893E-05	0
Phyla lanceolata	FOG-FRUIT		3 midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.327134413	0.98140324
Polygonum pensylvanicum	PINKWEED		0 tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.000554465	0
Populus deltoides	EASTERN COTTONWOOD		3 midrange	native	tree	tree	DI	FAC	W	FAC	FAC	FAC	0.005544651	0.016633953
Robinia pseudoacacia	BLACK LOCUST		0 tolerant	native	tree	tree	DI	FACU-	W	FACU	FACU	FACU	1.10893E-05	0
Rumex crispus	CURLY DOCK		0 tolerant	adventive	forb	advent	DI	FACU	PE	FAC	FAC	FAC	0.026614325	0
Scirpus pedicellatus	STALKED BULRUSH		3 midrange	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.041584883	0.124754649
Sida spinosa	PRICKLY SIDA		0 tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	1.10893E-05	0
Solanum carolinense	HORSE NETTLE		0 tolerant	adventive	forb	advent	DI	UPL	PE	FACU	FACU	FACU	0	0
Solidago canadensis	CANADA GOLDENROD		1 tolerant	native	forb	full	DI	FACU	PE	FACU	FACU	FACU	0.000554465	0.000554465
Sorghastrum nutans	INDIAN GRASS		5 midrange	native	grass	full	MO	UPL	PE	FACU	FACU	FACU	1.10893E-05	5.54465E-05
Sparganium eurycarpum	GIANT BUR-REED		4 midrange	native	forb	full	MO	OBL	PE	OBL	OBL	OBL	0.000554465	0.00221786
Symphytotrichum pilosum	AWL ASTER		1 tolerant	native	forb	full	DI	UPL	PE	FAC	FACU	FACU	0.000554465	0.000554465
Toxicodendron radicans	POISON-IVY		1 tolerant	native	vine	partial	DI	FAC	W	FAC	FAC	FAC	0	0
Trifolium hybridum	ALSIKE CLOVER		0 tolerant	adventive	forb	advent	DI	FACU-	PE	FACU	FACU	FACU	0.000554465	0
Trifolium pratense	RED CLOVER		0 tolerant	adventive	forb	advent	DI	FACU-	PE	FACU	FACU	FACU	0.000554465	0
Typha angustifolia	NARROW-LEAVED CAT-TAIL		0 tolerant	adventive	forb	advent	MO	OBL	PE	OBL	OBL	OBL	0.043248278	0
Vernonia gigantea	TALL IRONWEED		2 tolerant	native	forb	full	DI	FAC	PE	FAC	FAC	FAC	0.001663395	0.003326791
Vitis riparia	RIVERBANK GRAPE		3 midrange	native	vine	partial	DI	FACW	W	FACW	FACW	FAC	1.10893E-05	3.32679E-05
Xanthium strumarium	COMMON COCKLEBUR		0 tolerant	adventive	forb	advent	DI	FAC	AN	FAC	FAC	FAC	0.014416093	0

Wetland 203- Reference

Site Information									
Site Name:	Yellowbud Solar Farm W203- Reference					Site Code:			
County:		Sampling date(s):							
Collector(s):	C.Jansing, K. Hillier, B. Hess, M. Reed				Affiliation:		Cardno Inc.		
Phone number:	513-833-6392		email address:		cori.jansing@cardno.com		Create Summary Report		
Plot Information			VIBI Calculation Summary Information						
General Plot Information			Metric	Value		VIBI - Metric Score		VIBI FQ	
		VIBI & VIBI FQ	Statewide	ACOE Region	Statewide	ACOE Region	Metric Score		
Monitoring Type		1st	Carex	4	4	7	7	NA	
Monitor Event		1st	Cyperaceae	6	6	NA	NA	NA	
Total Modules		10	Dicot	16	16	3	3	NA	
Intensive Modules		4	Shade	2	2	NA	NA	NA	
Plot Configuration		VIBI-Std (2x5)	Shrub	0	0	0	0	NA	
Area (ha)		0.10	Hydrophyte	21	22	7	7	NA	
Latitude		39.497920	Seedless Vascular Plant	1	1	NA	NA	NA	
Longitude		-83.062860	Annual/Perennial ratio	0.22	0.22	7	7	NA	
Centerline		69	FQAI	13.21	13.21	3	3	8.01	
Army Corps Region		MW	Weighted C of C	3.54	3.54	NA	NA	29.46	
Plant Community Information			%bryophyte	0.00%	0.00%	NA	NA	NA	
VEG Class		EMERGENT	%hydrophyte	82.49%	82.93%	NA	NA	NA	
1st Plant Community			%sensitive	10.10%	10.10%	7	7	NA	
Veg. Group		Wet meadow	%tolerant	15.63%	15.63%	10	10	NA	
Veg. Modifier		other (specify dominants)	%invasive graminoids	0.77%	0.77%	10	10	NA	
Other			Pole timber (small tree)	0.00	0.00	NA	NA	NA	
2nd Plant Community			Subcanopy IV	0.00	0.00	NA	NA	NA	
VEG Class			Canopy IV	0.18	0.18	NA	NA	NA	
Veg. Group			Biomass	629	629	3	3	NA	
Veg. Modifier			%unvegetated	NA	NA	NA	NA	NA	
Other			Informational Parameters						
HGM Information			stems/ha wetland trees	210.00	210.00				
Primary HGM Class		DEPRESSION	stems/ha wetland shrubs	0.00	0.00				
Sub class		Surface water	%buttonbush	0.00%	0.00%				
Secondary HGM Class			%perennial native hydrophytes	82.38%	82.82%				
Sub class			%perennial native	95.52%	95.52%				
			%perennial	96.35%	96.35%				
Sub or Super Sample		NO	%adventives	3.98%	3.98%				
% Sub or Super Sample		100%	%open water	0.00%	0.00%				
Total plot canopy closure %			%unvegetated open water	0.00%	0.00%				
Total plot herbaceous cover %			%bare ground	0.00%	0.00%				
			Wetness Index	0.86	0.86				
			VIBI Total Score:		57	57	37		
			Average %Cover of Plot:		226.40%				
VIBI-TEMPLATE VERSION:			2015.2		* If total %cover is < 75% for non-forested veg classes, then weighted CofC VIBI-FQ metric score is proportioned.				

Datasheet 1

	Module			Module			Module			Module			Module			T _{sum}	Residual
	2			3			8			9							
	Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner			
	2	4		2	4		2	4		2	4						
species	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Cover Class	
%open water	1		0	1		0	1		0	1		0	1				
%unvegetated open water	1		0	1		0	1		0	1		0	1				
%bare ground	1		0	1		0	1		0	1		0	1				
%litter cover	1		0	1		0	1		0	1		0	1				
Asclepias incarnata	3	4	5	3	3	6	3	4	7	3	3	7					
Eleocharis erythropoda	3	4	6	2	4	8	4	4	6								
Polypodium appalachianum	2	4	8	4		5				3		6					
Bidens frondosa		4	2														
Phyla lanceolata	4	4	9	4	4	9	4	4	9	4	4	9					
Lycopus americanus		4	2	2	4	4				2		4					
Leersia oryzoides	2	3	5	4		4											
Carex frankii	2	3	4	4	2	4		1	4								
Aster pilosus	2	2	3		3	6	2	2	2	2		5					
Mentha arvensis		2	3														
Alisma subcordatum	4		6	2	2	6	4	2	5	2	2	5					
Xanthium strumarium	2		4	2	2	6	2	2	4	2		4					
Sparganium eurycarpum	2		3				2	4	7	4	4	8					
Alisma triviale	2		2		2	2	3		3	2		3					
Typha angustifolia		1	4	4		4											
Populus deltoides		1	1														
Aster ericoides		1	2														
Acer saccharinum		1	2		1	2		1	3								
Fraxinus pennsylvanica		1	2					1	2								
Abutilon theophrasti		1	1							3	2	2					
Morus alba		1	1														
Carex vulpinoidea		1	1	4	2	2											
Bidens sp.					2	4											
Juncus torreyi								1	3								
Festuca elatior					1	2											
Polygonum pensylvanicum					1	1					2	2					
Carex lupulina								2	6								
Schoenoplectus tabernaemontani											1	4					
Penthorum sedoides																1	
Ulmus americana																1	
Campsis radicans																1	
Rumex crispus																1	
Carex tribuloides																1	
Mimulus ringens																1	
Acer rubrum																	

Datasheet 2

			size class (cm) woody stems >1m tall																				
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
mod #	Veg Species	%sub	clump	0<1	1<2.5	2.5<5	5<10	10 - <15	15 - <20	20 - <25	25 - <30	30 - <35	35 - <40	>40-1	>40-2	>40-3	>40-4	>40-5	>40-6	>40-7	>40-8	>40-9	>40-10
4	Acer saccharinum	1.00	2																				
4	Fraxinus pennsylvanica	1.00		1																			
4	Morus alba	1.00		1																			
4	Ulmus americana	1.00		3																			
5	Ulmus americana	1.00		1																			
6	Acer saccharinum	1.00		2																			
6	Ulmus americana	1.00		1																			
6	Morus alba	1.00		1																			
7	Acer saccharinum	1.00	1	1																			
7	Ulmus americana	1.00		1																			
8	Fraxinus pennsylvanica	1.00		1																			
8	Acer saccharinum	1.00		2																			
10	Fraxinus pennsylvanica	1.00		1																			
1	Fraxinus pennsylvanica	1.00		1																			
2	Morus alba	1.00		1																			
2	Populus deltoides	1.00		1																			
3	Acer saccharinum	1.00	2																				

Biomass

Bio Mass Collected		YES						
Sample Area (m^2)		0.1						
Module	Corner	Sample Number	Area Sample (m2)	Weight w/bag (g)	Bag Weight (g)	Actual or Derived	Net Weight (g)	g/m2
2	2	1	0.1	105	55	A	50.0	500
2	4	2	0.1	123	55	A	68.0	680
3	2	3	0.1	135	55	A	80.0	800
3	4	4	0.1	97	55	A	42.0	420
8	2	5	0.1	115	55	A	60.0	600
8	4	6	0.1	120	55	A	65.0	650
9	2	7	0.1	130	55	A	75.0	750
9	4	8	0.1	118	55	A	63.0	630
		9	0.1			A	0.0	ND
		10	0.1			A	0.0	ND

Species Summary

Species	Common Name	CofC	Tolerance	Nativity	Form	Shade	Type	WET	Habit	EMP	MW	NCNE	Relative Cover	Weighted CofC
Asclepias incarnata	SWAMP MILKWEED	4	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.110422809	0.441691236
Eleocharis erythropoda	RED-FOOTED SPIKE-RUSH	4	midrange	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.107662239	0.430648955
Polypodium appalachianum	APPALACHIAN POLYPODY	8	sensitive	native	fern	shade	SVP	(UPL)	PE	(UPL)	(UPL)	(UPL)	0.096619958	0.772959663
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	2	tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.000552114	0.001104228
Phyla lanceolata	FOG-FRUIT	3	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.37543755	1.126312651
Lycopus americanus	AMERICAN WATER-HOREHOUND	3	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	0.008281711	0.024845132
Leersia oryzoides	RICE CUT GRASS	1	tolerant	native	grass	full	MO	OBL	PE	OBL	OBL	OBL	0.012146509	0.012146509
Carex frankii	FRANK'S SEDGE	2	tolerant	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.011594395	0.02318879
Aster pilosus	AWL ASTER	1	tolerant	native	forb	full	DI	UPL	PE	FAC	FACU	FACU	0.029814158	0.029814158
Mentha arvensis	FIELD MINT	2	tolerant	native	forb	full	DI	FACW	PE	FACW	FACW	FACW	0.001656342	0.003312684
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	2	tolerant	native	forb	full	MO	OBL	PE	OBL	OBL	OBL	0.055211404	0.110422809
Xanthium strumarium	COMMON COCKLEBUR	0	tolerant	adventive	forb	advent	DI	FAC	AN	FAC	FAC	FAC	0.030918387	0
Sparganium eurycarpum	GIANT BUR-REED	4	midrange	native	forb	full	MO	OBL	PE	OBL	OBL	OBL	0.112079151	0.448316604
Alisma triviale	NORTHERN WATER-PLANTAIN	6	sensitive	native	forb	full	MO	(OBL)	PE	OBL	OBL	OBL	0.004416912	0.026501474
Typha angustifolia	NARROW-LEAVED CAT-TAIL	0	tolerant	adventive	forb	advent	MO	OBL	PE	OBL	OBL	OBL	0.007729597	0
Populus deltoides	EASTERN COTTONWOOD	3	midrange	native	tree	tree	DI	FAC	W	FAC	FAC	FAC	1.10423E-05	3.31268E-05
Aster ericoides	WHITE HEATH ASTER	2	tolerant	native	forb	full	DI	FACU	PE	FACU	FACU	FACU	0.000552114	0.001104228
Acer saccharinum	SILVER MAPLE	3	midrange	native	tree	tree	DI	FACW	W	FACW	FACW	FACW	0.00276057	0.008281711
Fraxinus pennsylvanica	GREEN ASH	3	midrange	native	tree	tree	DI	FACW	W	FACW	FACW	FACW	0.001104228	0.003312684
Abutilon theophrasti	VELVETLEAF	0	tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0.000563156	0
Morus alba	WHITE MULBERRY	0	tolerant	adventive	tree	advent	DI	UPL	W	UPL	FAC	FACU	1.10423E-05	0
Carex vulpinoidea	FOX SEDGE	1	tolerant	native	sedge	full	MO	OBL	PE	OBL	FACW	OBL	0.000563156	0.000563156
Bidens sp.	BEGGAR'S-TICKS	-1	ND	0	forb	ND	DI	ND	AN	ND	ND	ND	0.003864798	
Juncus torreyi	TORREY'S RUSH	3	midrange	native	forb	full	MO	FACW	PE	FACW	FACW	FACW	0.001656342	0.004969026
Festuca elatior	TALL FESCUE	0	tolerant	adventive	grass	advent	MO	FACU	PE	FACU	FACU	FACU	0.000552114	0
Polygonum pensylvanicum	PINKWEED	0	tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.000563156	0
Carex lupulina	HOP SEDGE	3	midrange	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.019323992	0.057971975
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	2	tolerant	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	0.003864798	0.007729597
Penthorum sedoides	DITCH-STONECROP	2	tolerant	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	1.10423E-05	2.20846E-05
Ulmus americana	AMERICAN ELM	2	tolerant	native	tree	tree	DI	FACW-	W	FACW	FACW	FACW	1.10423E-05	2.20846E-05
Campsis radicans	TRUMPET-CREEPER	1	tolerant	native	vine	full	DI	FAC	W	FAC	FACU	FAC	1.10423E-05	1.10423E-05
Rumex crispus	CURLY DOCK	0	tolerant	adventive	forb	advent	DI	FACU	PE	FAC	FAC	FAC	1.10423E-05	0
Carex tribuloides	BLUNT BROOM SEDGE	4	midrange	native	sedge	partial	MO	FACW+	PE	FACW	OBL	FACW	1.10423E-05	4.41691E-05
Mimulus ringens	COMMON MONKEY-FLOWER	4	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	1.10423E-05	4.41691E-05
Acer rubrum	RED MAPLE	2	tolerant	native	tree	tree	DI	FAC	W	FAC	FAC	FAC	0	0

Wetland 204- Impact

Site Information			
Site Name:	Yellowbud Solar Farm-W204-Impact		Site Code:
County:	Ross	Sampling date(s):	9/10/2020
Collector(s):	Ben Hess, Kaitlin Hillier, and Macenzie Reed		Affiliation: Cardno Inc.
Phone number:	440-343-1148	email address:	kaitlin.hillier@cardno.com
Create Summary Report			

Plot Information	
General Plot Information	
Monitoring Type	VIBI & VIBI FQ
Monitor Event	1st
Total Modules	10
Intensive Modules	4
Plot Configuration	VIBI-Std (2x5)
Area (ha)	0.10
Latitude	39.499090
Longitude	-83.046270
Centerline	299
Army Corps Region	MW
Plant Community Information	
VEG Class	EMERGENT
1st Plant Community	
Veg. Group	Wet meadow
Veg. Modifier	other (specify dominants)
Other	Cocklebur
2nd Plant Community	
VEG Class	FOREST
Veg. Group	Swamp forest
Veg. Modifier	other (specify dominants)
Other	Green Ash
HGM Information	
Primary HGM Class	DEPRESSION
Sub class	Surface water
Secondary HGM Class	
Sub class	
Sub or Super Sample	NO
% Sub or Super Sample	100%
Total plot canopy closure %	10%
Total plot herbaceous cover %	95%

VIBI Calculation Summary Information					
Metric	Value		VIBI - Metric Score		VIBI FQ
	Statewide	ACOE Region	Statewide	ACOE Region	Metric Score
Carex	3	3	3	3	NA
Cyperaceae	6	6	NA	NA	NA
Dicot	26	26	10	10	NA
Shade	7	7	NA	NA	NA
Shrub	0	0	0	0	NA
Hydrophyte	26	25	7	7	NA
Seedless Vascular Plant	0	0	NA	NA	NA
Annual/Perennial ratio	0.82	0.82	0	0	NA
FQAI	13.29	13.29	3	3	8.23
Weighted C of C	0.39	0.39	NA	NA	3.27
%bryophyte	0.00%	0.00%	NA	NA	NA
%hydrophyte	37.86%	37.70%	NA	NA	NA
%sensitive	2.44%	2.44%	0	0	NA
%tolerant	95.00%	95.00%	0	0	NA
%invasive graminoids	0.00%	0.00%	10	10	NA
Pole timber (small tree)	0.02	0.02	NA	NA	NA
Subcanopy IV	0.00	0.00	NA	NA	NA
Canopy IV	0.23	0.23	NA	NA	NA
Biomass	600	600	3	3	NA
%unvegetated	NA	NA	NA	NA	NA
Informational Parameters					
stems/ha wetland trees	360.00	360.00			
stems/ha wetland shrubs	30.00	30.00			
%buttonbush	0.00%	0.00%			
%perennial native hydrophytes	26.91%	26.91%			
%perennial native	26.97%	26.97%			
%perennial	45.13%	45.13%			
%adventives	59.37%	59.37%			
%open water	0.00%	0.00%			
%unvegetated open water	0.00%	0.00%			
%bare ground	0.00%	0.00%			
Wetness Index	0.67	0.67			
VIBI Total Score:					
Average %Cover of Plot:		230.57%			
* If total %cover is < 75% for non-forested veg classes, then weighted CofC VIBI-FQ metric score is proportioned.					

VIBI-TEMPLATE VERSION: 2015.2

Datasheet 1

	Module			Module			Module			Module			Module			Residual
	2			3			8			9			T _{tot}			
	Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner		Corner	Corner		
	2	4		2	4		2	4		2	4					
species	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Level	Level	Cover Class	Cover Class
%open water	1		0	1		0	1		0	1		0	1			
%unvegetated open water	1		0	1		0	1		0	1		0	1			
%bare ground	1		0	1		0	1		0	1		0	1			
%litter cover	1		0	1		0	1		0	1		0	1			
Xanthium strumarium	3	4	9	4	4	9	4	4	9	4	4	8				
Cuscuta indecora		4	4	4	4	5	2	3	5	2		4				
Cyperus esculentus	4	4	7	4	4	8	4	4	8	4	4	8				
Sida spinosa	4	4	6	3	3	6	4	4	6	4	4	4				
Leersia oryzoides	2	4	4	4	4	5		2	4	2		3				
Ipomoea lacunosa	4	4	3	2	3	2		2	4	3	4	4				
Persicaria pensylvanica	2	3	2		2	2		1	3	3		3				
Butomus umbellatus	4	2	6	4	4	7	4	4	7	4	4	7				
Ipomoea purpurea		2	2													
Echinochloa muricata	4	2	3		1	2		1	2							
Carex muskingumensis	2		2													
Schoenoplectus mucronatus	2		5	4	2	6	4	2	4	2	2	5				
Abutilon theophrasti		1	2		2	2	3		3		1	2				
Eleocharis obtusa	2		2	4	2	7	4	4	7							
Rumex crispus	2		2					2	2		1	2				
Echinochloa crus-galli	2		2				3		2		1	3				
Acalypha rhomboidea	2		2								2	3				
Bidens comosa		1	2	4		5	2	4	2		2	3				
Setaria faberi		1	2													
Symphyotrichum lanceolatum		1	2					3	2	2		2				
Alisma subcordatum		1	3				2		3		1	3				
Ambrosia artemisiifolia					1	2		4	2							
Juncus acuminatus					1	2										
Amaranthus tuberculatus							2		1		2	1				
Symphyotrichum ericoides											1	2				
Acer negundo																1
Celtis occidentalis																1
Campsis radicans																1
Toxicodendron radicans																1
Penthorum sedoides																1
Rosa multiflora																1
Elymus virginicus																1
Symphyotrichum lateriflorum																1
Carex frankii																1
Typha angustifolia																1
Geum canadense																1
Bidens frondosa																1
Acer saccharinum																1
Ulmus americana																1
Asclepias incarnata																1
Juncus tenuis																1
Chamaecrista fasciculata																1
Lythrum alatum																1
Panicum dichotomiflorum																1
Lycopus americanus																1
Carex vulpinoidea																1
Schoenoplectus tabernaemontani																1
Cornus racemosa																1
Fraxinus pennsylvanica																1
Gleditsia triacanthos																1

Datasheet 2

			size class (cm) woody stems >1m tall																				
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
mod #	Veg Species	%sub	clump	0<-1	1<-2.5	2.5<-5	5<-10	10 - <15	15 - <20	20 - <25	25 - <30	30 - <35	35 - <40	>40-1	>40-2	>40-3	>40-4	>40-5	>40-6	>40-7	>40-8	>40-9	>40-10
1	Lonicera maackii	1.00	2																				
1	Cornus racemosa	1.00	3																				
1	Ulmus americana	1.00			1																		
1	Rosa multiflora	1.00	1																				
1	Fraxinus pennsylvanica	1.00		6	2	3	3																
10	Fraxinus pennsylvanica	1.00	1	6	3	5	5																
10	Gleditsia triacanthos	1.00	1																				

Biomass

Bio Mass Collected	YES
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Sample Area (m^2)	0.1
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Module	Corner	Sample Number	Area Sample (m2)	Weight w/bag (g)	Bag Weight (g)	Actual or Derived	Net Weight (g)	g/m2
2	2	1	0.1	125	55	A	70.0	700
2	4	2	0.1	106	55	A	51.0	510
3	2	3	0.1	112	55	A	57.0	570
3	4	4	0.1	118	55	A	63.0	630
8	2	5	0.1	97	55	A	42.0	420
8	4	6	0.1	135	55	A	80.0	800
9	2	7	0.1	125	55	A	70.0	700
9	4	8	0.1	102	55	A	47.0	470
		9	0.1			A	0.0	ND
		10	0.1			A	0.0	ND

Species Summary

Species	Common Name	CofC	Tolerance	Nativity	Form	Shade	Type	WET	Habit	EMP	MW	NCNE	Relative Cover	Weighted CofC
Abutilon theophrasti	VELVETLEAF	0	tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0.003252844	0
Acalypha rhomboidea	RHOMBIC THREE-S. MERCURY	0	tolerant	native	forb	partial	DI	FACU-	AN	FACU	FACU	FACU	0.002168562	0
Acer negundo	BOX ELDER	3	midrange	native	tree	tree	DI	FAC+	W	FAC	FAC	FAC	1.08428E-05	3.25284E-05
Acer saccharinum	SILVER MAPLE	3	midrange	native	tree	tree	DI	FACW	W	FACW	FACW	FACW	1.08428E-05	3.25284E-05
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	2	tolerant	native	forb	full	MO	OBL	PE	OBL	OBL	OBL	0.004879265	0.009758531
Amaranthus tuberculatus	TUBERCLED AMARANTH	1	tolerant	native	forb	full	DI	FACW	AN	FACW	OBL	OBL	2.16856E-05	2.16856E-05
Ambrosia artemisiifolia	COMMON RAGWEED	0	tolerant	native	forb	full	DI	FACU	AN	FACU	FACU	FACU	0.001084281	0
Asclepias incarnata	SWAMP MILKWEED	4	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	1.08428E-05	4.33712E-05
Bidens comosa	SWAMP TICKSEED	3	midrange	native	forb	full	DI	FACW	AN	FACW	OBL	FACW	0.010842812	0.032528435
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	2	tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	1.08428E-05	2.16856E-05
Butomus umbellatus	FLOWERING-RUSH	0	tolerant	adventive	forb	full	MO	OBL	PE	OBL	OBL	OBL	0.140956553	0
Campsis radicans	TRUMPET-CREEPER	1	tolerant	native	vine	full	DI	FAC	W	FAC	FACU	FAC	1.08428E-05	1.08428E-05
Carex frankii	FRANK'S SEDGE	2	tolerant	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	1.08428E-05	2.16856E-05
Carex muskingumensis	MUSKINGUM SEDGE	7	sensitive	native	sedge	shade	MO	OBL	PE	OBL	OBL	OBL	0.000542141	0.003794984
Carex vulpinoidea	FOX SEDGE	1	tolerant	native	sedge	full	MO	OBL	PE	OBL	FACW	OBL	1.08428E-05	1.08428E-05
Celtis occidentalis	HACKBERRY	4	midrange	native	tree	tree	DI	FACU	W	FACU	FAC	FAC	1.08428E-05	4.33712E-05
Chamaecrista fasciculata	PARTRIDGE-PEA	3	midrange	native	forb	full	DI	FACU	AN	FACU	FACU	FACU	1.08428E-05	3.25284E-05
Cornus racemosa	GRAY DOGWOOD	1	tolerant	native	shrub	full	DI	FAC-	W	FAC	FAC	FAC	1.08428E-05	1.08428E-05
Cuscuta indecora	PRETTY DODDER	8	sensitive	native	forb	full	DI	(FAC)	AN	(FAC)	(FAC)	(FAC)	0.023854186	0.190833487
Cyperus esculentus	YELLOW NUT-SEEDGE	0	tolerant	native	sedge	full	MO	FACW	PE	FACW	FACW	FACW	0.243963265	0
Echinochloa crus-galli	BARNYARD GRASS	0	tolerant	adventive	grass	advent	MO	FACU	AN	FAC	FACW	FAC	0.002710703	0
Echinochloa muricata	ROUGH BARNYARD GRASS	3	midrange	native	grass	full	MO	FACW+	AN	FACW	OBL	OBL	0.002710703	0.008132109
Eleocharis obtusa	BLUNT SPIKE-RUSH	1	tolerant	native	sedge	full	MO	OBL	AN	OBL	OBL	OBL	0.081863229	0.081863229
Elymus virginicus	VIRGINIA WILD RYE	3	midrange	native	grass	partial	MO	FACW-	PE	FACW	FACW	FACW	1.08428E-05	3.25284E-05
Fraxinus pennsylvanica	GREEN ASH	3	midrange	native	tree	tree	DI	FACW	W	FACW	FACW	FACW	1.08428E-05	3.25284E-05
Geum canadense	WHITE AVENS	2	tolerant	native	forb	shade	DI	FACU	PE	FACU	FAC	FAC	1.08428E-05	2.16856E-05
Gleditsia triacanthos	HONEY LOCUST	4	midrange	native	tree	tree	DI	FAC-	W	FAC	FACU	FAC	1.08428E-05	4.33712E-05
Ipomoea lacunosa	WHITE MORNING-GLORY	4	midrange	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.009758531	0.039034122
Ipomoea purpurea	COMMON MORNING-GLORY	0	tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0.000542141	0
Juncus acuminatus	SHARP-FRUITED RUSH	4	midrange	native	forb	full	MO	OBL	PE	OBL	OBL	OBL	0.000542141	0.002168562
Juncus tenuis	PATH RUSH	1	tolerant	native	forb	partial	MO	FAC-	PE	FAC	FAC	FAC	1.08428E-05	1.08428E-05
Leersia oryzoides	RICE CUT GRASS	1	tolerant	native	grass	full	MO	OBL	PE	OBL	OBL	OBL	0.017348499	0.017348499
Lycopus americanus	AMERICAN WATER-HOREHOUND	3	midrange	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	1.08428E-05	3.25284E-05
Lythrum alatum	WINGED LOOSESTRIPE	6	sensitive	native	forb	full	DI	FACW+	PE	FACW	OBL	OBL	1.08428E-05	6.50569E-05
Panicum dichotomiflorum	FALL PANIC GRASS	0	tolerant	native	grass	full	MO	FACW-	AN	FACW	FACW	FACW	1.08428E-05	0
Penthorum sedoides	DITCH-STONECROP	2	tolerant	native	forb	full	DI	OBL	PE	OBL	OBL	OBL	1.08428E-05	2.16856E-05
Persicaria pensylvanica	PINKWEED	0	tolerant	native	forb	full	DI	FACW	AN	FACW	FACW	FACW	0.004337125	0
Rosa multiflora	MULTIFLORA ROSE	0	tolerant	adventive	shrub	advent	DI	FACU	W	FACU	FACU	FACU	1.08428E-05	0
Rumex crispus	CURLY DOCK	0	tolerant	adventive	forb	advent	DI	FACU	PE	FAC	FAC	FAC	0.001626422	0
Schoenoplectus mucronatus	RICEFIELD BULRUSH	0	tolerant	adventive	sedge	advent	MO	OBL	PE	OBL	OBL	OBL	0.039034122	0
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	2	tolerant	native	sedge	full	MO	OBL	PE	OBL	OBL	OBL	1.08428E-05	2.16856E-05
Setaria faberi	GIANT FOXTAIL GRASS	0	tolerant	adventive	grass	advent	MO	UPL	AN	UPL	FACU	FACU	0.000542141	0
Sida spinosa	PRICKLY SIDA	0	tolerant	adventive	forb	advent	DI	UPL	AN	UPL	FACU	FACU	0.060719746	0
Symphyotrichum ericoides	WHITE HEATH ASTER	2	tolerant	native	forb	full	DI	FACU	PE	FACU	FACU	FACU	0.000542141	0.001084281
Symphyotrichum lanceolatum	EASTERN LINED ASTER	3	midrange	native	forb	full	DI	(FACW)	PE	FACW	FAC	FACW	0.001626422	0.004879265
Symphyotrichum lateriflorum	CALICO ASTER	2	tolerant	native	forb	shade	DI	FACW-	PE	FACW	FACW	FAC	1.08428E-05	2.16856E-05
Toxicodendron radicans	POISON-IVY	1	tolerant	native	vine	partial	DI	FAC	W	FAC	FAC	FAC	1.08428E-05	1.08428E-05
Typha angustifolia	NARROW-LEAVED CAT-TAIL	0	tolerant	adventive	forb	advent	MO	OBL	PE	OBL	OBL	OBL	1.08428E-05	0
Ulmus americana	AMERICAN ELM	2	tolerant	native	tree	tree	DI	FACW-	W	FACW	FACW	FACW	1.08428E-05	2.16856E-05
Xanthium strumarium	COMMON COCKLEBUR	0	tolerant	adventive	forb	advent	DI	FAC	AN	FAC	FAC	FAC	0.344259273	0

**YELLOWBUD SOLAR, LLC'S SEPTEMBER 28, 2020 RESPONSES
TO STAFF'S SEPTEMBER 21, 2020 DATA REQUESTS**

1. On page 30 of the application, it is stated that: "The estimated cost of the Facility is not anticipated to be substantially different from other Facilities completed by the Applicant." Can you please give some examples of other solar facilities developed by Geronimo and their costs? This information can be considered confidential.

Response: Prairie Wolf Solar, LLC, a subsidiary of Geronimo Energy, A National Grid Company, is currently constructing the 200 MW Prairie Wolf Solar project in Coles County, Illinois. While costs vary from state to state due to various factors, owing to their similarity in size and scope, Geronimo scaled costs from the Prairie Wolf Project to estimate the costs per kW for construction for the Yellowbud Solar Project for purposes of Yellowbud's permit application. Thus, the costs provided for Yellowbud can be approximately scaled to that of a 200 MW project. Geronimo considers the detailed costs from the Prairie Wolf project to be confidential in nature.

States, with similar Midwestern climates to that of Yellowbud, where Geronimo is actively constructing solar projects, or has solar projects in operation include Minnesota and Michigan. The costs per kW of projects in Minnesota and Michigan in many cases exceeded that of Yellowbud, due to economies of scale of Yellowbud as compared to those projects. However, Geronimo drew on the experience from the procurement of equipment, construction, and operation of these projects to better inform the costs associated with Yellowbud.

2. Does Geronimo intend to seek governmental funding or incentives, such as tax abatements, investment tax credits, or production tax credits?

Response: Yellowbud Solar plans to pursue the IRS Solar Investment Tax Credit for the Project. Yellowbud will consider other potential beneficial tax provisions that may apply to the project as available.

3. Can Geronimo provide an estimate of which materials and equipment used for construction and maintenance of the facility will be purchased from companies located in Ohio?

Response: At this time, Yellowbud cannot estimate the sourcing of equipment from any one location for construction and maintenance of the Facility. Negotiations with vendors for equipment are ongoing, and information regarding panel sourcing could impact these negotiations until an agreement is reached. Yellowbud will continue to monitor market

conditions to procure equipment at the best available cost on the open market. Additional information has been provided in question 4, below.

4. Please provide the inputs from the “Project Data” section of the JEDI model that was used to evaluate the economic impact of this project. A screenshot of this information will do.

Response: Table 5 of Exhibit K provides the same data that is listed in the “Project Data” section of the JEDI model for Project Expenditures. This has been submitted under confidential seal as part of Yellowbud’s permit application.

Snips of statewide shares, local tax, and wage information are provided in the screenshots of the Project Data sheet below. As the remaining information can be found in table 5 of exhibit K, which contains confidential information, Yellowbud redacted the monetary information from these screenshots.

Yellowbud conservatively assumed for purposes of its application that all construction materials would be procured from out of state and updated the statewide share in the Project Data appropriately. Yellowbud continues to explore procurement of materials within the state of Ohio, dependent on market considerations and negotiations with manufacturers. Due to uncertainty of sourcing, Yellowbud did not want to overestimate local impacts to statewide share. Yellowbud assumed that materials and technicians for operations and maintenance of the Project would be procured from within state. Services for O&M were assumed to be approximately 60% in state, as some special services may require specialized labor from the surrounding region.

Project Cost Data

Installation Costs

Materials & Equipment

Mounting (rails, clamps, fittings, etc.)

Modules

Electrical (wire, connectors, breakers, etc.)

Inverter

Subtotal

Labor

Installation

Subtotal

Total

Other Costs

Permitting

Other Costs

Business Overhead

Subtotal

Subtotal

Sales Tax (Materials & Equipment Purchases)

Total

Cost

Cost
Per kW

Percent of
Total Cost

Purchased
Locally (%)

Manufactured
Locally (Y or N)

0%

Y

0%

Y

0%

Y

0%

Y

80%

30%

10%

0%

100%

PV System Annual Operating and Maintenance Costs

Labor

Technicians

Subtotal

Materials and Services

Materials & Equipment

Services

Subtotal

Sales Tax (Materials & Equipment Purchases)

Total

Cost

Cost
Per kW

Percent of
Total Cost

Local
Share (%)

100%

Purchased
Locally (%)

Manufactured
Locally (Y or N)

100%

Y

60%

100%

Other Parameters

Financial Parameters

Debt Financing

Percentage financed

Years financed (term)

Interest rate

Tax Parameters

Local Property Tax (percent of taxable value)

Assessed Value (percent of construction cost)

Taxable Value (percent of assessed value)

Taxable Value

Property Tax Exemption (percent of local taxes)

Local Property Taxes

Local Sales Tax Rate

Sales Tax Exemption (percent of local taxes)

Payroll Parameters

Construction and Installation Labor

Construction Workers / Installers

O & M Labor

Technicians

Local Share

0%

85%

1

5%

0%

0%

0%

0

\$0

\$2,466,000

5.75%

100%

100%

100%

Wage per hour

\$23.00

Employer Payroll Overhead

45.6%

Wage per hour

\$24.00

Employer Payroll Overhead

45.6%

**YELLOWBUD SOLAR, LLC'S SEPTEMBER 28, 2020 RESPONSES
TO STAFF'S AUGUST 26, 2020 DATA REQUESTS**

In the Matter of the Application of	)	
Yellowbud Solar, LLC for a	)	
Certificate of Environmental	)	Case No. 20-0972-EL-BGN
Compatibility and Public Need	)	

1. Has the applicant initiated coordination with OEPA and USACE for wetland and stream impact permitting? If yes, please provide a status update on permitting.

Response: Yellowbud recognizes that wetland permitting will be necessary for the Project. Yellowbud has received a jurisdictional determination from the United States Army Corps of Engineers (USACE) for the Project, which identifies USACE jurisdictional waters within the Project Area. Based on the preliminary facility layout, Yellowbud anticipates that all wetland impacts can be permitted under either state or federal General Permits, dependent on jurisdiction. Wetland permitting will be re-evaluated upon development of the final facility layout to ensure compliance with state and federal law. Yellowbud will coordinate with the applicable agency as necessary to implement the necessary permits ahead of any impacts to those resources.

2. The ODNR Rainwater and Land Development Manual recommends a 120 ft. minimum setback to category 3 wetlands. Staff would likely recommend that the applicant maintain this minimum setback except where fill has been permitted through the US Army Corps of Engineers and/or OEPA. Would the Applicant be willing to commit to this setback? If not, please explain if adhering to this setback would impact the viability of the project.

Response: The wetland delineation process identified a single type 3 wetland within the Project Area. This wetland is set back more than 120 feet from the Project within a forested area that will be left intact during construction and operation of the Facility. Yellowbud will maintain a setback of 120 feet from this type 3 wetland. A shapefile of this wetland has been provided to OPSB staff.

In the Matter of the Application of)
Yellowbud Solar, LLC for a Certificate)
of Environmental Compatibility and)
Public Need)

Case No. 20-0972-EL-BGN

**YELLOWBUD SOLAR, LLC'S NOVEMBER 13, 2020 RESPONSES
TO STAFF'S OCTOBER 16, 2020 DATA REQUEST**

1. Please provide a large-scale aerial map that depicts all inhabited residential dwellings adjacent to the project area that have a direct, unobstructed line-of-sight view to the project boundaries. Identify on the map which receptors are participating and non-participating, as well as any nearby roads and highways.

Response: The attached map accounts for topography and screening elements such as structures and vegetation that at least partially screen views of the proposed Yellowbud Solar Project. This analysis was based on the existing conditions of the area surrounding the Project and no assumptions were made regarding future land use or screening measures.

Figure 1
Adjacent Residences
with Unobstructed
Line of Sight

Ross County and Pickaway
County, Ohio

Case No. 20-0972-EL-BGN



Adjacent Residences
with Unobstructed
Line of Sight

- Non-participating
- Participating

Belowground
Collection Line

Inverter

Access Road

PV Panel Area

Gen Tie Line
Alternatives

Collection Substation

O&M Building

Fenceline

Project Area

Parcels



1:6,000

Notes: 1. Basemap: Esri World Imagery, ODOT 2. Map generated in ArcGIS Pro on November 6, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data. 4. Map created by EDR on behalf of Yellowbud Solar, LLC.

**YELLOWBUD SOLAR, LLC'S NOVEMBER 13, 2020 RESPONSES
TO STAFF'S NOVEMBER 2, 2020 DATA REQUEST**

1. Please explain what possible mitigation measures Yellowbud Solar will employ for well locations, as mentioned on page 52 of the application.

Response: Yellowbud will continue to work closely with landowners to ensure that wells are identified across the site. All wells identified will be marked on final construction drawings. For wells located near residences, it is anticipated that no additional mitigation other than avoidance is necessary, as panels and associated construction equipment are significantly set back from those well locations. For any wells identified that will be impacted by construction or operation of the facility, the wells would be decommissioned prior to impacts to the area. The wells would be cut and capped, and any necessary documentation would be completed per local and state law.

2. Please explain how Yellowbud Solar will, during the detailed engineering phase, minimize any potential damage from high wind velocities by proper structural design of the project support equipment at sufficient depths based on the site-specific soil conditions to preclude any adverse influence from high wind velocities.

Response: Yellowbud has completed test borings of the site, previously provided with the Certificate Application as Exhibit C (Geotechnical Report), to determine overall suitability and anticipated range in pile depths for the Project (generally between 10 and 15 feet). Prior to construction, if deemed necessary, Yellowbud will complete further geotechnical evaluation and pull-testing. Pull testing evaluates the lateral and vertical loading to identify soils strength and the pile depth necessary to withstand high wind events. Final geotechnical borings and further pile testing, if required, will support a site specific structural design analysis that incorporates specific wind, snow, seismic, frost and corrosion inputs that will be utilized to complete the engineering requirements and pile design criteria.

3. Please indicate any wind loading precautions or wind equipment ratings that will be included in the final project design.

Response: Yellowbud's final project design will identify the necessary pile type and pile depth across the Project Area to ensure that site specific structural loading requirements and inputs (wind, snow, seismic, frost, and corrosion) are accounted for.

**YELLOWBUD SOLAR, LLC'S NOVEMBER 13, 2020 RESPONSES
TO STAFF'S OCTOBER 16, 2020 DATA REQUEST**

1. How many parcels in agricultural district land would be taken out of service for the life of the project?

Response: Yellowbud Solar Project components are proposed on eight parcels that have been identified as agricultural district land.

2. What is the estimated amount of solid waste that will be generated by the construction of the project in cubic feet, yards or meters?

Response: Construction activities will vary from month to month, and waste generation varies to some degree from project to project. It is anticipated that the Project will generate approximately 400 cubic yards of waste per month during construction. The Project is anticipated to generate approximately 4,800 cubic yards of solid waste over the period of construction.

3. Regarding the decommissioning schedule, Yellowbud Solar has indicated on page 37 of the Application, that decommissioning activities may last approximately 12 to 18 months after the useful life of the facility. Please explain what decommissioning activities would occur after the twelfth month.

Response: Site restoration activities are dependent on weather conditions and site-specific factors. Sometimes these conditions may lead to ongoing re-vegetation and restoration following the removal of the facility components for a period extending to approximately 18 months. It is anticipated that most facility components can be removed within 12 months, but restoration activities may be necessary for a longer period.

4. Have the solar panels under consideration by Yellowbud Solar passed the US EPA's Toxicity Characteristic Leaching Procedure (TCLP) test?

Response: Vendors under consideration for the project have historically certified their modules in compliance with the EPA TCLP, and expect to continue to do so once the modules under consideration begin serial production.

5. According to p. 3 of the Decommissioning Plan, "waste materials that hold no value will be recycled or disposed of via a licensed solid waste disposal facility." Will the solar panels be checked for toxicity or hazardous materials (e.g. RCRA listing), or acceptability of the solid waste facility prior to decommissioning?

Response: As noted above, the panels under consideration have historically been in compliance with the US EPA's TCLP test, and meet the US EPA definition of non-hazardous waste. Should the panels be landfilled, Yellowbud would ensure that they meet all disposal requirements related to the panels and would work with the selected disposal facility to ensure compliance. However, the panels are still anticipated to hold value at the end of the Project's life. Many solar panel manufacturers either have programs or are developing programs to accept panels back to their facility to recycle and reuse most of the components. Various recycling programs are under development that are likely to accept panels at the end of the Project's life.

This foregoing document was electronically filed with the Public Utilities

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Case No(s). 20-0972-EL-BGN

Summary: Exhibit Company Exhibit 3 electronically filed by Mr. Ken Spencer on behalf of Armstrong & Okey, Inc. and Gibson, Karen Sue Mrs.