

## RESPONSES TO OPSB STAFF DATA REQUESTS/REQUESTS FOR INFORMATION

Hog Creek Wind Farm LLC,

Case Nos. 16-1422-EL-BGA and 16-1423-EL-BGA

### Responses E-mailed to Staff on September 23, 2016

1. Please provide the jurisdictional determination from the Army Corps of Engineers on streams and wetlands which would be impacted.

**Response:** *A formal jurisdictional determination was not requested from the U.S. Army Corps of Engineers (USACE) for this Project, but in previous conversations, the USACE indicated that the ditches/streams in the Project area would be considered jurisdictional. In an email dated January 21, 2011, the USACE confirmed that the ditch crossings required for the Project could be covered under Nationwide Permit 12, but a pre-construction notification would not be required. See attached correspondence (Attachment 1).*

*Additionally, Tetra Tech has reviewed the 6 ditches and 1 wetland that would be impacted by the current Project layout, and recommends that these features may also be considered jurisdictional based on the previous guidance provided by USACE.*

2. Please provide shapefiles of the delineations any jurisdictional streams and/or wetlands which will be impacted.

**Response:** *Seven (7) waterways will be impacted by the current Project layout. A zip file labeled "Wetlands\_092316" was provided to Staff on September 23, 2016. Two of these waterway impacts are access roads crossing ditches with culverts, and the rest will be temporary crane walks, or impacts that will be avoided with small adjustments (to be provided to you next week).*

*The zip file provided to Staff included two shapefiles. The one called "Impacted wetlands" includes the full surveyed area for each wetland that would be impacted. The file called "wetlands impacts area" shows the actual area of estimated impacts to each waterway (the 100-foot culverts).*

3. Please provide resource quality evaluations (ORAM, QHEI, and HHEI) on any jurisdictional streams and/or wetlands which will be impacted.

**Response:** *See attached evaluation sheets (Attachment 2).*

## RESPONSES TO OPSB STAFF DATA REQUESTS/REQUESTS FOR INFORMATION

Hog Creek Wind Farm LLC,

Case Nos. 16-1422-EL-BGA and 16-1423-EL-BGA

### Updated Response to Staff Data Request No. 12:

12. Please update the status of Cultural Resources efforts (field work, studies, coordination, etc.) regarding the Amended projects.

**Response:** *The Applicant's consultant, Tetra Tech, has contacted the Ohio Historic Preservation Office to provide an update on the Amended projects, confirm survey methods, and confirm the Applicant's intent to honor the existing Memorandum of Agreement (MOU). On September 8, 2016, the Applicant contacted Linda Iams, director of the Hardin County Historical Museum to confirm the intent to honor the MOU.*

*Tetra Tech has completed a pedestrian survey for archaeological resources and shovel testing is currently underway on approximately 25 acres where surface visibility was below 50 percent. The results of the shovel testing will be provided in approximately two weeks, and a report will be provided as soon as it is complete.*

**Updated Response:** *Attached is a letter from Hardin County Historical Museum dated September 30, 2016 stating there are no additional history and architectural investigations are need (Attachment 3).*

.

# Attachment 1

Irwin, Adam

---

**From:** Wetzel, Paul F LRB [Paul.F.Wetzel@usace.army.mil]  
**Sent:** Friday, January 21, 2011 11:31 AM  
**To:** Mike Sponsler  
**Cc:** Almady, Joseph  
**Subject:** RE: JW - Hardin North (BHE 1865.004) (HOG Crossings)  
**Attachments:** OH NWP12.doc; Application Sample Drawings.pdf; Application Drawing Requirements.doc; Application Drawing Requirements.doc; Copy of eng4345a.pdf; Preliminary JD form.doc

Mike,

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Certain types of excavation activities are defined as discharges of dredged or fill material when they occur in waters of the United States. For instance, land clearing using mechanized equipment, ditching, channelization and other types of excavation when performed in such waters, including wetlands, would likely be regulated under Section 404 of the Clean Water Act.

I am responding to the items in your email below with the following comments:  
#1 curI con

#2 - For linear projects, the single and complete project (i.e., single and complete crossing) will apply to each crossing of a separate water of the United States (i.e., single waterbody) at that location. Therefore a single and complete project is each ditch crossing authorized under NWP 12.

#3 - Temporary crossings that involve the placement of fill in a regulated ditch would be authorized under NWP 12.

#4 - Directional bore under ditches with upland staging is not a regulated activity since there is no discharge of fill in the waterway. In addition to this, the placement of mats in the waterway to facilitate crossing would not require a permit either, since this is a structure not a fill. Spanning a ditch with a structure top of bank to top of bank in order to facilitate a vehicle crossing would not involve a fill and is not regulated either.

#5 - There is no need to conduct another site visit since the additional ditch crossings are pretty much identical to the ones I already observed.

Preconstruction notification requirements are as follows (taken from the current NWP 12):

" Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (See general condition 27.) (Sections 10 and 404)"

"Nationwide Permit 12 Specific Regional Conditions:

a. Pre-Construction Notification: The permittee must notify the District Engineer in accordance with the "Pre-Construction Notification" Nationwide Permit General Condition for the following activities:

- \* All work in waters of the U.S., including special aquatic sites, associated with utility line substations;
- \* All stream work (perennial, intermittent, and ephemeral) associated with foundations for overhead utility line towers, poles, and anchors;
- \* Impacts greater than 1/10 acre in waters of the US, including wetlands, associated with access roads;
- \* All work associated with temporary construction, access, and dewatering activities in Section 10 waters, perennial streams, and wetlands. The PCN must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions.
- \* All impacts to forested wetlands; and
- \* All impacts to shrub/scrub wetlands."

Also, impacts to endangered species or the presence of a historic property would trigger a PCN requirement. However, it is my understanding that there are no ESA or historic property resources within the project area for each crossing.

It doesn't appear that any of the ditch crossings would trigger a PCN requirement.

I have attached a copy of NWP 12 as well as an "application package" for your information and future use. If you have any questions, please feel free to contact me.

Paul Wetzel  
Biologist  
U.S. Army Corps of Engineers, Buffalo District  
Oak Harbor Field Office  
240 Lake Street, Unit D  
Oak Harbor, Ohio 43449  
(419) 898-3491  
Fax (419) 898-4292

-----Original Message-----

From: Mike Sponsler [mailto:msponsler@bheenvironmental.com]  
Sent: Wednesday, January 19, 2011 11:54 AM  
To: Wetzel, Paul F LRB  
Cc: 'Almady, Joseph'  
Subject: RE: JW - Hardin North (BHE 1865.004) (HOG Crossings)

Hi Paul,

I am following up to confirm our phone call this morning regarding the Hog Creek Wind farm project.

My understanding is as follows:

1. Hog Creek II will be under the same interpretation as Hog Creek I because site conditions are the same or similar.
  2. Each crossing is a separate authorization.
  3. Temporary crossing for the crane do not require a PCN provided the temporary fill is removed quickly after the crane crosses.
  4. Cables placed under streams that do not involve any fill in the stream do not require authorization.
  5. You do not need to make an additional site visit.
- Please confirm that my understanding is correct.

Thank you Paul  
Mike

-----Original Message-----

From: Mike Sponsler  
Sent: Monday, January 03, 2011 10:50 AM  
To: 'Wetzel, Paul F LRB'  
Cc: 'Almady, Joseph'  
Subject: RE: JW - Hardin North (BHE 1865.004) (HOG Crossings)

Hi Paul,  
You saw all of the Hog Creek I area. Hog Creek II is very similar. The only ditch crossings in Hog Creek II will be cables...no access roads will cross ditches in Hog Creek II. So I am not sure a site visit is necessary; however if you wish to make another visit to answer our questions, I can be available. The questions are below: Thanks  
Mike

1. Can you confirm that Hog Creek II will be under the same interpretation as Hog Creek I i.e. NWP 12, with no PCN?
2. Is each permanent ditch crossing considered a separate authorization?
3. It is assumed the temporary crane crossings of these ditches are under NW12 conditions. Can you confirm?

-----Original Message-----

From: Wetzel, Paul F LRB [mailto:Paul.F.Wetzel@usace.army.mil]  
Sent: Thursday, December 30, 2010 11:52 AM  
To: Mike Sponsler  
Subject: RE: JW - Hardin North (BHE 1865.004) (HOG Crossings)

Mike,

When I reviewed the initial phase we viewed all the crossings and discussed NWP 12 requirements. Did I see these yet or are they additional stream crossings? Would you be available some time during the week of Jan. 17? I am open the 18-20 if you wish to have a preappl. meeting on site. Thanks!

Happy New Year!

Paul Wetzel  
Biologist  
U.S. Army Corps of Engineers, Buffalo District Oak Harbor Field Office 240  
Lake Street, Unit D Oak Harbor, Ohio 43449  
(419) 898-3491  
Fax (419) 898-4292

-----Original Message-----

From: Mike Sponsler [mailto:msponsler@bheenvironmental.com]  
Sent: Tuesday, December 21, 2010 3:26 PM  
To: Wetzel, Paul F LRB  
Subject: JW - Hardin North (BHE 1865.004) (HOG Crossings)

Hi Paul,  
After a site visit a year and half ago, you sent out an email to Dane Vandewater of our company, BHE Environmental, (see below). I am now taking

the lead on this issue and have some follow up based on recent discussion with our client. Below is some background to jog your memory about the project.

1. Our client, juwi Wind, LLC (formerly JW Great Lakes Wind) is adding a second phase to the Hog Creek Wind Farm (formerly Hardin County North Wind Farm). Hog Creek I is still not under construction. At the time you indicated no PCN is required (see below). The current project schedule has the construction of both phases at the same time in early 2012. The second phase, Hog Creek Wind Farm II, has similar wetland features compared to the first as it located on ditched farmland see (photos and maps). They have a possibility of only one additional ditch crossing proposed in this new area. juwi will address Hog Creek II in a second authorization. Can you confirm that Hog Creek II will be under the same interpretation as Hog Creek I, i.e. NWP 12, with no PCN?

2. Also in the email that Dane sent after the site visit, he asked confirmation on the following assumption: " It was assumed that the NWP 12 would be the NWP to authorize each individual road crossing. I am requesting confirmation of this determination by the USACE for these proposed crossings." It appears as though it was agreed each individual road crossing will be authorized separately under the NWP 12. Am I interpreting this correctly?

3. Finally, an item has come up which was not discussed on the field visit you made with Dane as we just became aware of it last week. During construction our client is planning to cross the ditches at several locations with a large crane which will involve temporary crossings, i.e. the fill will be removed after the crane passes over the ditch. It appears these activities would be authorized under NW12 based on the following permit condition language,

"This NWP also authorizes temporary structures, fills, and work necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate." AND

"12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate."

My questions are summarized below:

1. Can you confirm that Hog Creek II will be under the same interpretation as Hog Creek I i.e. NWP 12, with no PCN?
2. Is each permanent ditch crossing considered a separate authorization?
3. It is assumed the temporary crane crossings of these ditches are under NW12 conditions. Can you confirm?

I'll be glad to discuss with you, but I thought some background info to refresh your memory may be helpful before I call. Thanks Mike Sponsler  
Technical Director 5300 East Main St., Ste 101 Columbus, Ohio 43213

Office: 614.856.4680 ext. 4681

Direct Line: 856-4681

Fax: 614.856.4685

Cellular: 614.743.9977

Email: [msponsler@bheenvironmental.com](mailto:msponsler@bheenvironmental.com)

Web Address: [www.bheenvironmental.com](http://www.bheenvironmental.com)

-----Original Message-----

From: Wetzel, Paul F LRB [<mailto:Paul.F.Wetzel@usace.army.mil>]

Sent: Wednesday, July 15, 2009 2:55 PM

To: Dane Vandewater

Cc: Mike Sponsler

Subject: RE: JW - Hardin North (BHE 1865.004)

Hi Dane,

Under Section 404 of the Clean Water Act (CWA), the U.S. Army Corps of Engineers regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Certain types of excavation activities are defined as discharges of dredged or fill material when they occur in waters of the United States. For instance, land clearing using mechanized equipment, ditching, channelization and other types of excavation when performed in such waters, including wetlands, would likely be regulated under Section 404 of the Clean Water Act.

The ditches/tributaries that will be impacted are considered relatively permanent waterways subject to regulation under Section 404 CWA. Directional boring will not require a permit since there is no discharge of fill into a water of the US involved in this process. Culverting the RPW will require a permit, but this would be authorized under nationwide permit (NWP) 12 and there is no preconstruction notification (PCN) required, i.e. you do not need to submit an application to the Corps prior to commencing with work. I have attached a copy of NWP 12 for your information.

I am assuming that that the wetlands associated with the ditches are ORAM category 1 wetlands and the streams are not considered to be water bodies meeting the criteria set forth in Part 1A-2 (a thru c) of the NWP 401 water quality certification (Superior High Quality Waters, etc). This must be confirmed by the Ohio EPA prior to commencing with work. Work in category 3 wetlands or high quality resource waters as described in the 401 WQC would require an individual 401 WQC from OEPA. I copied Ben Smith from OEPA on this email for your convenience.

If you would like a formal verification letter sent to you must submit an

application. Otherwise, no further coordination with the Corps is required. If you have any questions, please feel free to contact me.

Thanks!

Paul Wetzel  
Biologist  
U.S. Army Corps of Engineers, Buffalo District Oak Harbor Field Office 240  
Lake Street, Unit D Oak Harbor, Ohio 43449  
(419) 898-3491  
Fax (419) 898-4292

-----Original Message-----

From: Dane Vandewater [mailto:dvandewater@bheenvironmental.com]  
Sent: Tuesday, July 14, 2009 9:24 AM  
To: Wetzel, Paul F LRB  
Cc: Mike Sponsler  
Subject: JW - Hardin North (BHE 1865.004)

Paul,

Thank you for your time at the Hardin County site visit last week.

I wanted to confirm our discussion at the Hardin County North project site for JW. During the site visit and our review of several of the ditch/stream/linear wetland areas it was determined that these areas would be considered regulated by the USACE. Due to the status of these areas as "jurisdictional" to the USACE, any impacts to these areas would be authorized by the use of the Nationwide Permits (NWP). It was indicated by JW that the impacts would likely be isolated to three to four road crossings. Cabling will be directionally drilled beneath the channels or brought up and over the ditches on transmission poles located outside the ditches, and therefore are non-jurisdictional. It was assumed that the NWP 12 would be the NWP to authorize each individual road crossing. I am requesting confirmation of this determination by the USACE for these proposed crossings.

Upon receipt of a typical plan and profile view of the road crossings, BHE will provide these to the USACE on JW's behalf along with a brief project discussion to request an NWP verification for the road crossings. We hope to have this information within the next few weeks. If the USACE determines, upon receipt of the NWP, that an NWP 12 will authorize the activities without a PCN due to the lack of temporary fill, JW will be authorized to proceed without notification to the USACE. Please confirm that our understanding is correct. If it is not, please advise what steps should be taken so that we can include the appropriate information in the initial submission to the USACE.

Thanks again for your time to visit the site. Your attention to this project is greatly appreciated.



-Dane

BHE Environmental, Inc.  
Dane G. Vandewater  
Wetland Scientist & Project Manager  
11733 Chesterdale Road  
Cincinnati, OH 45246  
Office: 513.326.1500  
Direct: 513.326.1163  
Fax: 513.326.1550  
Mobile: 513.324.1927  
Email: [dvandewater@bheenvironmental.com](mailto:dvandewater@bheenvironmental.com)  
<blocked::mailto:dvandewater@bheenvironmental.com>  
Website: [www.bheenvironmental.com](http://www.bheenvironmental.com) <blocked::http://www.bheenvironmental.com/>

NOTICE: This electronic mail transmission is for the use of the named individual or entity to which it is directed and may contain information that is privileged or confidential. It is not to be transmitted to or received by anyone other than the named addressee (or person authorized to deliver it to the named addressee). It is not to be copied or forwarded to any unauthorized persons. If you have received this electronic mail transmission in error, please delete it from your system without copying or forwarding it, and notify the sender of the error by replying via email or by calling BHE Environmental, Inc. at 513.326.1500 (collect), so that our address record can be corrected.

Please consider the environment before printing this E-mail

This e-mail message and its attachments are intended solely for the use of the addressee and may contain legally privileged and confidential information. If you are not the intended recipient, nor an employee or agent responsible for delivering this message to the intended recipient, please note that any dissemination, distribution, copying, or other use of this message or its attachments is strictly prohibited. If you have received this message in error, please notify the sender immediately and delete this message. Thank you.

## Attachment 2



## Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

52

SITE NAME/LOCATION SL-ajr-06222016 m-p3  
 SITE NUMBER SL-ajr RIVER BASIN \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) \_\_\_\_\_  
 LENGTH OF STREAM REACH (ft) \_\_\_\_\_ LAT. 40.80190 LONG. -83.7177 RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_  
 DATE 6/22/2016 SCORER J. Swilick COMMENTS \_\_\_\_\_

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY  
 MODIFICATIONS: \_\_\_\_\_

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B)				HHEI Metric Points	
TYPE	PERCENT	TYPE	PERCENT		
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>100</u>	Substrate Max = 40 <b>4</b>	
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____		
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____		
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____		
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____		
<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____		
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock <u>0</u>		(A) <b>6</b>	(B) <b>1</b>		A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: _____		TOTAL NUMBER OF SUBSTRATE TYPES: _____			
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):				Pool Depth Max = 30	
<input type="checkbox"/> > 30 centimeters [20 pts] <input type="checkbox"/> > 22.5 - 30 cm [30 pts] <input type="checkbox"/> > 10 - 22.5 cm [25 pts] <input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts] <input type="checkbox"/> < 5 cm [5 pts] <input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]					
COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): <b>15</b>					
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):				Bankfull Width Max=30	
<input checked="" type="checkbox"/> > 4.0 meters (> 13') [30 pts] <input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] <input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts] <input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] <input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]					
COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): <b>30</b>				<b>30</b>	

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY			
L	R	L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/> Wide >10m	<input type="checkbox"/>	<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/> Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/> Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/> Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/> Residential, Park, New Field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/> None	<input type="checkbox"/>	<input type="checkbox"/> Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/> Mining or Construction

COMMENTS \_\_\_\_\_

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):  
☐ Stream Flowing  
☒ Subsurface flow with isolated pools (Interstitial)  
☐ Moist Channel, isolated pools, no flow (Intermittent)  
☐ Dry channel, no water (Ephemeral)  
 COMMENTS \_\_\_\_\_

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  
☒ None  
☐ 0.5  
☐ 1.0  
☐ 1.5  
☐ 2.0  
☐ 2.5  
☐ 3.0  
☐ >3

STREAM GRADIENT ESTIMATE  
☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This information must also be completed):**

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: \_\_\_\_\_ NRCS Soil Map Page \_\_\_\_\_ NRCS Soil Map Stream Order \_\_\_\_\_

County: Hardin Township / City: Washington/Dola

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6/20/2016 Quantity: 0.5"

Photograph Information: East and West photos

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: N/A

Field Measures Temp (°C): N/A Dissolved Oxygen (mg/L): N/A pH (S.U.): N/A Conductivity (µmhos/cm): N/A

Is the sampling reach representative of the stream (Y/N): \_\_\_\_\_ If not, please explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOTIC EVALUATION**

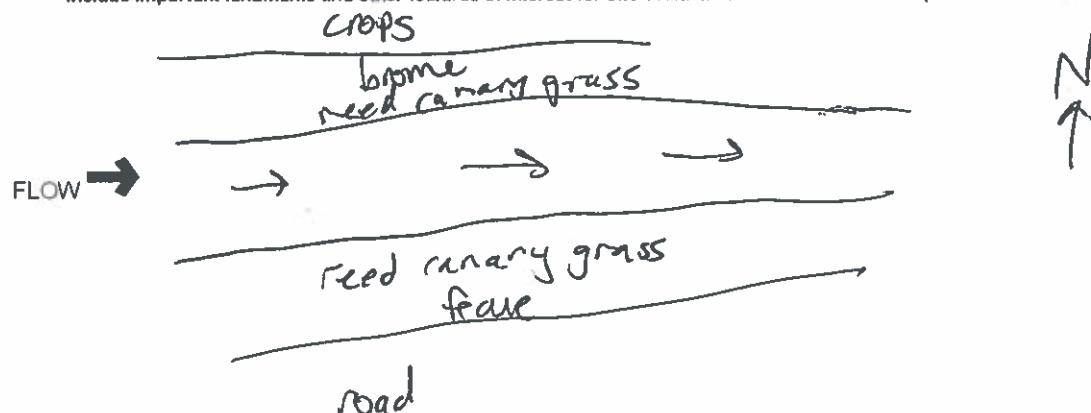
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N  
Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

44

SITE NAME/LOCATION Hog Creek SI-ASR-07616

SITE NUMBER \_\_\_\_\_ RIVER BASIN \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) \_\_\_\_\_

LENGTH OF STREAM REACH (ft) 100 LAT. \_\_\_\_\_ LONG. \_\_\_\_\_ RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_

DATE 7/6/16 SCORER GR COMMENTS 07616 SI-ASR-07616

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY  
MODIFICATIONS: \_\_\_\_\_

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>100</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 0

(A)

3

(B)

1

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI  
Metric  
Points

Substrate  
Max = 40

4

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS 8'10.3"

200

MAXIMUM POOL DEPTH (centimeters):

20

Pool Depth  
Max = 30

20

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS \_\_\_\_\_

5

AVERAGE BANKFULL WIDTH (meters)

20

Bankfull  
Width  
Max=30

20

This information must also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS R bank delineated

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

- FLOW REGIME** (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS N flow

- SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name: Hog Creek Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: SWA-13 Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: \_\_\_\_\_ NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order \_\_\_\_\_

County: Hardin Township / City: Dola

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 7/1/16 Quantity: 40.0 inches

Photograph Information: Ali's phone 220 219

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N): Y If not, please explain: \_\_\_\_\_

Additional comments/description of pollution impacts: Artificial Ditch, delineated w bank of stream

**BIOTIC EVALUATION**

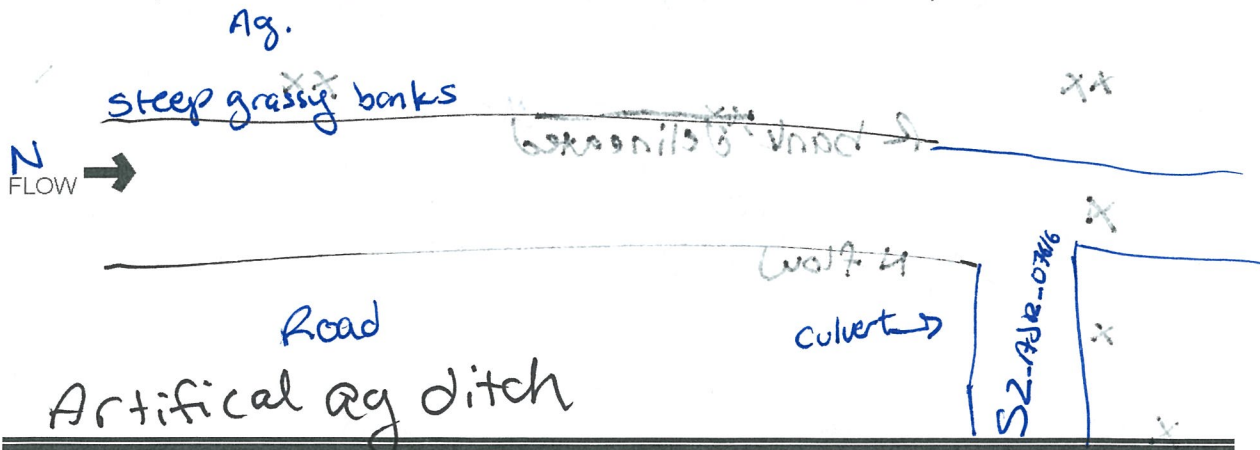
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): Y Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): \_\_\_\_\_  
Frogs or Tadpoles Observed? (Y/N): Y Voucher? (Y/N): \_\_\_\_\_ Aquatic Macroinvertebrates Observed? (Y/N): \_\_\_\_\_ Voucher? (Y/N): \_\_\_\_\_

Comments Regarding Biology: \_\_\_\_\_

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

54

SITE NAME/LOCATION Hog Creek SITE NUMBER S2-AJR-07616 RIVER BASIN \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) \_\_\_\_\_  
LENGTH OF STREAM REACH (ft) \_\_\_\_\_ LAT. \_\_\_\_\_ LONG. \_\_\_\_\_ RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_  
DATE 7/6/16 SCORER AJR COMMENTS S2A and S2B points AJR 07616

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY  
MODIFICATIONS:

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pts]	100
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY or HARDPAN [0 pts]	
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) 3

(B) 1

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI  
Metric  
Points

Substrate  
Max = 40

4

A + B

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS 8' 10"

200

MAXIMUM POOL DEPTH (centimeters):

20

Pool Depth  
Max = 30

20

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input checked="" type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> 1.0 m (< 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS

5

AVERAGE BANKFULL WIDTH (meters)

30

Bankfull  
Width  
Max=30

30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY NOTE: River Left (L) and Right (R) as looking downstream

## RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS steep banks

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS Heavy rains w/in the past 20 days

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

## STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S):

☐ WWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☒ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: \_\_\_\_\_ NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order \_\_\_\_\_

County: \_\_\_\_\_ Township / City: \_\_\_\_\_

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 7/1/16 Quantity: 4 inch

Photograph Information: 0223 x 0221

Elevated Turbidity? (Y/N): N Canopy (% open): 100

Were samples collected for water chemistry? (Y/N): \_\_\_\_\_ (Note lab sample no. or id. and attach results) Lab Number: \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: \_\_\_\_\_

Additional comments/description of pollution impacts: Ag

**BIOTIC EVALUATION**

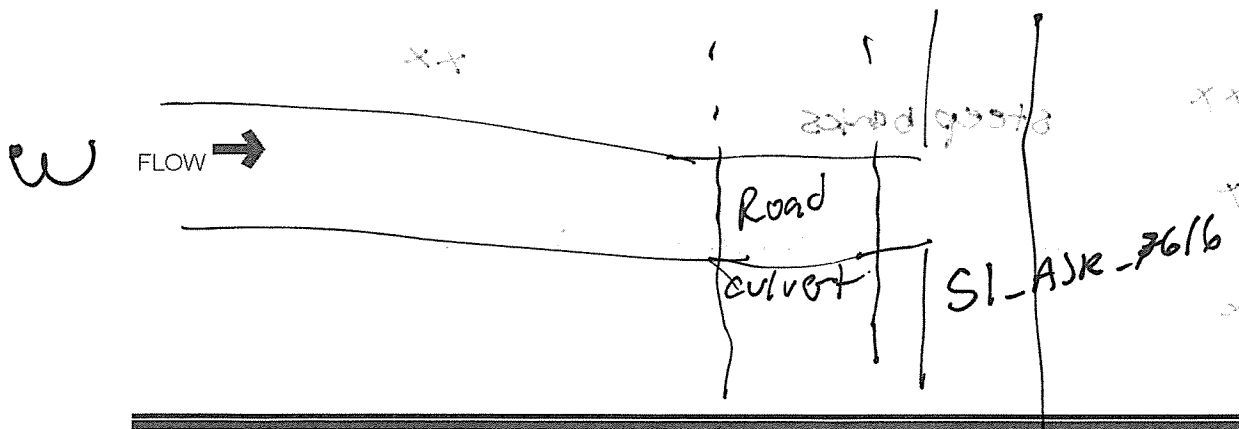
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N  
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: dragonflies

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

42

SITE NAME/LOCATION SS

SITE NUMBER \_\_\_\_\_ RIVER BASIN \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) \_\_\_\_\_

LENGTH OF STREAM REACH (ft) 100 LAT. \_\_\_\_\_ LONG. \_\_\_\_\_ RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_

DATE 6/22/16 SCORER MKE COMMENTS \_\_\_\_\_

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY  
MODIFICATIONS: not in stream

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	_____
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock \_\_\_\_\_

(A)

6

(B)

1

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_

MAXIMUM POOL DEPTH (centimeters):

5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input checked="" type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS \_\_\_\_\_

AVERAGE BANKFULL WIDTH (meters)

30

HHEI  
Metric  
Points

Substrate  
Max = 40

7

A + B

Pool Depth  
Max = 30

5

Bankfull  
Width  
Max=30

30

This information must also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS \_\_\_\_\_

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

### FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)



**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: \_\_\_\_\_ NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order \_\_\_\_\_

County: Hardin Township / City: Washington, Polk, OH

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): N Date of last precipitation: 6/20/16 Quantity: 0.5

Photograph Information: 1 N 2 S

Elevated Turbidity? (Y/N): N Canopy (% open): 100 open

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: \_\_\_\_\_

Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream (Y/N) \_\_\_\_\_ If not, please explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOTIC EVALUATION**

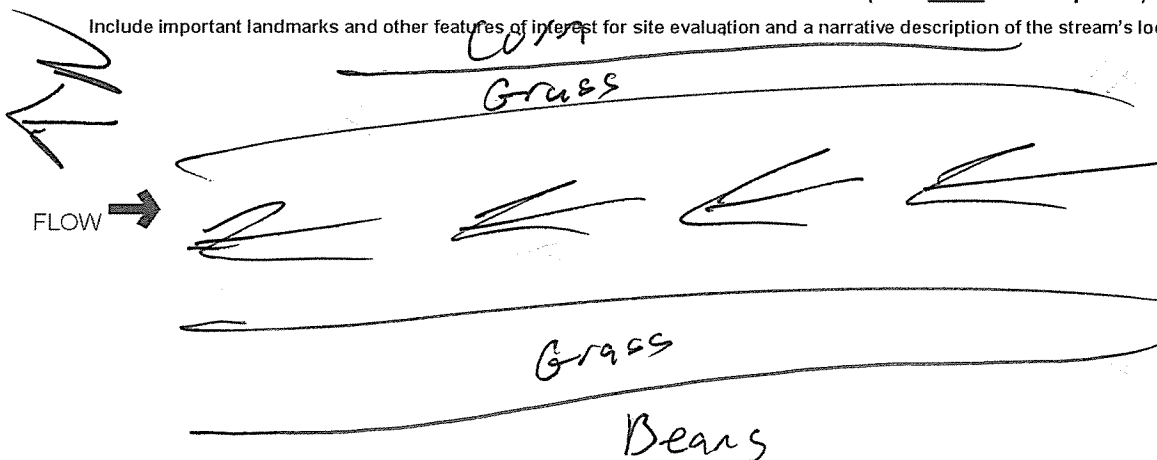
Performed? (Y/N): \_\_\_\_\_ (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N  
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: No wildlife was observed

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





## Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

24

SITE NAME/LOCATION SSSITE NUMBER \_\_\_\_\_ RIVER BASIN \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) \_\_\_\_\_

LENGTH OF STREAM REACH (ft) \_\_\_\_\_ LAT. \_\_\_\_\_ LONG. \_\_\_\_\_ RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_

DATE \_\_\_\_\_ SCORER \_\_\_\_\_ COMMENTS \_\_\_\_\_

**NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions**

## STREAM CHANNEL

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

## MODIFICATIONS:

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check **ONLY** two predominant substrate **TYPE** boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pts]	_____
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pts]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY or HARDPAN [0 pts]	_____
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock \_\_\_\_\_(A) **3**(B) **1**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check **ONLY** one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_

MAXIMUM POOL DEPTH (centimeters):

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check **ONLY** one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS \_\_\_\_\_

AVERAGE BANKFULL WIDTH (meters)

HHEI  
Metric  
PointsSubstrate  
Max = 40

4

A + B

Pool Depth  
Max = 30

15

Bankfull  
Width  
Max=30

5

This information **must** also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

## RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS \_\_\_\_\_

## FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

☒ **FLOW REGIME** (At Time of Evaluation) (Check **ONLY** one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS \_\_\_\_\_

☒ **SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check **ONLY** one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

☒ **STREAM GRADIENT ESTIMATE**☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

**QHEI PERFORMED?** - ☐ Yes ☒ No QHEI Score \_\_\_\_\_ (If Yes, Attach Completed QHEI Form)

**DOWNSTEAM DESIGNATED USE(S)**

☐ WWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: \_\_\_\_\_ NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order \_\_\_\_\_  
County: Harding Township / City: Washington Dala, OH

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): N Date of last precipitation: 6/20/16 Quantity: 0.5  
Photograph Information: 1 S 2 SE  
Elevated Turbidity? (Y/N): N Canopy (% open): 100  
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: \_\_\_\_\_  
Field Measures: Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_  
Is the sampling reach representative of the stream (Y/N) \_\_\_\_\_ If not, please explain: \_\_\_\_\_

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOTIC EVALUATION**

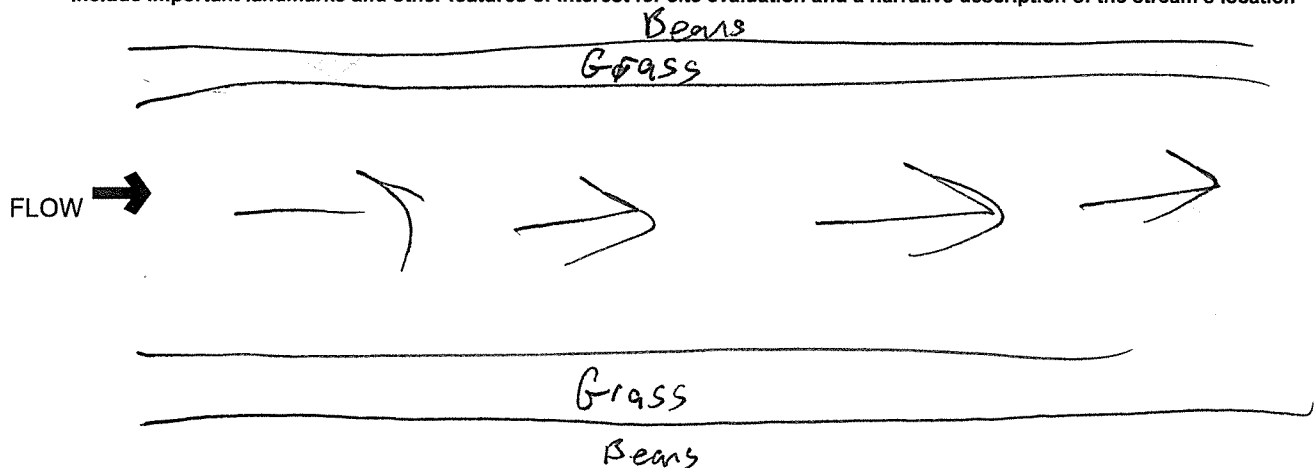
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) \_\_\_\_\_ Salamanders Observed? (Y/N) N Voucher? (Y/N) \_\_\_\_\_  
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) \_\_\_\_\_ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) \_\_\_\_\_

Comments Regarding Biology: No wildlife observed

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



**Hardin County Historical Museum**

---

223 N. Main St., Kenton, OH 43326 419-673-7147 [director@hardinmuseums.org](mailto:director@hardinmuseums.org)

September 30, 2016

Adam Holven  
Tetra Tech, In.  
2001 Killebrew Dr., Suite 141  
Bloomington, MN 55425

Dear Mr. Holven:

To our knowledge there are no additional history and architectural investigations that are needed.

Thank you for keeping us up to date.

Sincerely,



Linda L. Iams, Director

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**10/5/2016 3:05:18 PM**

**in**

**Case No(s). 14-2273-GA-BNR, 16-1422-EL-BGA, 16-1423-EL-BGA**

Summary: Response of Hog Creek Wind Farm LLC to Staff Data Requests electronically filed by Teresa Orahod on behalf of Sally W. Bloomfield