Depth (Inches) Matrix Color (moist) Redox Features Color (moist) Type* Loc** Texture Remarks 0-18 10YR 4/3 100 - - silt loam - 0-18 10YR 4/3 100 - - silt loam - 0-18 10YR 4/3 100 - - silt loam - 0-18 10YR 4/3 100 - - silt loam - 0-18 10 - - - silt loam - 0-18 10 - - - - - - 0-19 10 10 10 10 - - - - 0-19 10 10 10 10 -		the second s	be to th				Indicato	r or confirm the absence of	indicators.)
0-18 10YR 4/3 100 - - silt loam 0-18 10YR 4/3 100 - - silt loam 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Depth	Matrix Color (moint)	0/				100**	Texture	Remarks
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains *Location: PL=Pore Lining, M=Matrix typic Soil Indicators: Indicators for Problematic Hydric Soil Histisol (A1) Histisc Epipedon (A2) Black Histic (A3) Histige (A4) Hydrogen Suffide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Matrix (F3) Depleted Matrix (S4) Sandy Mucky Mineral (S1) Gleyed Matrix (S6) Stratified Layers (S5) Sandy Redox (S5) Sandy Macky (S6) Sandy Matrix (S6) Red Parent Material (F21) (MLRA 148) Stratified Layers (S5) Sandy Matrix (S6)		the second se			By set	Type	LUC	silt loam	
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Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147)									
		and the second se							
Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic	Strippe	d Matrix (S6)		Red Par	ent Ma	iterial (F2	21) (MLR	A 127, 147)	
Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic									
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Restrictive Layer (if observed): Type: Hydric soil present? N		Layer (if observe	ed):			and the			
Type: Hydric soil present? N Depth (inches):		06).						Hydric son present	r <u> </u>
	Separ (mor		197						
Remarks:			1000		_				
	A. HETLY			1.5 1.5 1.2			-		

DUKE- WALTON TO BIG BONE

Project/Site: Walton-Big Bone	e Natural Gas Pipe	eline City/County:	Boone	Sampling Date:	4/1/16
Applicant/Owner: Duke Energy			Kentucky	Sampling Point:	
Investigator(s): Sarah Miloski, J				ange: No PLSS in Are	
Landform (hillslope, terrace, etc.)	discrimination of the local di	and the state of t		none): concave	Slope (%): 0
Subregion (LRR or MLRA): LRR		Lat.: 38.87925		-84.698896	Datum: WGS 84
Soil Map Unit Name No-Nolin silt	loam, 0 to 2 perce	ent slopes, occasionally	flooded N	WI Classification: N/A	
Are climatic/hydrologic conditions	s of the site typical	for this time of the year	? Yes X	No (If no, e	xplain in remarks)
Are vegetation , soil	, or hydrol	ogy significant	ly disturbed?	Are "normal	Yes
Are vegetation , soil	, or hydrol	ogy naturally p	problematic?	circumstances" pres	sent?
				(If needed, explain a	any answers in remark
SUMMARY OF FINDINGS					
Hydrophytic vegetation present?	Yes				
Hydric soil present?	Yes	is the sar	npled area with	in a wetland? Ye	2
Wetland hydrology present?	Yes	is the out		Wo	
Wetland Hydrology present?	103				10
Remarks:			f f	the beauty set of the set	
DEM wetland along road E		6020			
PEM wetland along road F	Cov drains into	5039			
HYDROLOGY				The Martine of Paras	
Wetland Hydrology Indicators	3:		Secon	ndary Indicators (minim	num of two required)
Primary Indicators (minimum of o	ne is required; ch	eck all that apply)	St	urface Soil Cracks (B6)	
X Surface Water (A1)	Tr	ue Aquatic Plants (B14)	Sp	parsely Vegetated Conc	ave Surface (B8)
X High Water Table (A2)	Hy	drogen Sulfide Odor (C1) X Dr	rainage Patterns (B10)	
X Saturation (A3)		didized Rhizospheres on I	Living M	oss Trim Lines (B16)	
Water Marks (B1)		oots (C3)		y-Season Water Table	(C2)
Sediment Deposits (B2)	Pr	esence of Reduced Iron ((C4)CI	rayfish Burrows (C8)	
Drift Deposits (B3)	Re	cent Iron Reduction in Ti	lled Sa	aturation Visible on Aeri	al Imagery (C9)
Algal Mat or Crust (B4)	So	ils (C6)	St	unted or Stressed Plan	ts (D1)
Iron Deposits (B5)	Th	in Muck Surface (C7)	G	eomorphic Position (D2)
Inundation Visible on Aerial	Ot	her (Explain in Remarks)	St	hallow Aquitard (D3)	
Imagery (B7)			M	icrotopographic Relief (D4)
Water-Stained Leaves (B9)			XFA	AC-Neutral Test (D5)	
Aquatic Fauna (B13)					
Field Observations:			1	1	engen leinen och sig
Surface water present? Ye	s X No	Depth (inches): 3	Wetland	
Water table present? Ye	s X No	Depth (inches): 0	hydrology	
Saturation present? Ye	s X No	Depth (inches): 0	present?	Y
(includes capillary fringe)	A CONTRACTOR		March Bar		
Describe recorded data (stream g	jauge, monitoring	well, aerial photos, prev	vious inspections	s), if available:	
Remarks:					

EGETATION - L	Jse scientific i	names of p	plants			Sampling Pol	int: W010
						50/20 Thresholds	
Tree Stratum	Plot Size (30 ft.) Absolute	Dominant	Indicator		20% 50%
			% Cover	Species	Status	Tree Stratum	0 0
				C Y U A S		Sapling/Shrub Stratum	0 0
C. C. L. C.		N. West	and the states	E MANY AND	The second	Herb Stratum	20 50
	COLUMN TO L	124			20300	Woody Vine Stratum	0 0
De Chill (2004)				in the second			
	1.17 . 1. 00				A CONTRACTOR	Dominance Test Worksh	eet
						Number of Dominant	
						Species that are OBL.	
in the second	of the set of the					FACW, or FAC:	(
he has said the					111	Total Number of Dominant	
	2. V		The name of	NAME AND DESCRIPTION OF	March Street	Species Across all Strata:	3 (
			0	= Total Cover		Percent of Dominant	
			and the second second	A Constant in the		Species that are OBL,	
Conline/Shath			Absolute	Dominant	indicator	the second s	66 670/ /
Sapling/Shrub	Plot Size (15 ft.				FACW, or FAC:	66.67% (
Stratum			% Cover	Species	Status		
						Prevalence index Workst	neet
a de la serie d					A CONTRACTOR	Total % Cover of:	
							- 0
				-			and the second se
			4 - 10 1 5			FACW species 60 x 2	and the second division of the second divisio
		ALC STREET, ST				FAC species 10 x 3	the second se
	all and a second	ALL AREA		1. 1. 1. 1. 1.		FACU species 30 x 4	= 120
A MORE NEW YORK	STONE WAR	1330 8	STUD FROM		N 88 57 100	UPL species 0 x 5	= 0
	1.6			With any Art		Column totals 100 (A)	270 (
No reaction of				-		Prevalence Index = B/A =	2.70
				-			
			0	= Total Cover			
			0	- Total Cover			
						Hydrophytic Vegetation I	
Herb Stratum	Plot Size (5 ft.) Absolute	Dominant	Indicator	Rapid test for hydrophy	
nerb Stratum	1 101 0128 (U II.	% Cover	Species	Status	X Dominance test is >50	%
Phalaris arun	dinacea		30	Y	FACW	X Prevalence index is ≤3	.0*
Cyperus strige	And a second		30	Y	FACW	Morphological adaptati	
Poa pratensis			30	Y	FACU	supporting data in Rem	and the second se
Rumex crispu			10	N	FAC	separate sheet)	
Rumex crispu	3			<u> </u>			
						Problematic hydrophyti	c vegetation
Soft Superior States		and the second				(explain)	
		the stars	City Change State			*indicators of hydric soil and wetla	
	and the second	I.S. S. Holder	Sector President Part		and the second	present, unless disturbed or problem	ematic
THE VIEW OF		Contraction of the second	ALC: NOTE !!		Cherro and the		
S DECEMBER OF		and the second	and the second second	Streets of the state	STATES AND	Definitions of Vegetation	Strata:
	STA DEL	DA TANANA MAN	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A STATISTICS AND A STATISTICS	THE REPORT OF		
aphilip and set of the	TRUE TO A TOUR	Contraction of the	The Martin State	Longer Harrison		Tree - Woody plants 3 in. (7.6 cm	
				-		breast height (DBH), regardless of	f height.
No State Barrier					Children and the state		2 - 21
AND EXPLOYED AND		C. C. S. S. Lines				Sapling/shrub - Woody plants le	ss than 3 in. DBH
		ALC: NOTE: ST	C. C	the state of the state of the		greater than 3.28 ft (1 m) tall.	
	States 1		100	= Total Cover	Martin and		A
						Herb - All herbaceous (non-wood	
Woody Vine			, Absolute	Dominant	Indicator	size, and woody plants less than a	3.28 ft tall.
Stratum	Plot Size (30 ft.) % Cover	Species	Status	Manda dan All wande vinne	
oratom				50000	-	Woody vines - All woody vines g height.	Cater than 3.261
						indigent.	
		and the second second			0.0000000000000000000000000000000000000	the color of the State of the	
	1.00				The second second		
		in the second		C. 200 10110	A	Hydrophytic	
1.100 515			and the second se		and a new life ??	vegetation	
			0	= Total Cover			
			0	- Total Cover		present? Y	10 C
marks: (Include p	hoto numbers h	ere or on a :					
	hoto numbers h	ere or on a s					
marks: (Include p	hoto numbers h	ere or on a s					
marks: (Include p	hoto numbers h	ere or on a s					
marks: (Include p	hoto numbers h	ere or on a s					
	hoto numbers h	ere or on a s					

Depth	cription: (Descrit	e to th	e denth needed (to docu	ment the	indicato	r or confirm the absence o	f indicators)
	Matrix	<u>, , , , , , , , , , , , , , , , , , , </u>		lox Feat		Indiodec	THE PROPERTY AND A DESCRIPTION OF	
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0-18	10YR 4/2	80	10YR 4/6	20	C	PL/M	silt loam	
		Sel your		80020		10000		
			10		Selfer.			
		22 30			1.200			
12.1			SAL IN MERICA	0.42				PARTITION CARE LA COMPANY
1. 1. 1.	Sec. Sec.	1.50	Part of the state of the	10000		10000		
	Such Sector (Sector)	al and	Contraction of the		1-060	Carlot and		
S. S. Star	17.1.1.1.1	())注意。	West the Current			Terrare State	21.01 N. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	
·王子子弟子里-			and the second				war on the second in	
						1.184		
Tom yet a								
*Type: C=C	oncentration, D=	Depleti	ion, RM=Reduce	d Matri	x. CS=C	overed o	r Coated Sand Grains	
	PL=Pore Lining,							
Hvdric Soi	I Indicators:	R			10202-1		Indicators for Pro	oblematic Hydric Soils:
			Dark Su	urface (S7)			
Histisol	(A1)				w Surfac	e (S8)		10) (MLRA 147)
	pipedon (A2)		(MLRA				Coast Prairie I	Redox (A16) (MLRA 147, 148
Black H	listic (A3)		Thin Da	rk Surfa	ace (S9)			odplain Soils (F19)
	en Sulfide (A4)		(MLRA				(MLRA 136, 1	
	ed Layers (A5)	- En			Matrix (F	-2)		Dark Surface (TF12)
	uck (A10) (LRR I		X Deplete				Other (Explain	in Remarks)
	ed Below Dark Su				urface (Fe			
	ark Surface (A12		and the second s		Surface			
and the second se	Mucky Mineral (S				sions (F8		(LRR N, MLRA 136)	
	I, MLRA 147, 148 Gleyed Matrix (S4					MLRA 13		
	Redox (S5)	+)					(MLRA 148)	
The second se	d Matrix (S6)						RA 127, 147)	
the second se	1 INITION /=-/							
and the second s			10-14 MILLING 1997	dralage	u munt h		and the second sec	
Strippe	of hvdrophytic ve	aetatio.	n and wetland hy	vai olog j	A ILLAPT D	e presen	t, unless disturbed or prob	ematic
Strippe	of hydrophytic ve	getatio	n and wetland hy	arolog:	y must b	e presen	t, unless disturbed or prob	lematic
Stripped		in an a' the	n and wetland hy	varolog:		e presen	t, unless disturbed or prob	lematic
Stripped *Indicators Restrictive	of hydrophytic ve Layer (if observe	in an a' the	n and wetland hy	Varolog	y must b	e presen		
Stripped *Indicators Restrictive I Type:	Layer (if observe	in an a' the	on and wetland hy	yarolog:	- Indist D	e presen	t, unless disturbed or prob Hydric soil present?	
Stripped *Indicators Restrictive	Layer (if observe	in an a' the	n and wetland hy		-	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type:	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		
Stripped *Indicators Restrictive I Type: Depth (inch	Layer (if observe	in an a' the	n and wetland hy		- -	e presen		

DUKE- WALTON TO BIG BONE

Project/Site: Walton-Big Bone I	Natural Gas Pipeline	City/County: Bo	one	Sampling Date:	4/1/16
Applicant/Owner: Duke Energy		State: Ke		Sampling Point	
Investigator(s): Sarah Miloski, Juli				e: No PLSS in Are	and the second
Landform (hillslope, terrace, etc.):		Local relief (concav			Slope (%): 10
Subregion (LRR or MLRA): LRR N		38.889434		84.628515	Datum: WGS 84
Soil Map Unit Name No-Nolin silt lo	am, 0 to 2 percent slop	bes, occasionally flood		Classification: N/A	
Are climatic/hydrologic conditions of	of the site typical for this	s time of the year? Y	res X M	lo(If no, e	explain in remarks)
	, or hydrology	significantly dis		vre "normal	Yes
Are vegetation, soil	, or hydrology	naturally proble		ircumstances" pre	
			(If needed, explain	any answers in remar
SUMMARY OF FINDINGS					
Hydrophytic vegetation present?	No	व्यान दिन्द्र मध्य स्थ		No Report of the	
Hydric soil present?	No	is the sample	d area within a	a wetland?	lo
Wetland hydrology present?	No	to the campion	Upland for W		<u></u>
Weiland hydrology present?		and the second	opland for vi	010	
Remarks:			"A		
Upland pit for wetland W010)				
HYDROLOGY					
Wetland Hydrology Indicators:		the second	Seconda	ry Indicators (mini	num of two required)
Primary Indicators (minimum of one		that apply)		ce Soil Cracks (B6)	
Surface Water (A1)		atic Plants (B14)		sely Vegetated Con	
High Water Table (A2)		Sulfide Odor (C1)		age Patterns (B10)	
Saturation (A3)				Trim Lines (B16)	
		Rhizospheres on Living		eason Water Table	(02)
Water Marks (B1) Sediment Deposits (B2)	Roots (C3	of Reduced Iron (C4)		ish Burrows (C8)	(02)
Drift Deposits (B3)		on Reduction in Tilled		ation Visible on Ae	rial Imagery (C9)
Algal Mat or Crust (B4)	Soils (C6)			ed or Stressed Plan	
Iron Deposits (B5)		k Surface (C7)		norphic Position (D2	
Inundation Visible on Aerial		plain in Remarks)		ow Aquitard (D3)	
Imagery (B7)		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	and the second se	topographic Relief	(D4)
Water-Stained Leaves (B9)				Neutral Test (D5)	(04)
Aquatic Fauna (B13)					
Field Observations: Surface water present? Yes	No. V	Depth (inches):	NA	Wetland	
and the second		Depth (inches): Depth (inches):		hydrology	
Water table present? Yes Saturation present? Yes	<u> </u>	Depth (inches):	NA	present?	N
(includes capillary fringe)				present	
(includes capillary ininge)					
Describes are and ad data (at a second	uge, monitoring well, a	erial photos, previous	inspections), i	f available:	
Lescribe recorded data (stream da	-ge, mennenng men, -	ener prietee, pretieue			
Describe recorded data (stream ga					
Describe recorded data (stream ga		A State State	Strate Car		and the state of the state
Remarks:		Andreas and a second	2000 (G		

Absolute % Cover 30	Dominant Species Y	Indicator Status UPL	50/20 Thresholds Tree Stratum Sapling/Shrub Stratum	20% 6 3	50% 15 8
	Contraction of the local distance of the loc		Sapling/Shrub Stratum	-	
		UPL	the second s	3	
			Llorb Circlum	20	50
		Track Party of the	Herb Stratum Woody Vine Stratum	0	0
			LEADER STREET, ST.		
			Dominance Test Worksho Number of Dominant	eet	
	A BALLING				
1-10-10-10-10-10-10-10-10-10-10-10-10-10			the set of	0	(A)
	Committee String	T. Book Margaret			,
TO BALLER		in the second	Species Across all Strata:	5	(B)
30	= Total Cover	ALSO DEL SE	Percent of Dominant		12
			Species that are OBL,		
Absolute	Dominant	Indicator	FACW, or FAC:	0.00%	(AJ
% Cover	Species	Status		THE TONN !	
15	Y	UPL	Prevalence Index Worksh	neet '	
STREET, MILLION			Total % Cover of:		
	Ser Jan Million	1000	OBL species 0 x 1	= 0	
and the second		7	and the second		
A STREET, STREET, ST	TRACTOR -	HERE PARTY SHOP			-
Sha strake	The second second	The second second			5
ALC: NO				and division in the local division in the lo	
No. Strainers	「「大阪市」の高いたい。	Concernation of			5 (B)
- An owned		- COLUMN TO	Prevalence Index = B/A =	4.31	
1.2.2.2.1.1.A.	The state of the second	- 1-72. (FT)		CHLC/PS1	_
15 :	Total Cover				
THE REPORT			Hydrophytic Vegetation I	ndicators	:
Absolute	Dominant	Indicator			
% Cover	Species	Status	Dominance test is >50	%	
30	Y	FACU	Prevalence index is ≤3	.0*	
25	Y	FACU	Morphological adaptati	ons* (prov	vide
20	Y	FACU			
10	N	FACU	separate sheet)		
10	N	FACU	Problematic hydrophyti	ic vegetat	ion*
5	N	FACU	(explain)		
all and the second		Contestister)	*Indicators of hydric soil and wetla	and hydrolog	w must
Mag 20 91 (1990)	Trades and				,
No. Station				20.00	123
	<u></u>		Definitions of Vegetation	Strata:	
		A CONTRACTOR			diamet
A MELOWER TO	1	HAR SHEER A	breast height (DBH), regardless o	f height.	
				ss than 3 in,	DBH a
100 =	Total Cover				
1. 4.57 5-1					gardies
Absolute	Dominant	Indicator	size, and woody plants less than .	3.20 TT TELL.	
% Cover	Species	Status	Woody vines - All woody vines g	reater than 3	3.28 ft i
Mainer sont	STERIO MIC	1 Carlos Para	height.		
				- isu	1
1.1.1.1			Hydrophytic		
- 17	Mar Startige		vegetation		
			present? N		
	Absolute % Cover 15 15 15 15 Absolute % Cover 30 25 20 10 10 5 5 20 10 10 10 5 5 20 10 10 10 5 5 20 10 10 10 5 5 20 10 10 10 5 5 20 10 10 10 5 5 20 10 10 10 10 10 10 10 10 10 10 10 10 10	Absolute % Cover Dominant Species 15 Y 15 Y 15 Y 15 Y 15 Y 15 Y 15 Total Cover Absolute % Cover Dominant Species 30 Y 25 Y 20 Y 10 N 5 N 10 N 100 Total Cover 100 Total Cover	Absolute % Cover Dominant Species Indicator Status 15 Y UPL 15 Y UPL 15 - - 15 - - 15 - - 15 - - 15 - - 15 - - 15 - - 15 - - 15 - - 15 - - 15 - - 15 - - 20 Y - 10 N - 5 N - 10 N - - - - - - - - - - 10 N - - - - - - - - - - - - - - - - - - -	Species that are OBL, 30 = Total Cover Absolute Dominant 15 Y 15 Y 20 Y 215 Y 20 Y 30 Y 225 Y 10 N 74CU Prevalence Index Worksh 75 N 76CU Species 20 Y 76ACU Prevalence Index = B/A = 15 Total Cover Hydrophytic Vegetation I Rapid test for hydrophy 20 Y FACU Prevalence Index = S/A = Hydrophytic Vegetation I Rapid test for hydrophy Dominant Indicator Species Status 10 N FACU Prevalence index is s3 Morphological adaptati supporting data in Rem separate sheet) Problematic hydrophy (explain) *Indicator Morphological adaptati	Species that are OBL, 0 30 = Total Cover 0 Absolute Dominant Indicator % Cover Species Status 5 15 Y UPL 740 Worksheet 0 750 Y UPL 750 Y UPL 750 Y UPL 751 Y UPL 752 Y FACU 752 Y FACU 752 Y FACU 75 Y FACU 75 Y FACU 75 Y FACU 75 Y FACU 76 Prevalence index is >3.0* 76 Y FACU 76 Y FAC

Depth (Inches)	and the second division of the second divisio	be to the				indicato	r or confirm the absence o	f indicators.)
(Inches)	Matrix			ox Feat			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 3/3	100	-	-			silt loam	
14					11 - 24 (Par)	de la de		
		<u></u>		0.0				
1 10	14				1.2.2	11.082		
			A DATE OF THE OWNER					
	and the second							
The states								
and the second								
				100 21	-	New Street		
14 J. 14	Wine Kull St		and the second second		ALC: NOT ST	Sec. Lan	Carl Westerney and Th	
10.00	and the second second			4000		10-10-0 m		
Turner Or Or	neentretien D	Declet	on DM-Deduce	d Matri	00-0		Control Cond Coning	
	PL=Pore Lining,			a watrix	(, 63=61	overed o	r Coated Sand Grains	
lydric Soil I	The second se	IN-INIGI		10.15 C			Indicators for Dr	blomatic Hydria Sailay
nyaric Soli i	indicators:		Dark Si	urface (S	37)		indicators for Pro	blematic Hydric Solls:
Histisol (A1)		a second s	and the second	w Surfac	e (S8)	2 cm Muck (A	10) (MLRA 147)
	pipedon (A2)		the second se	147, 14				Redox (A16) (MLRA 147, 14
Black His			and the second sec		ice (S9)			dplain Soils (F19)
Hydroge	n Sulfide (A4)		(MLRA	147, 14	8)		(MLRA 136, 1	
	Layers (A5)		Loamy			-2)		Dark Surface (TF12)
	ck (A10) (LRR		Deplete				Other (Explain	in Remarks)
	Below Dark Su							
	irk Surface (A12 lucky Mineral (S	and the second se	Redox [Surface			
The second s	MLRA 147, 148						(LRR N, MLRA 136)	
	leyed Matrix (S					MLRA 1		
	edox (S5)	-					(MLRA 148)	
Stripped	Matrix (S6)		Red Par	rent Mat	terial (F2	21) (MLF	RA 127, 147)	
North and			1					
Indicators of	f hydrophytic ve	getatio	n and wetland hy	/drology	must be	e presen	t, unless disturbed or prob	ematic
		1-1772		na sai Ni	100	The second		
	ayer (if observe	d):					Undria apil present?	
	s):		di seren in andre				Hydric soil present?	<u> </u>
Type: Depth (inche		and the second se						
Depth (inche Remarks:		1000				1		

DUKE- WALTON TO BIG BONE

Project/Site: Walton-Big	Bone Natura	Gas Pipeline	City/County:	Boone	Sampling Date:	
Applicant/Owner: Duke E				Kentucky	Sampling Point	
Investigator(s): Sarah Milos					ange: No PLSS in Are	
Landform (hillslope, terrace,					, none): concave	Slope (%): 0
Subregion (LRR or MLRA):		Lat.:	and the second se		: -84.625699	Datum: WGS 84
Soil Map Unit Name No-Noli	in silt loam, 0	to 2 percent slo	pes, occasionally	nooded N	WI Classification: N/A	
Are climatic/hydrologic cond	titions of the s	ite typical for thi	is time of the year	? Yes X	No(If no, e	xplain in remarks)
Are vegetation , so	, lic	or hydrology	significant	y disturbed?	Are "normal	Yes
Are vegetation , so	pil,	or hydrology		roblematic?	circumstances" pres	sent?
					(If needed, explain a	any answers in remai
SUMMARY OF FINDIN	GS					
Hydrophytic vegetation pres	ent? Ye	<u>s</u>				
Hydric soil present?	Ye	s	is the san	pled area with	hin a wetland? Ye	
Wetland hydrology present?	? <u>Ye</u>	S			W	011
PEM wetland along ro	ad ROW					
HYDROLOGY				0		
Wetland Hydrology Indic					ndary Indicators (minir	
Primary Indicators (minimun	n of one is rec	THE PROPERTY OF THE STREET	A SAME AND A		urface Soil Cracks (B6)	
X Surface Water (A1)			atic Plants (B14)		parsely Vegetated Con	cave Surface (B8)
X High Water Table (A2)		Hydrogei	n Sulfide Odor (C1)		rainage Patterns (B10)	
X Saturation (A3)			Rhizospheres on L		loss Trim Lines (B16)	
Water Marks (B1)		X Roots (C			ry-Season Water Table	(C2)
Sediment Deposits (B2)		the second s	of Reduced Iron (-	rayfish Burrows (C8)	
Drift Deposits (B3) Algal Mat or Crust (B4)			on Reduction in Til		aturation Visible on Aer tunted or Stressed Plan	All there is a second to be a second
		Soils (C6	k Surface (C7)			
Iron Deposits (B5)	가 크고, 카니니	10	Line to restar the star		eomorphic Position (D2	,
Inundation Visible on Ae	rial		oplain in Remarks)	CONCEPTER AND AND	hallow Aquitard (D3)	D.O.
Imagery (B7)	20)			Contraction of the local division of the loc	licrotopographic Relief (AC-Neutral Test (D5)	,D4)
Water-Stained Leaves (E Aquatic Fauna (B13)	55)			<u> </u>	AC-Medical rest (DS)	
Field Observations:		Sol Englisher and	Death for the		14/-4/1	
Surface water present?	Yes X	and the second se	Depth (inches)		Wetland	
Water table present? Saturation present?	Yes X Yes X	- No	Depth (inches) Depth (inches)		hydrology	Y
(includes capillary fringe)	Yes X		Deput (inches)		present?	
(monutes capitaly mige)						
Describe recorded data (stre	eam gauge, m	nonitoring well, a	erial photos, prev	ious inspection	s), if available:	
Remarks:						

EGETATION - L	Jse scientific	names of pl	ants			Sampling Poi	nt: W01	11
	The second				1200	50/20 Thresholds		
Tree Stratum	Plot Size (30 ft.	Absolute	Dominant	Indicator		20%	50%
nee Suatum	FIOL SIZE (50 n.	% Cover	Species	Status	Tree Stratum	0	0
						Sapling/Shrub Stratum	0	0
and the second	-		San San Die			Herb Stratum	20	50
111-0 decision	1.1.1.1.1.1.1	- 100 PA				Woody Vine Stratum	0	0
2.44.0						Dominance Test Worksho Number of Dominant	et	
						Species that are OBL,		
1. St. H (- 1.)						FACW, or FAC:	1	(A)
		and man				Total Number of Dominant Species Across all Strata:	1	(D)
				= Total Cover		Party Explored to the second second second second		(B)
			And the second second			Percent of Dominant Species that are OBL,		
anline/Chath			Absolute	Dominant	Indicator		100.00	% (A/E
apling/Shrub Stratum	Plot Size (15 ft.)	% Cover	Species	Status	FACW, or FAC:	100.00	70 (201
						Prevalence Index Workst	neet	
						Total % Cover of:		
							- 10	•
	diana di Santa					FACW species 90 x 2		_
						FAC species 0 x 3		_
A 19101 ST 11				Contraction of the	March State	FACU species 0 x 4	With Street of Concession, Name	21
1 1 1 1 1 1 1 1 T		and the second second				UPL species 0 x 5		
Carl Contraction of the	All and the second					Column totals 100 (A)	19	0 (B)
	rb Stratum Plot Size(5ft.)				Prevalence Index = B/A =	1.90		
THERE IS			100 Mar 100					
		0	= Total Cover					
		6 2640450			Hydrophytic Vegetation In	ndicator	s:	
		Absolute	Dominant	Indicator	X Rapid test for hydrophy			
lerb Stratum		% Cover	Species	Status	X Dominance test is >50			
Obalada anus				and the second s				
Phalaris aruno		Call Call	65	Y	FACW	X Prevalence index is ≤3		14.
Scirpus cyper			15	N	FACW	Morphological adaptati		
Typha latifolia	Str. P. No.46 L	ALL STATION	10	N	OBL	supporting data in Rem	arks or c	on a
Juncus effusu	IS	0.00	10	N	FACW	separate sheet)		
	1	1			1	Problematic hydrophyti	c vegeta	tion*
					The state of the s	(explain)	e regen	
			_					
						*Indicators of hydric soil and wetla		gy must
		14.1			Artes	present, unless disturbed or probl	ematic	
CONVERSION OF THE OWNER			-			Definitions of Vegetation	Strata:	
COLORADO CALCO	and a statis	1. 3. 5. 11.	3. 2 Ca 2. C.	S. BRILLE	The second second	1020 H395 1046 15 23 311		
IS SEALERS		A MARTINE ST			Superior in	Tree - Woody plants 3 in. (7.6 cm breast height (DBH), regardless o		n diamete
	194 g/ 16.1107 a By/	12521111151	1011255-5-1	differences.	110-7年37年2月1			
			-			Sapling/shrub - Woody plants les greater than 3.28 ft (1 m) tall.	s than 3 in	. DBH ar
		10.0	100	= Total Cover			Antonia	
						Herb - All herbaceous (non-wood size, and woody plants less than 3		egardiess
Woody Vine	Plot Size (30 ft.)	Absolute	Dominant	Indicator			
Stratum			% Cover	Species	Status	Woody vines - All woody vines g	reater than	3.28 ft in
			-	-		height.		
	1 day and the	1.15			The second second			-
1. 1. 2. 1						Hydrophytic		
	- + +		and the second	Cherry .		vegetation		
			0 :	= Total Cover		present? Y		
			KARLINA SEE ALLES					
marks: (Include p	hoto numbers h	ere or on a se	eparate sheet)	A STREET		Contraction of the second	1.1.1	

SOIL		- 16			1.50	1.5		npling Point: W011
						e indicato	or or confirm the absence of	of indicators.)
Depth (inches)	Matrix Color (moist)	%	Color (moist)	dox Feat %	atures Type*	Loc**	Texture	Remarks
(incries) 0-18	10YR 4/2	90	10YR 5/8	10	I C	PL/M	silt loam	
0-10		00	101110/0	10	+ -		Sillivain	
					1.2			
112		9						
					+			
	-	1000			-			
					-	14		
ALL CALLS		Contraction of	The second s	HEAD IN COLOR	1.000	De Maren		
	(Heff) - Heff) - Heff)	123372			A STATISTICS			
	A				A DECK			
			120.00		1 3 3 1	1.0		
A Same			1 Martin					
				d Matri	x, CS=C	overed o	or Coated Sand Grains	
	PL=Pore Lining,	, M=Mai	trix	the party of				
Hydric Sol	il Indicators:		Death Co				Indicators for Pr	roblematic Hydric Soils:
1 l'ation			Dark Su			(00)	2 am Muck //	440 /84 PA 447)
Histiso	l (A1) Epipedon (A2)				ow Surfac	ce (58)		A10) (MLRA 147) Redox (A16) (MLRA 147, 148)
the second se	Epipedon (A2) Histic (A3)		(MLRA Thin Da		40) face (S9)	A		odplain Soils (F19)
	gen Sulfide (A4)		(MLRA				(MLRA 136, 1	
	ed Layers (A5)				Matrix (I	F2)		Dark Surface (TF12)
	Auck (A10) (LRR	N)	X Deplete					in in Remarks)
	ed Below Dark Si				urface (F	-6)		
Thick D	Dark Surface (A1)	2)	Deplete	ed Dark	Surface	(F7)		
and the second se	Mucky Mineral (S	100 million 100			sions (F8			A LOCATE CONTRACTOR
	N, MLRA 147, 14						(LRR N, MLRA 136)	
	Gleyed Matrix (S	;4)				(MLRA 1		
	Redox (S5)) (MLRA 148) BA 127, 147)	
Strippe	ed Matrix (S6)		Keu Fa		iteriai (r.	21) (MLr	RA 127, 147)	
*Indicators	of hydrophytic V	anatatic	and wetland h	nolorbu	w must h		nt, unless disturbed or prot	blamatia .
"Indicators	от пусторнусс ч	Bgerano	n anu wetana nj	Jaroiog:	y must b	e presen	I, unless disturbed or pro-	Diemauc
and and a second of the		131130				Care Mana		
Restrictive	Layer (if observe	ed):						
Type:			State State		121-201	12-11-22	Hydric soil present	17 <u>Y</u>
Depth (inch	nes):	SEVE				Unit of		
	H DESIGNATION				All and a	AND SH		
Remarks:								
1.151								
-								
1000								
30 JA 20								

DUKE- WALTON TO BIG BONE

Project/Site: Walton-Big	Bone Natural Gas Pipeline	City/County: Boone	Sampling Date: 4/	1/10
Applicant/Owner: Duke E		State: Kentuc	ky Sampling Point U)11
Investigator(s): Sarah Milos			ship, Range: No PLSS in Area	
Landform (hillslope, terrace,		Local relief (concave, c		Slope (%): 10
Subregion (LRR or MLRA):			Long.: -84.628204	Datum: WGS 84
Soil Map Unit Name No-Noli	in silt loam, 0 to 2 percent sl	opes, occasionally flooded	NWI Classification: N/A	
Are climatic/hydrologic cond	ditions of the site typical for t	his time of the year? Yes	X No (If no, exp	lain in remarks)
Are vegetation , so	, or hydrology	significantly disturb	ed? Are "normal	Yes
Are vegetation, so	oil , or hydrology	naturally problema		Concession of the local division of the loca
			(If needed, explain any	
SUMMARY OF FINDIN	GS			
Hydrophytic vegetation pres	sent? No			
Hydric soil present?	No	is the sampled are	ea within a wetland? No	
Wetland hydrology present?	? No	Up	land for W011	
Remarks:				
Upland pit for wetland	W011			
HYDROLOGY				
Wetland Hydrology Indic	ators:		Secondary Indicators (minimum	m of two required)
Primary Indicators (minimun	n of one is required; check a	II that apply)	Surface Soil Cracks (B6)	
Surface Water (A1)	True Ac	juatic Plants (B14)	Sparsely Vegetated Concav	e Surface (B8)
High Water Table (A2)		en Sulfide Odor (C1)	Drainage Patterns (B10)	
Saturation (A3)	and the second sec		Moss Trim Lines (B16)	
Water Marks (B1)	Roots (d Rhizospheres on Living	Dry-Season Water Table (C	2)
Sediment Deposits (B2)		ce of Reduced Iron (C4)	Crayfish Burrows (C8)	-)
Drift Deposits (B3)		Iron Reduction in Tilled	Saturation Visible on Aerial	Imagery (C9)
Algal Mat or Crust (B4)	Soils (C		Stunted or Stressed Plants	
Iron Deposits (B5)		uck Surface (C7)	Geomorphic Position (D2)	
	Others (1	Explain in Remarks)	Shallow Aquitard (D3)	
Inundation Visible on Aer Imagery (B7)			Microtopographic Relief (D4	
Water-Stained Leaves (E	39)		FAC-Neutral Test (D5)	,
Aquatic Fauna (B13)	,			
Field Observations:				
Surface water present?	Yes No	X Depth (inches): NA	Wetland	
Nater table present?		X Depth (inches): NA		
Saturation present?		X Depth (inches): NA		N
(includes capillary fringe)				
Describe recorded data (stre	eam gauge, monitoring well,	aerial photos, previous insp	ections), if available:	
Remarks:		····	<u> </u>	
PROMINE AND				

	s		14	Sampling Poir	π: 001	1
	Absolute	Dominant	Indicator	50/20 Thresholds	20%	50%
ft.)				Tree Stratum		0
	10 00101	opoolog	oluluo			15
						50
				and the second		
A Laure				woody vine Stratum	U	0
				Dominance Test Workshe	et	1
	an wat w			Number of Dominant		
STITL W	difference and a	-14	61.0	Species that are OBL,		
S. Solar	12 12	Lug (Arall	LIME AL	FACW, or FAC:	0	(A)
		AND ROBER DE	and the second	Total Number of Dominant	1000	
	Lan a nets	OR ALCO DE		Species Across all Strata:	4	(B)
Lin with the	0 =	Total Cover		Percent of Dominant		151.00
	ADD STREET					
	Absolute	Dominant	Indicator	and the second	0.00%	(AVE
ft.)					0.007	
		and the state of the state				
1.11	30	<u> </u>	UPL		eet	
V SPUT	1245		COMPANY STATE	Total % Cover of:		
- 1.2 II II		A HERE AL		OBL species 0 x 1	= 0	-
ALC: NOT THE OWNER	ALL BE AND	THE TRACK	73. 1	FACW species 0 x 2	= 0	
Barris and	In the second second			FAC species 0 x 3	= 0	10 2 3
Section 1		17 19		FACU species 100 x 4	= 40	0
	100 100 State 100			UPL species 30 x 5	= 15	0
Lotan and						
	PERCENT.	12111000	100 C			-
	30	Total Cover		And the second second second		
		- Total Cover		Hydrophytic Vegetation In	dicator	B.
	Absolute	Dominant	Indicator			
ft.)					-	auon
		and the second se		the second		
			The second se	the second se		-
	and the second se		the second division of			
	and the second se		and the second se		arks or c	on a
Charles Com			the second se			
1. 24	10	<u>N</u>	FACU	Problematic hydrophytic	c vegeta	tion*
	Dec Inter	State of the state of the		(explain)		
				*Indicators of hydric soil and wetta	nd hydrolo	gy must b
	51725 4.0	15 0351080	ADD TO YES	present, unless disturbed or proble	matic	
<u> </u>				Definitions of Vegetation	Strata.	-
		TRACE AND	CO ^C States			
	Al Annahar					1 diamete
			The design of the			DBU
				greater than 3.28 ft (1 m) tall.	e uner i o m	. Don an
- Harris	100 =	Total Cover		Herb - All herbaceous (non-woody) plants, n	gardless
	Abachita	Dominant	Indiactes			
ft.)						
	% Cover	Species	Status		eater than	3.28 ft in
a la senten		- ALLAL TE	1	rwight.	A. C.	11
				Hydrophytic		
I NATO CARGO		Total Cover		vegetation		
distant des	0 =			present? N		
	ft.)	% Cover	tt.) % Cover Species	tt.) % Cover Species Status	ft) % Cover Species Status Sapling/Shrub Stratum	ft) % Cover Species Status Tree Stratum 0 Seping/Shrub Stratum 0 Herb Stratum 20 Woody Vine Stratum 0 Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: 0 0 0 = Total Cover Species that are OBL, FACW, or FAC: 0.00% 30 Y UPL Species that are OBL, FACW, or FAC: 0.00% 30 Y UPL Fevalence Index Worksheet Total % Cover of: 0 30 Y UPL Fevalence Index Worksheet Total % Cover of: 0 30 Y UPL FACW, or FAC: 0.00% Status 30 Y UPL FACW, or FAC: 0.00% Secies 0 x1 = 0 FACW, or FAC: 0.00% Secies 0 x1 = 0 FACW, or FAC: 0.00% Secies 0 x1 = 0 FACW, or FAC: 0.00% Secies 0 x1 = 0 FACW species 0 x1

Depth	Matrix			ox Feat		Indicato	r or confirm the absence of	indicators.)		
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks		
0-18	10YR 4/3	100		-	12.00	84101	silt loam			
De Testan				6-114	但不可					
					20.20	R. S. R.				
240 - Cal					al said	Sound		The second street the		
S. Sugali and										
							ALCENTER ALCENTER	S. C. Howeld Toys (10		
A PART IN					1.00	1000				
				14.14	Ref. S.	1.50.00				
15 0			和自己的中国,等所	1.202	1.000	No. 18				
				UP L'IV	68.JU.					
Tune: O-C	Concentration D	Donlat	on PM=Deduce	d Matri	00-0	avered a	Control Sand Crains			
	PL=Pore Lining,			o Matrix	x, CS=C	overed o	r Coated Sand Grains			
	Indicators:	IVI-IVICI					Indicators for Br	oblematic Hydric Solls:		
iyunc 30i	indicators.		Dark Su	face (S7)			obiematic nyunc Sons.		
Histiso	(A1)				w Surfac	e (S8)	2 cm Muck (A	10) (MLRA 147)		
	pipedon (A2)		(MLRA	147, 14	(8)		Coast Prairie	Redox (A16) (MLRA 147, 148		
the state of the s	listic (A3)				ace (S9)			odplain Soils (F19)		
	en Sulfide (A4)		(MLRA				(MLRA 136, 1			
	d Layers (A5) uck (A10) (LRR	M)	Loamy C		Matrix (F	-2)	Other (Explain	Dark Surface (TF12)		
	ed Below Dark Su				rface (Fi	3)				
and the second sec	ark Surface (A12				Surface					
	Mucky Mineral (S		Redox D	Depress	sions (F8)				
and the second se	, MLRA 147, 14						LRR N, MLRA 136)			
	Gleyed Matrix (S	4)				MLRA 13	36, 122) (MLRA 148)			
	Redox (S5) d Matrix (S6)						(MLCA 140) A 127, 147)			
Outppe				0.111 1010						
Indicators	of hydrophytic ve	getatio	n and wetland hy	drology	/ must be	e present	t, unless disturbed or prob	lematic		
Restrictive	Layer (if observe	q).								
Гуре:		-,.			All		Hydric soil present?	? N		
Depth (inch	es):		and the second second					The second second		
Remarks:				-		-				
ternarita.										

DUKE- WALTON TO BIG BONE

Project/Site: Walton-Big	Bone Natura	Gas Pipeline	City/County:	Boone	Sampling Date:	4/1/16				
Applicant/Owner: Duke E				Kentucky	Sampling Point					
Investigator(s): Sarah Milos				A CONTRACTOR OF	inge: No PLSS in Are					
Landform (hillslope, terrace,					none): concave	Slope (%): 0				
Subregion (LRR or MLRA):		Lat.:	38.889762		-84.625699	Datum: WGS 84				
Soil Map Unit Name No-Nol	in silt loam, 0	to 2 percent slop	bes, occasionally	tooded N	NI Classification: N/A					
Are climatic/hydrologic conc		C. SCIANSIN MARK			The Real Press	explain in remarks)				
Are vegetation, so, so	pil,	or hydrology or hydrology		y disturbed? roblematic?	Are "normal circumstances" pre (If needed, explain	Yes sent? any answers in remark				
SUMMARY OF FINDIN	GS			oper this and the						
Hydrophytic vegetation pres Hydric soil present?	ent? Ye		is the san	pled area with		es				
Wetland hydrology present?	Ye Ye	s	W012							
PEM wetland along ro	ad ROW									
HYDROLOGY										
Wetland Hydrology Indic	ators:			Secon	dary Indicators (minin	num of two required)				
Primary Indicators (minimum	n of one is rec	quired; check all	that apply)	SL	Inface Soil Cracks (B6)					
X Surface Water (A1)		True Aqua	atic Plants (B14)	Sp	arsely Vegetated Con	cave Surface (B8)				
X High Water Table (A2)		Hydrogen	Sulfide Odor (C1)	. X Dr	ainage Patterns (B10)					
X Saturation (A3)		Oxidized	Rhizospheres on L	iving Ma	oss Trim Lines (B16)					
Water Marks (B1)		X Roots (Ca			y-Season Water Table	(C2)				
Sediment Deposits (B2)			of Reduced Iron (C4)Cr	ayfish Burrows (C8)					
Drift Deposits (B3)		Recent In	on Reduction in Til	led Sa	turation Visible on Aer	ial Imagery (C9)				
Algal Mat or Crust (B4)		Soils (C6)	Manipal Sci Thi	St	unted or Stressed Plan	nts (D1)				
Iron Deposits (B5)	San Star	Thin Muc	k Surface (C7)	Ge	eomorphic Position (D2	2)				
Inundation Visible on Ae	rial	Other (Ex	plain in Remarks)	Sł	allow Aquitard (D3)					
Imagery (B7)					crotopographic Relief	(D4)				
Water-Stained Leaves (E	39)			X FA	C-Neutral Test (D5)					
Aquatic Fauna (B13)										
Field Observations:										
Surface water present?	Yes X	No	Depth (inches)		Wetland					
Water table present?	Yes X	No	Depth (inches)		hydrology					
Saturation present? (includes capillary fringe)	Yes X	No	Depth (inches)	:	present?	<u> </u>				
	eam gauge, m	nonitoring well, a	erial photos, prev	ious inspections), if available:					
Describe recorded data (stre										
Describe recorded data (stre Remarks:		E ale								
	<u></u>	and the second								

scientific r	names of	plants	5	ALL THURSE		Sampling Poi	int: W01	2
			Abaalada	Destinent	Indiantes	50/20 Thresholds	0001	
Plot Size (30 ft.)				Transformer		50%
			% Cover	Species	Status			0
1							-	0
				and the second	ALC: NO.	Herb Stratum	20	50
A SECOND	コンに成本的	- 1 A	2.5 (10) E	a level i e		Woody Vine Stratum	0	0
The state water		SALE .	1.2010	and the second second	101223		- 11.1.1	1
al sus se vice	S. State For	100	ALC: NO		Carlo Maria	Dominance Test Worksh	eet	
1000	10.000 Lat	45.4	Station -	The second states	ALDORED.	Number of Dominant		
e Marson	In Early State				The State of	Species that are OBL.		
TUNO THE	1			Line an and the	The second second	A CONTRACT OF A CO	2	(A)
		1				the second se	Contraction of the local division of the loc	- "
	Second Second							(B)
		1		Total Cover	the second second			_(0)
				- TOTAL COVEL		and the light that the same starts and the same set		
Not Size /	15.0	1	Absolute	Dominant	Indicator	FACW, or FAC:	100.00	% (A/
TUL SIZE (15 11.	,	% Cover	Species	Status		514 A	ALL ST
						Drouglange Index Works	heat	
						a share the percent of the state of the reserver of	ueer	
한 권리 무역		90.5	11 - 11 - 13 - 13 - 13 - 13 - 13 - 13 -			and the second		
And States and		- 50 k			AT CARLE		= 85	5
	1-1 A	1.	1015 44		6 (P)	FACW species 15 x 2	= 30)
	1		Contraction in the	State of the	STAKE PUTTO	FAC species 0 x 3	= 0	100
					Contraction of the	FACU species 0 x 4	= 0	100
		TLES	1.00	Contraction of		and the second se	= 0	1000
		1			The state of the s			5 (B)
IN CALIFORN								<u> </u>
		11.00	A State of the			Frevalence index - b/A -	1.15	-
S		1			and the second second			
			0 :	= Total Cover		And the second second second	HER.O.	
Diet Size /	5.8	1	Absolute	Dominant	Indicator	X Rapid test for hydrophy	ytic veget	ation
101 3128 (J IL.	,	% Cover	Species	Status	X Dominance test is >50	%	
			50	Y	OBL	X Prevalence index is ≤3	.0*	
n Salute I	ALC: 10		35	Y	And the owner water of the local data	and the second se		vide
	il in the second	1000	and the second se	and the second s	No. of Concession, Name			
	EL CANERES!							
Contraction of the							in unante	lion*
	41041E (A) = C -						ic vegeta	lion
	and the set		- Contractional Distance		The second second			
	alla sectores	1.80 1		and the second				gy must
Salar Parsi	5	_	28. V. 22. U.V.	Sufficient Soft	odnessi sis	present, unless disturbed or prob	lematic	
期の成功を			State (Based Shill	Contracting 190		at a second second second second	States in	
A REAL PROPERTY	And a lot	1	UEL VAUETESTAVA	Weba Marking	INS SHEWRON	Definitions of Vegetation	Strata:	
	0016 m # 2	able 10	1 1 1 1 1 1 1 1 1	NVA BARES AND SA	STATISTICS OF	DESCRIPTION OF STREET		11
Contraction of	A DATE OF	There		A SAME AND A	and the second of			diamet
Martine and Martin	A Contractor	_	the second second	A start and a start of	The State State	breast height (DBH), regardless of	of height.	
	ALV SHERE IT?			The second se			an then D !-	-
							as then 3 in	. DBH 8
ALC: SHURMAN	A CARE	States 1	100	Telel	IT TO AND	greater man 3.20 ft (1 m) tall.		
a set the set			100 =	Total Cover		Herb - All herbaceous (non-wood	tv) plante m	namilae
We partie -						size, and woody plants less than		yaraas
			Absolute	Dominant	Indicator		0.2011 12.	
Not Size (30.8	1		Oranian	Status	Woody vines - All woody vines g	reater than	3.28 ft i
Plot Size (30 ft.)	% Cover	Species				
Yot Size (30 ft.)	% Cover	Species		height.		
Plot Size (30 ft.)	% Cover	Species	AND AND A	height.		
Plot Size (30 ft.)	% Cover			height.		
Plot Size (30 ft.)	% Cover					<u></u>
Plot Size (30 ft.)	% Cover			Hydrophytic		
Plot Size (30 ft.)	% Cover					
² lot Size (30 ft.) 		= Total Cover		Hydrophytic		
Not Size (30 ft.)				Hydrophytic vegetation		
Plot Size (Hydrophytic vegetation		
						Hydrophytic vegetation	-	
						Hydrophytic vegetation	-	
						Hydrophytic vegetation	-	
	Plot Size (Plot Size (15 ft.	Plot Size (15 ft.)	% Cover % Cover 0 35	Plot Size (30 ft.) % Cover Species	Plot Size (30 ft.) % Cover Species Status	Plot Size (30 ft. Absolute % Cover Dominant Species Indicator Status	Plot Size (30 ft.) Absolute % Cover Dominant Species Indicator Status Tree Stratum 0

	Matrix			o docul ox Feat		indicato	r or confirm the absence of	
Depth (inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0-18	2.5Y 4/1	80	2.5Y 3/1	10	D	PL/M	silt loam	the Marthan Instantion of South
	a transfer of set		10YR 5/8	10	С	PL/M	silt loam	
1 1. 1. 1.		4520				der 30	발생님 관계 관습은 문	
		1.45		2974	経営の			「「見ていた」を見ていた。
146.2	Althon Street Proves	92211	western with Third	120 Hards		Contraction of the		Par the Miles - Done
SHIPCVILS			石窟的高 规制化		102.52	Return	的高速的。 和市场和市场	利用の「おおお」のない。こ
SARAH'S						CODES:		
		COLUMN TO A		10125		35. 24 11		
		1 State Notific			114 113487			
					2 1			
Type: C=C	Concentration D=	Deplet	ion. RM=Reduce	d Matrix	CS=C	overed o	r Coated Sand Grains	
	PL=Pore Lining,							
vdric Sol	I Indicators:		HAR SHOULD		CAL NO.		Indicators for Pro	oblematic Hydric Soils:
,			Dark Su	rface (S	57)			
Histiso	(A1)		Polyvalu			e (S8)	2 cm Muck (A	10) (MLRA 147)
	Epipedon (A2)		(MLRA					Redox (A16) (MLRA 147, 14
	listic (A3)		Thin Da				and the second se	odplain Soils (F19)
	en Sulfide (A4)		(MLRA				(MLRA 136, 1	
	ed Layers (A5)		Loamy (=2)		Dark Surface (TF12)
	luck (A10) (LRR	N)	X Deplete	margine and the second	STATUS AND ADDRESS OF	-,	Other (Explain	
	ed Below Dark Su		the second se			2)		r in r tornanto/
		11000 (
the second se	Dark Surface (A12	2)						
Thick D	Dark Surface (A12 Mucky Mineral (S		Deplete	d Dark	Surface	(F7)		
Thick D Sandy	Dark Surface (A12 Mucky Mineral (S I, MLRA 147, 148	1)	Depleter Redox D	d Dark : Depress	Surface ions (F8	(F7) 5)	(LRR N, MLRA 136)	
Thick D Sandy (LRR N	Mucky Mineral (S	i1) 3)	Deplete Redox D Iron-Ma	d Dark Depress nganes	Surface ions (F8 e Masse	(F7) 5)		
Thick E Sandy (LRR N Sandy	Mucky Mineral (S I, MLRA 147, 148	i1) 3)	Deplete Redox D Iron-Ma	d Dark Depress nganes Surface	Surface ions (F8 e Masse (F13) (I	(F7) 3) es (F12) MLRA 1:		
Thick E Sandy (LRR N Sandy Sandy	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S4	i1) 3)	Depleter Redox D Iron-Ma Umbric	d Dark Depress nganes Surface nt Flood	Surface ions (F8 e Masse (F13) (I Iplain Sc	(F7) 3) 95 (F12) MLRA 1: pils (F19)	36, 122)	
Thick E Sandy (LRR N Sandy Sandy Strippe	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6)	(1) 3) 4)	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) & 127, 147)	
Thick E Sandy (LRR N Sandy Sandy Strippe	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6)	(1) 3) 4)	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148)	lematic
Thick E Sandy (LRR N Sandy Sandy Strippe	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6)	(1) 3) 4)	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) & 127, 147)	lematic
Thick E Sandy (LRR N Sandy Sandy Sandy Strippe	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) & 127, 147)	lematic
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype:	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) & 127, 147)	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype: Depth (inch	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype: Depth (inch	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype: Depth (inch	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype:	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype: Depth (inch	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype: Pepth (inch	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype: Pepth (inch	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype: Depth (inch	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe Indicators Restrictive ype: Depth (inch	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	
Thick E Sandy (LRR N Sandy Sandy Strippe ndicators estrictive ype: epth (inch	Mucky Mineral (S I, MLRA 147, 148 Gleyed Matrix (S- Redox (S5) d Matrix (S6) of hydrophytic ve Layer (if observe	(1) 3) 4) egetatio	Deplete Redox D Iron-Mai Umbric Piedmoi Red Par	d Dark Depress nganes Surface nt Flood rent Ma	Surface ions (F8 e Masse (F13) (I Iplain So terial (F2	(F7) s) MLRA 1 ; bils (F19) 21) (ML F	36, 122) (MLRA 148) (A 127, 147) t, unless disturbed or prob	

DUKE- WALTON TO BIG BONE

Project/Site: Walton-Big Bone Na	tural Gas Pipeline	City/County:	Boone	Sampling Date	: 4/1/16
Applicant/Owner: Duke Energy			Kentucky	Sampling Point	
Investigator(s): Sarah Miloski, Julie I				Range: No PLSS in An	
Landform (hillslope, terrace, etc.): <u>t</u>	and the second			(, none): none	Slope (%): 10
Subregion (LRR or MLRA): LRR N	Lat.:	38.889829		.: -84.625665	Datum: WGS 84
Soil Map Unit Name <u>No-Nolin silt loar</u>	n, 0 to 2 percent slop	es, occasionally	flooded	WI Classification: N//	4
Are climatic/hydrologic conditions of t	he site typical for this	s time of the year	? Yes X	No (If no, e	explain in remarks)
Are vegetation , soil	, or hydrology	significant	ly disturbed?	Are "normal	Yes
	, or hydrology	naturally p	roblematic?	circumstances" pre	esent?
				(If needed, explain	any answers in remain
SUMMARY OF FINDINGS					
Hydrophytic vegetation present?	No		1 2	a the second second	A HALL MARINE AND
Hydric soil present?	No	is the sar	npled area wit	hin a wetland?	No
Wetland hydrology present?	No		Upland fo	or W012	
	Water and the second	1-2-10 M = B			
Remarks:	A	241.7			1000
Upland pit for wetland W012					
HYDROLOGY			Coord	adam Indiantam (mini	
Netland Hydrology Indicators:		Ale and a secole A		ondary Indicators (mini	
Primary Indicators (minimum of one is				Surface Soil Cracks (B6	
Surface Water (A1)		atic Plants (B14)		Sparsely Vegetated Cor	
High Water Table (A2)	Hydrogen	Sulfide Odor (C1)		Drainage Patterns (B10)	
Saturation (A3)	Oxidized	Rhizospheres on I		Noss Trim Lines (B16)	
Water Marks (B1)	Roots (C:	the second se		Dry-Season Water Table	e (C2)
Sediment Deposits (B2)		of Reduced Iron (Crayfish Burrows (C8)	
Drift Deposits (B3)		on Reduction in Ti		Saturation Visible on Ae	
Algal Mat or Crust (B4)	Soils (C6)			Stunted or Stressed Pla	
Iron Deposits (B5)	Thin Muc	k Surface (C7)		Seomorphic Position (D	2)
Inundation Visible on Aerial	Other (Ex	plain in Remarks)		Shallow Aquitard (D3)	
Imagery (B7)			N	Aicrotopographic Relief	(D4)
Water-Stained Leaves (B9)			F	AC-Neutral Test (D5)	
Aquatic Fauna (B13)					
Field Observations:	States and States				
Surface water present? Yes	No X	Depth (inches): NA	Wetland	
Water table present? Yes	No X	Depth (inches		hydrology	
Saturation present? Yes	No X	Depth (inches): NA	present?	N
(includes capillary fringe)			The later is the		Level a la sel se
Describe recorded data (stream gaug	e, monitoring well, a	erial photos, prev	ious inspection	s), if available:	Sector Stream of
	the second second				
Remarks:					

GETATION - Use scientific name	s of plants	acon in the			Sampling Poi	nt: U012	2
		12 1 - 750			50/20 Thresholds	12.00	
Tree Stratum Plot Size (30 f	H)	Absolute	Dominant	Indicator		20%	50%
Thee Stratum Flot Size (Sol	n.)	% Cover	Species	Status	Tree Stratum	0	0
					Sapling/Shrub Stratum	6	15
	1.3.5			ME STREET	Herb Stratum	20	50
N 200 1 2 2 3 0 1 1 1		ALCOURT,	1000 BH 172.00	State of the second st	Woody Vine Stratum	0	0
		Sec. 21		The seal	and an and a state of the state of the		1215
			notice and second to	CORC - W	Dominance Test Workshe	et	
相關之間以后,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	and a second second		a transferration	and shares a	Number of Dominant		
	CANA TO P				Species that are OBL,		
ちたいや中でなってんせい。これの理论のです。		a desta de			FACW, or FAC:	0	(A)
The second	Concern State	Statistics"	Street Anorth St	The start	Total Number of Dominant	32 I.I.	1200
· · · · · · · · · · · · · · · · · · ·	THE PART OF	$u \to u u$	ILAN WEST	Contraction of the Party of the	Species Across all Strata:	4	(B)
	The second second	0 =	Total Cover	A Case of the second	Percent of Dominant		
	Same State State	NOTINT Y			Species that are OBL.		
apling/Shrub Diet Size (15		Absolute	Dominant	Indicator	FACW, or FAC:	0.00%	(AI
Stratum Plot Size (151		% Cover	Species	Status		0.0070	
			and the second second				
Lonicera maacki		30	<u> </u>	UPL	Prevalence Index Worksh	leet	
		LIGHT BOLL			Total % Cover of:		
	1000		1.1.1.2.2.2.1.1.1		OBL species 0 x 1	and the second se	
		net all an	100 W 28527	TWEIN LIGHT	FACW species 0 x 2	= 0	6.3
		目前の一日			FAC species 0 x 3	= 0	8. 1
	1.41. 1.01		amer and a	Carl Street	FACU species 80 x 4	= 32	0
LUCK ANY REAL PROPERTY AND ANY		12. A 12 0		CONSCREME?	UPL species 50 x 5	= 25	0
	20. 20 To 10. 10	1. 19 . 19 . 19		1	Column totals 130 (A)	57	0 (B)
	and the	A BAR ST	W DATES	A CONTRACTOR	Prevalence Index = B/A =	4.38	ì
	Cantres	TANK LOT V	The first second	CHARGE THE A			-
and the second se		30 =	Total Cover	and the second second			
					Hydrophytic Vegetation In	dicators	
		Absolute	Dominant	Indicator	Rapid test for hydrophy		
lerb Stratum Plot Size (5 fl		% Cover	Species	Status	Dominance test is >509		auon
Discours & Horsen		30	The state of the s	FACU	Prevalence index is ≤3.		
Dipsacus fullonum			<u>Y</u>	Statement of the local division of the local	the second s		
Daucus carota		20	Y	UPL	Morphological adaptation		
Lamium purpureum		20	Y	FACU	supporting data in Rem	arks or o	na
Plantago major		15	N	FACU	separate sheet)		
Taraxacum officinale	1	10	N	FACU	Problematic hydrophyti	c vegetat	tion*
Cirsium arvense		5	N	FACU	(explain)		
	Super Strike	MILLING CONTRACT	The second second	A STATE AND A STATE AND	*Indicators of hydric soil and wetla	nd hydrolog	gy musi
The of All Contract States and the second	The ways	Statistics and		A >10-2012	present, unless disturbed or proble	ematic	
	34 140 14		1			Contraction of	
· · · · · · · · · · · · · · · · · · ·	a nuller	Materia S	A Star La Star	WELL HANDE	Definitions of Vegetation	Strata:	
·····································	(天马)[2] 言語		APRIL PROPERTY	and the state	Tree - Woody plants 3 in. (7.6 cm		diama
1.3.11.22 また。思いして、ほういい。		States 11	in the second second	NELET SLOT	breast height (DBH), regardless o		Gianna
	RANGENIE DES	A SHE WAS		Mer Phillips		STATISTICS.	
			The second		Sapling/shrub - Woody plants les	s than 3 in.	DBH a
		400	Tatal Or	11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	greater than 3.28 ft (1 m) tall.		
	ALC: NO	100 =	Total Cover		Herb - All herbaceous (non-wood)) plants re	gardles
Alanda Mana		Abaalita	Daminut	Indiantes	size, and woody plants less than 3		
Noody Vine Plot Size (30 f		Absolute	Dominant	Indicator	States and the states of the		
Stratum		% Cover	Species	Status	Woody vines - All woody vines gr	reater than	3.28 ft i
		13.11.1.1.1.	the Contraction		height.		
	the state of the					Mar and State	
	<u> 1997 - 19</u> 77		A THURSDAY				
		And the second second	The second second		Hydrophytic		
					vegetation		
	The other Local	0 =	Total Cover	and an internal	present? N		
narks: (Include photo numbers here or	on a separat	te sheet)	Station of the		and the second states of the	22.2013	CZ Inc.

Depth			e deput needed t	o docu	ment the	indicato	r or confirm the absence of	indicators.)	
	Matrix			ox Feat	tures	1972	Texture	Remarks	
· · · · · · · · · · · · · · · · · · ·	lor (moist)	%	Color (moist)	%	Type*	Loc**	Toxidio		
0-6 1	0YR 3/4	100		_	1.1.1		silt loam	A STREAM STREAM	
6-12 1	0YR 4/6	100	8 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	-	1.3 000	2000	silt loam		
1. N. M. 2.	102.00	18 C 19		11614	1.14.3	100			
				3	1.000	1			
es) at the set	14 1.2.	R. S.C							
19 19 19 19 19 19 19 19 19 19 19 19 19 1	and in the	19 19 14			¥7 383				
in a	四次法律的	图以後	S.2.2. 8.3		E. T				
見みる目的とい	2.1977月	in the second		品的。例					
			4月1日1月11日1月11日			THE Y			
	2011年代			1.2	1124	6.510	医关节 的复数形式		
2.1.2.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	and W 1	1000 A.	18,18,124	20. S. L	CALCE.	10.00			
	7157		1 . S. H.		1.24	18 14			
				d Matrix	x, CS=Co	overed o	r Coated Sand Grains		
*Location: PL=	and the second sec	M=Mat	rix		-				
lydric Soil Indi	icators:						Indicators for Pro	oblematic Hydric Solls:	
			Dark Su			- (00)	Dam Munk (A	40) (MI DA 447)	
Histisol (A1) Histic Epipe			Polyvalu (MLRA			æ (58)		10) (MLRA 147) Redox (A16) (MLRA 147, 14	
Black Histic					ace (S9)			odplain Soils (F19)	
Hydrogen Si			(MLRA				(MLRA 136, 1		
Stratified La			Loamy C			-2)		Dark Surface (TF12)	
2 cm Muck (N)	Depleter				Other (Explain		
Depleted Be	low Dark Su	urface (A	A11) Redox D	ark Su	rface (F6	3)			
Thick Dark S	C. Selection of the sel		Depleted						
Sandy Muck	the state of the s		Redox D						
(LRR N, ML						MLRA 13	(LRR N, MLRA 136)		
Sandy Gleye Sandy Redo		4)					(MLRA 148)		
Stripped Ma							(A 127, 147)		
							,		
Indicators of hy	drophytic ve	egetatio	n and wetland hy	drology	/ must be	e present	t, unless disturbed or prob	lematic ·	
Postriotivo Lovo	r (if obsorve					Sales -			
Restrictive Laye		au).					Hydric soil present?	P N	
Depth (inches):		1000		61-81P	1.213	12			
			E. 1999 - 19-4			1			
Remarks:									

DUKE- WALTON TO BIG BONE

Project/Site: Walton-Big Bone Natur	al Gas Pipeline	City/County:	Boone						
Applicant/Owner: Duke Energy			Kentucky	Sampling Point: V					
Investigator(s): Sarah Miloski, Julie Fre		Section	n, Township, Ra	nge: No PLSS in Area					
Landform (hillslope, terrace, etc.): dep				none): concave	Slope (%): 0				
Subregion (LRR or MLRA): LRR N	Lat.:	38.88906		-84.615092	Datum: WGS 84				
Soil Map Unit Name FcD-Faywood silty	clay loam, 12 to 20	percent slopes	NV	VI Classification: PUB	Hh				
Are climatic/hydrologic conditions of the	and the second second second				plain in remarks)				
Are vegetation, soil	, or hydrology , or hydrology	significanti naturally pi	y disturbed? roblematic?	Are "normal circumstances" prese (If needed, explain ar					
SUMMARY OF FINDINGS									
	es								
Constant and Milling Prof. Children and States and States	es	is the sam	pled area with						
Wetland hydrology present? Y	es		W013						
PEM wetland along road ROW									
HYDROLOGY									
Wetland Hydrology Indicators:	NATE OF MEL	ALL REAL PRINCIPLE	Secon	dary Indicators (minim	um of two required)				
Primary Indicators (minimum of one is re	equired; check all t	that apply)	Su	rface Soil Cracks (B6)					
X Surface Water (A1)	True Aqua	tic Plants (B14)	Sp	arsely Vegetated Conca	ive Surface (B8)				
X High Water Table (A2)	Hydrogen	Sulfide Odor (C1)	X Dra	ainage Patterns (B10)					
X Saturation (A3)	Oxidized F	Rhizospheres on Li	ivina Mo	ss Trim Lines (B16)					
Water Marks (B1)	X Roots (C3	second states and states and the second states and the	-	-Season Water Table (C2)				
Sediment Deposits (B2)		of Reduced Iron (C		ayfish Burrows (C8)					
Drift Deposits (B3)	Recent Iro	n Reduction in Till	ed Sa	turation Visible on Aeria	I Imagery (C9)				
Algal Mat or Crust (B4)	Soils (C6)		Stu	inted or Stressed Plants	s (D1)				
Iron Deposits (B5)	Thin Muck	Surface (C7)	Ge	omorphic Position (D2)					
Inundation Visible on Aerial	Other (Exp	plain in Remarks)	Sh	allow Aquitard (D3)					
Imagery (B7)			Mie	crotopographic Relief (D	4)				
Water-Stained Leaves (B9)			X FA	C-Neutral Test (D5)					
Aquatic Fauna (B13)									
Field Observations:	NE TRUSPECTOR	PRIS SHEET	and the second second						
	K No	Depth (inches)	: 1	Wetland					
Water table present? Yes	K No	Depth (inches)	4	hydrology					
Saturation present? Yes	K No	Depth (inches)		present?	Y				
(includes capillary fringe)					Chief and a second second				
Describe recorded data (stream gauge,	monitoring well, ae	erial photos, previ	ous inspections), if available:					
Remarks:									

	f plants				Sampling Po		13
30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	50/20 Thresholds	20% 0	50% 0
					a second s	0	0
	1.5			Talenter	Herb Stratum	20	50
and the second					Woody Vine Stratum	0	0
				7.0. 31. 1	Dominance Test Worksho	eet	
	15 5 19			ALC: NEW YORK	Number of Dominant		
		1245111		a nort start			
		I WEAR AND		Peter Station		-	(A)
	<u></u>						(B)
		Ō	Total Cover				_(_)
					Species that are OBL,		
15 ft.)	Absolute % Cover	Dominant Species	Indicator Status	FACW, or FAC:	100.00	<u>%</u> (A/B
					Prevalence Index Works	neet	and a second
	125.03		Diaman Constant	S. M. W. Alley	Total % Cover of:		
		M				= 0	
	10 m	211	1000	A Constant	FACW species 85 x 2	= 17	0
0 E 1.000 E 1		1. 1. 1. 200 m	C NELSMINDLA			-	-
			The second second second				
State 1 Stor		Contractory.		100 C	The second se	-	-
		1					
antia Carra		Manhatrand.	<u></u>	i	Prevalence Index = B/A =	2.30	
1.1		0 :	Total Cover				
				1			
5 ft.)						ation
			and the second sec		The second		
				and the second se			vide
	INT WAR	and the second se		Add and a second			
P design and said			N			ic vegeta	tion*
Traffic State	CITY OF	CLOSER C	-	The second second	(explain)		
$ f = f _{p_0}$	1997 P.	And the second	Contraction of the second	and the second	*Indicators of hydric soil and wetta	and hydrolo	av must b
ALL STREET		an ann an An			Definitions of Vegetation	Strata:	
L. Standy							n diameter
				AND THE EVEL CARE	Sapling/shrub - Woody plants le		
		100 =	Total Cover		greater than 3.28 ft (1 m) tali.		
					Herb - All herbaceous (non-wood		egardless (
30 ft.)	Absolute	Dominant	Indicator Status	Herb - All herbaceous (non-wood size, and woody plants less than	3.28 ft tall.	Stars.
30 ft.)			Indicator Status	Herb - All herbaceous (non-wood	3.28 ft tall.	
30 ft.)	Absolute	Dominant		Herb - All herbaceous (non-wood size, and woody plants less than Woody vines - All woody vines g	3.28 ft tall.	
30 ft.)	Absolute	Dominant		Herb - All herbaceous (non-wood size, and woody plants less than Woody vines - All woody vines g height. Hydrophytic	3.28 ft tall.	
30 ft.)	Absolute % Cover	Dominant Species		Herb - All herbaceous (non-wood size, and woody plants less than Woody vines - All woody vines g height. Hydrophytic vegetation	3.28 ft tall.	
30 ft.)	Absolute % Cover	Dominant		Herb - All herbaceous (non-wood size, and woody plants less than Woody vines - All woody vines g height. Hydrophytic	3.28 ft tall.	Stars.
30 ft.)) 	Absolute % Cover	Dominant Species		Herb - All herbaceous (non-wood size, and woody plants less than Woody vines - All woody vines g height. Hydrophytic vegetation	3.28 ft tall.	
)) 	Absolute % Cover	Dominant Species		Herb - All herbaceous (non-wood size, and woody plants less than Woody vines - All woody vines g height. Hydrophytic vegetation	3.28 ft tall.	
)	Absolute % Cover	Dominant Species		Herb - All herbaceous (non-wood size, and woody plants less than Woody vines - All woody vines g height. Hydrophytic vegetation	3.28 ft tall.	
	15 ft.	15 ft.)	30 ft.) % Cover	30 ft.) % Cover Species	30 ft. % Cover Species Status	30 ft. % Cover Species Status Tree Stratum	30 ft. % Cover Species Status Tree Stratum 0

Depth	Matrix			ox Feat		Indiodeo	r or confirm the absence of	Carden Manager and States of the
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0-18	10YR 4/2	70	10YR 5/6	30	Ċ	PL/M	silt loam	
Type: C=C	oncentration. D	Deplet	on. RM=Reduce	d Matrix	CS=C	overed o	r Coated Sand Grains	
Histisol Histic E Black H Hydrog Stratifie 2 cm M Deplete Thick D Sandy (LRR N Sandy Sandy Strippe	pipedon (A2) listic (A3) en Sulfide (A4) d Layers (A5) uck (A10) (LRR d Below Dark Su ark Surface (A12 Mucky Mineral (S Mucky Mineral (S Mucka 147, 144 Gleyed Matrix (S Redox (S5) d Matrix (S6)	N) Irface (?) \$1) 3) 4)	Dark SL Polyvalu (MLRA Thin Da (MLRA Loamy (X Deplete A11) Redox I Deplete Redox I Iron-Ma Umbric Piedmo Red Pau	ue Belov 147, 14 rk Surfa 147, 14 Gleyed d Matrix Dark Su d Dark Depress nganes Surface nt Flooc rent Ma	w Surfac 18) ace (S9) 18) Matrix (F x (F3) Irface (Ff Surface e Masse e (F13) (I dplain So terial (F2)	F2) 6) (F7) 3) 9s (F12) (MLRA 13 50ils (F19) 21) (MLR	2 cm Muck (A Coast Prairie Piedmont Flor (MLRA 136, 1 Very Shallow Other (Explair	Dark Surface (TF12) n in Remarks)
Restrictive Type: Depth (inch	Layer (if observe es):	d):			-		Hydric soll present	? <u>Y</u>
Remarks:								

DUKE- WALTON TO BIG BONE

er lope	Section		Sampling Poin Range: No PLSS in Ar	rea		
lope	Local relief (con					
	Adapter .		(, none): none	Slope (%): 10		
Lat.:	38.88901		.: -84.615131	Datum: WGS 84		
at a state with the				A		
site typical for this	time of the year?	Yes X	No (If no,	explain in remarks)		
			Are "normal	Yes		
, or hydrology	naturally pro	oblematic?	the second s			
			(If needed, explain	any answers in remark		
		र जन्म		Here Hade Statistics		
0	6. St 7. W. 199					
	is the same	oled area wit	hin a wetland?	No		
-		opiana i				
		-				
Second S. S.	I AND			the state of the state		
	Compare State	Seco	ondary Indicators (min	imum of two required)		
quired; check all t	hat apply)	5	Surface Soil Cracks (B6	3)		
True Aqua	tic Plants (B14)		Sparsely Vegetated Col	ncave Surface (B8)		
Hydrogen	Sulfide Odor (C1)		Drainage Patterns (B10) .		
Oxidized F	Rhizospheres on Liv	vina 🕂	Moss Trim Lines (B16)			
	State of the state		Dry-Season Water Tabl	e (C2)		
Address of the second se		and an				
Recent Iro	n Reduction in Tille	edS	Saturation Visible on Ae	erial Imagery (C9)		
Soils (C6)			Stunted or Stressed Pla	ints (D1)		
Thin Muck	Surface (C7)		Geomorphic Position (D2)			
Other (Exp	plain in Remarks)	5	Shallow Aquitard (D3)			
CARE STORES		-	Aicrotopographic Relief	(D4)		
		F	AC-Neutral Test (D5)			
No X	Depth (inches):	NA	Wetland			
No X	Depth (inches):	NA	hydrology			
No X			present?	N		
		1 1 M				
nonitoring well, ae	erial photos, previo	ous inspection	ns), if available:			
Stables & UNIT						
	site typical for this , or hydrology , or hydrology o o o o o o o o o o o o o o o o o	or hydrology	site typical for this time of the year? Yes X , or hydrology	site typical for this time of the year? Yes X No (If no, , or hydrology		

EGETATION - Use scie	ntific name	es of plant	S		5 307	Sampling Point: U013
Tree Stratum Plot S	Size (30) ft.)	Absolute % Cover	Dominant Species	Indicator Status	50/20 Thresholds20%50%Tree Stratum0Sapling/Shrub Stratum0Herb Stratum22Voody Vine Stratum0
				Total Cover		Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: 0 (A) Total Number of Dominant Species Across all Strata: 2 (B) Percent of Dominant
Sapling/Shrub Plot S Stratum	Size (15	ft.)	Absolute % Cover	Dominant Species	Indicator Status	Species that are OBL, FACW, or FAC: 0.00% (A/B
						Prevalence Index WorksheetTotal % Cover of:OBL species $0 \times 1 = 0$ FACW species $0 \times 2 = 0$ FAC species $0 \times 3 = 0$ FACU species $80 \times 4 = 320$ UPL species $30 \times 5 = 150$ Column totals 110 (A)Prevalence Index = B/A = 4.27
Herb Stratum Plot S Dipsacus fullonum Trifolium repens Lamium purpureum Plantago major Taraxacum officinale Cirsium arvense	šize (5	ft.)	Absolute % Cover 30 20 15 10 5	Dominant Species Y N N N N	Indicator Status FACU UPL FACU FACU FACU FACU	Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation Dominance test is >50% Prevalence index is ≤3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation* (explain) *Indicators of hydric soil and wetland hydrology must b present, unless disturbed or problematic
				Total Cover		Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter breast height (DBH), regardless of height. Septing/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
			110 =	Dominant	Indicator	Herb - All herbaceous (non-woody) plants, regardless size, and woody plants less than 3.28 ft tall.
Woody Vine Plot S Stratum	iize (30	ft.)	% Cover	Species	Status	Woody vines - All woody vines greater than 3.28 ft in height.

Depth (Inches) 0-12	Matrix Color (moist)	~		ox Feat	ures	1912 - 1941 - L		
	Color (moist)		• • • • •	~		1	Texture	Remarks
0-12	101/10 414	%	Color (moist)	%	Type*	Loc**	- 10 1	
	10YR 4/4	100		-			silt loam	
				E153	121314			
					Erse (12)			
				19772L	1			
1.1.1.1.1.1.1						Edd Papers		
				1.000		100		
						Contract.		
Type: C=Cc	ncentration D-	Denleti	n RM=Reduce	d Matri	CS=C	overed or	Coated Sand Grains	
	PL=Pore Lining,				, 00-00		Coaled Gand Grains	
	Indicators:	10.000			1.1.1.1		Indicators for Pro	blematic Hydric Soils:
yano con			Dark Su	rface (S7)			Siemane Hyane Cone.
Histisol ((A1)				w Surfac	e (S8)	2 cm Muck (A*	10) (MLRA 147)
Histic Ep	bipedon (A2)		(MLRA	147, 14	8)			Redox (A16) (MLRA 147, 148
Black His	the second s				ace (S9)			dplain Soils (F19)
	n Sulfide (A4)		(MLRA				(MLRA 136, 14	
	Layers (A5)				Matrix (F	-2)		Dark Surface (TF12)
	Ick (A10) (LRR I Below Dark Su		Deplete		rface (F6	2)	Other (Explain	in Remarks)
	ark Surface (A12				Surface			
	lucky Mineral (S				ions (F8			
A REAL PROPERTY AND A REAL	MLRA 147, 14						LRR N, MLRA 136)	
	leyed Matrix (Se	4)			e (F13) (I			
	edox (S5)		Conception of the local division of the loca			and the second	(MLRA 148)	
Stripped	Matrix (S6)		Red Par	ent Ma	terial (F2	21) (MLR	A 127, 147)	
Indicators of	f hydrophytic yd	antatio	and wotland by	drology	must be	orocon	unloss disturbed or probl	omatia
nuicators o		yelauor	and welland ny	alology	mustbe	e presen	, unless disturbed or probl	emauc
		1 1 55	The second second		100	THE REAL	There are another end of	
estrictive L	ayer (if observe	d):						
ype:		579. A.					Hydric soil present?	<u>N</u>
epth (inche	es):			1. 74				
lemarks:				101				
emarks.								

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Appendix B Rapid Bioassessment Datasheets

(4) 近日书 建心理学生生物理学生 是中国的法律学生的主义的主义的理想的问题。

High Gradient Bioassessment Stream Visit Sheet

STREAM NAI	ME: S001		4	LOCATION:	Bigbon	e, KY		
STATION #:				COUNTY: BO	ALL STALL A	P	ROGRAM: ROJECT:	
	ORS: SM, JF	A She more		DATE: 3/29	kende - D		tart:	
Verify Site LAT	T/LONG vs GPS	YES NO	/A	DATE: 3/29	12010	(24hr) F	inish:	
	Station	Downstr		each Upstreau	n		COVER:	STREAM
LAT						ed (0-25%) posed (25-50 aded (50-75%	6) DEphemeral	
LONG						Fully Shade	d (75-100%)	Intermittent
WEATHER Has there been a scouring rain in the last 14 days? Yes No		vy rain dy rain rmittent showers ar/sunny	Deep Oil V	l Disposal	EATURE Const Comm Indust Row	ruction nercial trial	Forest Pasture/	Grazing
Stream Width Maximum Dep Reach Length Riffle/Run (No. Sam	M FEATURES 3.5 ft	HYDRAU	RES	STREAM FLOW Dry Pooled Low High Normal	Domin Tra Or Numb Tree/S	ARIAN VEGET nate Type: ees Herbaccou asses Shrubs er of strata 2 shrub Taxa occidentalis, Lo	ıs Dom.	CHANNEL ALTERATIONS Dredging Channelization (IFull Partial)
P-CHEM	Instru	ument Used:	1.19			Date	Calibrated:	
Temp(°C)	D.O. (mg/l)_	%Sa	turation	pH(S.U	J.)	Cond	Tı	ırb
NY MARCE Z	San She Martin		Sample (Collection Verific	ation			
Algae	Sample: Qual	AHC Other		Visual Assessm	ent	Lead Col	lector:	在同时已经出版
Fish	BPEF Seine	Other Tin	ne: BPEF	Seine		Lead Col	lector:	
Habitat	RBP Subst	rate 🗌 Other:	$\frac{1}{2}$ $\frac{1}{2}$			Lead Col	lector:	
Invertebrates	1m ² Qual	E-C ALLOW				Lead Col		
	a second s			eg. Banks Sar	ndM	lacrophytes		<u>)</u>
	No. of Samples co					Lead Col		
Water Chem	Acid/Alk B	and the second second	11111			Lead Col	lector:	the state
Duplicate Sa	Herbicides mples Taken:	Pesticides [] Orti						
	1		Substra	te Characteriz	ation	新学、 市内		
Substrate	st. P.C. Riffle	25 %	R	tun 25 %	P	ool 50 %		Reach Total
Silt/Clay (<0.	06 mm)							30
Sand (0.06 - 2	2 mm)		8					20
Gravel (2-64 i	nm)							30
Cobble (64 – 2	256 mm)		1					15
Boulders (>25	6 mm)							5
	the second se				and a second second		CHINA DATA	0

SITE NOT SAMPLED: Too deep/Impounded

□ Land owner denial □ Dry

□ Site not found/Secluded Unsafe

Other (indicate under comments)

RBP High Gradient Habitat

Habitat		Condition	Category				
Parameter	Optimal	Suboptimal	Marginal	Poor			
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0			
I.Epifaunai Substrate/ Available Cover 10 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
Embeddedness.	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75%					
11 Score	Layering of cobble provides diversity of niche space.	surrounded by fine sediment.	surrounded by fine sediment.	surrounded by fine sediment.			
3.Velocity/ Depth Regime Score 10	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast- shallow). (Sow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).			
4. Sediment Deposition 10 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low- gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.			
5.Channel Flow Status Score 5	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.			
5.Channel Alteration 10 Score	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.			
7.Frequency of Riffles (or bends) 9 Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles, poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.			
Left/Right Bank	10 9	8 7 6	5 4 3	· 2 1 0			
Bank Stability B B B 6	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.			
9. Vegetative Protection 7 LB RB 7	More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the stream bank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.			
0. Riparian Vegetative Lone Width B 3	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.			
	al Score	NOTES/COMMENTS:					

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High Gradient Bioassessment Stream Visit Sheet

STREAM	A NAME:	5003			1451	17-1	LOCA	TION: E	Bigbon	e, KY				
	N #: N/A	1					COUN	TY: BO	one	< (8)	and the second second	GRAM: JECT:		
	IGATORS:	SM, JF	•			765.5		1.		TIME		Start:		
Verify Sit	te LAT/LON	NG vs GP	s 🗆	YES IN		4	DATE	3/29/	2016	(24hr)	Finis	sh:		
	s	tation		D	ownstrea		ach	Instream	12.2			OVER::	STREAM	
LAT		LALIVII			ownsu cz		1 10 24	Upstream Fully Deartial				(0-25%) ed (25-50	%) Perennial	
LONG										Partiall	and the second second	and the second second second		
WEAT	140	w Pas	t 24 hou	urs		LOCAL	WATER	SHED F	EATURE	ES (Predom	inant Su	urrounding	g Land Use):	
Has there a scourin				y rain ly rain	al and	Deep	ce Mining					Forest Pasture/	Grazing	
Contraction and the second second second	in the last 14								Indus	trial		Silvicult	ure	
	lays? Yes No Clear/sunny Clear/sunny Clear/sunny R R								Row	Crops	L	Urban R	unoff/Storm Sewers	
and the second sec	TREAM FE		100 C					6.1	and the second se	ARIAN VE	GETAT	TION		
Stream V Maximur	m Depth		ft	STR	UCTUR			FLOW	Tr	nate Type: ees Herba			CHANNEL	
Reach Le		18	_m	Dam Dam	s ge Abutm	ients	Pooled			asses Shr er of strata		-	ALTERATIONS	
	e/Run/Pool b. Sampled in			Islan	d		Low High			hrub Taxa			Channelization	
1 Riffle 1 Run 1 Pool Waterfalls Image: Culture of the state of								Normal Populus deltoid					(Full Partial)	
Р-СНЕМ			Instru	ment Used			D 119	Date Calibrated:						
Temp(°C	:)	_ D.O. (I	mg/l)	See.	%Satu	uration		pH(S.U.)	Cond.		Tu	rb	
A Charles	1919	4.1 1				Sample (Collection	Verifica	ation	7	APA	State of the		
Algae	Sa	mple: 🔲	QualM	нс 🗆 О	her		🗋 Visual	Assessme	ent	Lead	Collect	or:		
Fish		BPEF	Seine	Other	Tim	e: BPEF		Seine		Lead	Collect	or:		
Habitat	2.0 M 🗖	RBP 🗌	Substra	ite 🗌 Oth	er:					Lead	Collecto	or:		
Invertebr	STO 10 13	1 m ² 🗌 (Collect			
		I THE COURSE IT			_		g. Banks_	San	1M	acrophytes_			<u> </u>	
Tissue:			100	lected				-			Collecto			
Water Cl							Low Hg			Lead	Collecto	or:		
Dunlicat	te Samples			esticides			er:		10.1		10-11			
Dupneut	ie Sampie.												and a start	
			Mary P		5	Substra	te Chara	acteriza	tion					
Substrate	E Est.	P.C.	tiffle 6	0 %	6	R	un 10	_%	F	ool 30	_%		Reach Total	
Silt/Clay	(<0.06 m	n)			Nam ₂								30	
Sand (0.0	06 – 2 mm)		-									15	
Gravel (2-64 mm)												15		
Cobble (64 – 256 mm)												30		
Boulders	s (>256 mn	n)	They w										5	
Bedrock			4:41.1										5	
NOT	ES/COM	MENTS	S:					OTT		C SAME				

21 E NUI SAMPLED:

Land owner denial Dry Too deep/Impounded

Site not found/Secluded Unsafe

Other (indicate under comments)

RBP High Gradient Habitat

Habitat		Condition	Category	
Parameter	Optimal	Suboptimal	Marginal	Poor
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
I.Epifaunal Substrate/ Available Cover 14 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
2.Embeddedness	Gravel, cobble, and boulder			
Score 12	particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
3.Velocity/ Depth Regime _{Score} 11	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast- shallow). (Sow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).
4. Sediment Deposition 10 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low- gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
5.Channel Flow Status Score 13	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
6.Channel Alteration 9 Score	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
7.Frequency of Riffles (or bends) Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
Left/Right Bank	10 9	8 7 6	5 4 3	2 1 0
8.Bank Stability LB 6 RB 6	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.
9. Vegetative Protection 7 LB RB 7	More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the stream bank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
10. Riparian Vegetative Zone Width LB 10	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.

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High Gradient Bioassessment Stream Visit Sheet

STREAM NAM	ME: S004	4			LOCATION	Bigbor	ie, KY		
STATION #:					COUNTY:	Boone		PROGRAM	
INVESTIGAT		JF		C. L. and		0.13	TIME	Start:	
and the second s		The second second	YES NO	/A	DATE: 3/2	9/2016	(24hr)	Finish:	
	Station		Downstru	Rea	ach Upstr			OPY COVER:	
LAT	Station		Duwiistri		Opsu			xposed (0-25% y Exposed (25-	
LONG							Partiall	y Shaded (50-7 haded (75-100%	5%) 🔲 Ephemeral
WEATHER	Now	Past 24 ho	ure	LOCAL	WATERSHE	FEATURE	ES (Predom	inant Surround	ing Land Use):
Has there been a scouring rain		Heav	y rain	Surfac	e Mining	Cons	truction	Fores	t
in the last 14			dy rain mittent showers	Deep				Pastu Silvio	re/Grazing
days?	×	Clea	r/sunny	Land	Disposal	Row		and the second se	Runoff/Storm Sewers
	M FEATU	Clou	dy	Resid	ential	DID	ADIANVE	GETATION	
Stream Width	8	ft	HYDRAUL	Sector and the sector of the s	STREAM FLO	Domi	nate Type:		
Maximum Dep Reach Length	th <u>4</u> 18	ft m		des	Dry	11	ees Herba		CHANNEL ALTERATIONS
and the second se	Pool Seque		Bridge Abut		Pooled Low	Numt	er of strata		Dredging
(No. Sam	pled in Read	ch)	☐ Island ☐ Waterfalls		High	Tree/:	Shrub Taxa		Channelization (EFull Partial)
1 Riffle 1	Run1	Pool	Other: Cul	vert	Normal	Platanus oc	cidentalits, Lamium pur	puneum, Populus deitoides	
P-CHEM		Instru	ment Used:			1918 1971	r	Date Calibrated	
Temp(°C)	D.0	D. (mg/l)_	%Sa	turation	pH(S.U.)	Cond.		Turb
	1.19			Sample C	ollection Ver	fication			
Algae	Sample:	QualM	IHC 🗌 Other		Visual Asses	sment	Lead	Collector:	新聞というないには
Fish	BPEF	Seine	Other Tin	ne: BPEF	Sei	ne	Lead	Collector:	と見ている。
Habitat		Substra	ate 🗌 Other:				Lead	Collector:	
Invertebrates	A STREET STREET, STREE	Qual						Collector:	
			CobbleSnag	THE REAL PROPERTY.	g. Banks	SandN	and the second second	Street of the local day	
Tissue:			lected	-		<u></u>		Collector:	
Water Chem	SUPERING THE	Correct A	ulk 🗋 Nutrients [Pesticides 🗖 Orth				Lead	Collector:	
Duplicate Sar	mples Tak	en:	名類の時代は、日	State of the	S. Sur. ASTA		The second	YERE	
				Substrat	e Character	ization	NUG E-		
	st. DP.C.	Riffle_4	10 %	R	un_35%		Pool 25	_%	Reach Total
Silt/Clay (<0.0	06 mm)								30
Sand (0.06 - 2	2 mm)								15
Gravel (2-64 n	nm)								15
Cobble (64 – 2	256 mm)								30
Boulders (>25	6 mm)								5
Bedrock				and so					5
NOTES/C	OMMEN	TS:	and the second second	S					Contract and contracted

SITE NOT SAMPLED:

Land owner denial Dry Too deep/Impounded

Site not found/Secluded Unsafe

Other (indicate under comments)

RBP High Gradient Habitat

		Category		
Optimal	Suboptimal	Marginal	Poor	
20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
Greater than 70% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.	
All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast- shallow). (Sow is < 0.3 m/s,	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).	
Little or no enlargement of islands or point bars and less than 5% (<20% for low- gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.	
Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.	
Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.	
10 9	8 7 6	5 4 3	2 1 0	
Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.	
More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the stream bank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	
Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.	
	20 19 18 17 16 Greater than 70% of substrate favorable for epifaual colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Sow is < 0.3 m/s, deep is > 0.5 m.) Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	20 19 18 17 16 15 14 13 12 11 Greater than 70% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble of potential (i.e., logs/snags that are ngi new fall and ngi transient). 40-70% mix of stable habitat, well-suited for full colonization potential; adequate habitat for motification that and an potential (i.e., logs/snags that are ngi new fall and ngi transient). 50-70% mix of stable habitat, well-suited inform of new fall, but not yet prepared for constraint on the sediment. Gravel, cobble, and boulder particles are 0-25% Gravel, cobble, and boulder particles are 25-50% Gravel, cobble, and boulder particles are 25-50% Mart four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast- shallow). (Sow is < 0.3 m/s, deep is > 0.5 m.) Only 3 of the 4 regimes present (if fast-shallow is missing other regimes). Little or no enlargement of islands or point bars and less than 5% (<20% for low- pardient streams) of the bottom affected by sediment deposition. Only 3 of the 4 regimes meanuel substrate is channel: substrate is channel substrate is channel substrate is channel substrate is channel substrate is channel substrate is channelization is not present. Channelization or dredging absent or mimal, streams with normal pattern. Some channelization present, stream is between 7 to 15. Occurrence of riffles relatively requent; ratio of distance present, but recent on ank failure absent or mimal, little potential for future problems. <5% of bank affected.	20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 Idreater than 70% of substrate tavasets for all compliance or prime of the substrate or presence of additional substrate in the form of new presence of of scale). 20-40% mix of stable habitat; desinble visubstrate for queunity disturbed or removed. arrent of the substrate or provides diversity of nice space. Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. All four velocity/depth regimes present (slow-dep, fast- shallow). (Sow is < 0.3 m/s, team or fine sediment, 5-30% than 5% (<20% for low- gradient stranes) of the porticles are 0-25% diversity of now size (- strane stranes) of the formation, nossity from gravel, sand or fine sediment, 5-30% (20-50% for low-gradient) of the bottom affected by sediment deposition in pools. Moder at eposition of new gravel, sand or fine sediment, 5-30% (20-50% for low-gradient) of the soften new tars; 30-50% (20-50% for low-gradient) of the soften new tars; 30-50% (20-50% for low-gradient) of the bottom affected by sediment deposition in pools. Moder at the soften new tars; 30-50% (20-50% for low-gradient) of the	

Fotal Score

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High Gradient Bioassessment Stream Visit Sheet

STREAM NAM	IE: S005	5			LOCATION:	Bigbon	e, KY		
STATION #: N		The second		1992	COUNTY: BO	oone		PROGRAM PROJECT:	:
INVESTIGAT		JF			DATE: 3/29	1.590		Start:	
Verify Site LAT	LONG vs	GPS	YES INO N/A			2010	(24hr)	Finish:	
	Station		Downstrea	Rea am	chUpstream	m		Y COVER:	
LAT							Fully Exp	xposed (25-5	0%) Derennial
LONG							Partially S		
WEATHER Has there been a scouring rain in the last 14 days? Yes No		Stead	ry rain ly rain mittent showers r/sunny	LOCAL	Mining ells Disposal	EATURE	ruction nercial trial	Forest Pasture Silvice	e/Grazing
INSTREAM Stream Width Maximum Dept Reach Length Riffle/Run/ (No. Samp 1 Riffle 1	h $\frac{5}{3}$ 18 Pool Sequer led in Reac	ft ft m nce .h)	HYDRAULI STRUCTUR Dams Bridge Abutm Island Waterfalls Other: Apre	ES nents	TREAM FLOW Dry Pooled Low High Normal	Domin True Numb Tree/S	ARIAN VEGE nate Type: ses Herbaced asses Shrub: er of strata 2 .hrub Taxa	ous Dom.	CHANNEL ALTERATIONS Dredging Channelization (Full Partial)
P-CHEM	nes ere	Instru	ment Used:	(1000	Dat	e Calibrated:	1、1913年1月2月時間
Temp(°C)	D.C). (mg/l)	%Sati	uration	pH(S.U	J.)	Cond	1	ſurb
	a de la compañía de	19 ¹⁰ -		Sample Co	ollection Verific	ation	1	25 10	
Algae	Sample:	QualM	HC 🗌 Other	E	Visual Assessm	nent	Lead Co	ollector:	
Fish	BPEF	Seine Seine	Other Tim	e: BPEF	Seine	6.1115	Lead Co	ollector:	
Habitat		_	ate 🗌 Other:				Lead Co	1	
Invertebrates	A DECK DECK DECK DECK DECK DECK DECK DECK	Qual C] Other: Cobble Snags	s Veg	. Banks Sau	nd M	Lead Co acrophytes)
Tissue:			lected S			De aver	Lead Co		1
Water Chem	Acid/	Alk 🗌 Bi	ulk 🗌 Nutrients 🗌	Metals	Low Hg	195.00	Lead Co	ollector:	いるからには
D 11 1 0			Pesticides Ortho	P Othe	r:	1.1			stavi ito ito
Duplicate San		en:		Substrate	e Characteriz	ation			
Substrate EEs	t. DP.C.	Riffle 3			in ¹⁰ %		001 60	6	Reach Total
Silt/Clay (<0.0						14 1 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			30
Sand (0.06 – 2	mm)								15
Gravel (2-64 m	m)						10.00		15
Cobble (64 – 2	56 mm)								30
Boulders (>256	ó mm)								5
Bedrock		Le de	Shi jin Shi						5
NOTES/CO	OMMEN	TS:			STT.	TNO	r sampi	FD.	

11 11 11 11 11 11 11 11 11 11

□ Land owner denial □ Dry □Too deep/Impounded

Site not found/Secluded Unsafe

Other (indicate under comments)

RBP High Gradient Habitat

Habitat		Condition	Category		
Parameter	Optimal	Suboptimal	Marginal	Poor	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
1.Epifaunal Substrate/ Available Cover 11 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover, mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
2.Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 25-50%	Gravel, cobble, and boulder particles are 50-75%	Gravel, cobble, and boulder particles are more than 75%	
10 Score	Layering of cobble provides diversity of niche space.	surrounded by fine sediment.	surrounded by fine sediment.	surrounded by fine sediment.	
3.Velocity/ Depth Regime _{Score} 10	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast- shallow). (Sow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).	
4. Sediment Deposition 9 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low- gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
S.Channel Flow Status Score 10	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.	
6.Channel Alteration 10 Score	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments, evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.	
7.Frequency of Riffles (or bends) Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream $<7:1$ (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent, distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.	
Left/Right Bank	10 9	· 8 7 6	5 4 3	2 1 0	
8.Bank Stability LB 7 RB 7	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.	
9. Vegetative Protection 5 LB RB 5	More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the stream bank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	
10. Riparian Vegetative Zone Width LB 8	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.	

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High Gradient Bioassessment Stream Visit Sheet

STREAM NAM	E: S008				LOCATIO	N: Big	gbon	e, KY			
STATION #: N					COUNTY:				PROG		
INVESTIGATO					DATE: 3/	20/2	016	TIME Start:			
Verify Site LAT	LONG vs GP	S DY	ES 🗖 NO 🗐 N	/A	DATE. 3/	2912	010	(24hr)	Finish:		
San States	Station		Downstr	Rea		ream			OPY COV		STREAM
LAT							1.2	Partial	xposed (0-2 y Exposed	(25-50%)	TYPE: Perennial
LONG						1997			y Shaded (5 haded (75-)		Ephemeral Intermittent
WEATHER Has there been a scouring rain in the last 14 days? Yes No	Now Past	Steady	rain rain ittent showers unny	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ce Mining Mining /ells Disposal	Mining Commercial Pass ells Industrial Silv Disposal Row Crops Urb					
Stream Width Maximum Dept Reach Length Riffle/Run/J (No. Samp	A FEATURES a 15 20 Pool Sequence led in Reach) Run 1	ft ft m	HYDRAU STRUCTU Dams Bridge Abu Island Waterfalls Other:	RES tments	STREAM FL Dry Pooled Low High Normal	ow	Domin Tree Gra Numbo Tree/S	RIAN VE ate Type: es Herba asses Shr er of strata hrub Taxa	ubs <u>1</u> Dom.	A 	CHANNEL LTERATIONS Dredging Channelization Full Partial) raightened
P-CHEM Temp(°C)			ent Used:%Sa	aturation	pH	(S.U.)_	1987) 192		Date Calibra		
		in the second		Sample C	collection Ve	rificati	ion			10157	
Algae	Sample:	QualMH	C 🗌 Other		Visual Asse			Lead	Collector:		
Fish	BPEF	Seine [Other Ti	me: BPEF	Se	ine		Lead	Collector:		
Habitat		Substrate	• 🗌 Other:			S IN IS		Lead	Collector:		-3644- V193
Invertebrates	\Box 1m ² \Box \Box	1.2.2.1.1.1.1							Collector:		
	the second second		bbleSna		g. Banks	Sand_	M			r)	and a ball
Tissue:				Sp:			-		Collector		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -
Water Chem	and standards	and the set	t 🗋 Nutrients sticides 🗖 Ort	C-CLARKER	A CONTRACTOR OF A CONTRACTOR			Lead	Collector:		
Duplicate San											
Substrate 🗆 Es					e Characte	-					
Silt/Clay (<0.0		iffle 10	%	R	un <u>10</u> %	D	P	ool ⁸⁰	_%	Ke	ach Total 30
Sand (0.06 – 2											30
Gravel (2-64 m	um)				1					15	
Cobble (64 – 2	56 mm)	12-00									15
Boulders (>256	5 mm)						1	1.46			10
Bedrock										and the	
NOTES/CO	OMMENTS	:		1. A. 1997	1.11.2	- 77		1 4000			Self Strategy

SITE NOT SAMPLED: Too deep/Impounded Land owner denial Dry

Site not found/Secluded Unsafe

Other (indicate under comments)

RBP High Gradient Habitat

Habitat		Condition	Category		
Parameter	Optimal	Suboptimal	Marginal	Poor	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
1. Epifaunal Substrate/ Available Cover 9 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
2.Embeddedness 6 Score	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.	
3.Velocity/ Depth Regime _{Score} 6	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast- shallow). (Sow is < 0.3 m/s, deep is < 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).	
4. Sediment Deposition 8 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low- gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
5.Channel Flow Status Score 12	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.	
6.Channel Alteration 11 Score	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.	
7.Frequency of Riffles (or bends) Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.	
Left/Right Bank	10 9	8 7 6	5 · 4 3	2 1 0	
8.Bank Stability LB 6 RB 6	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.	
9. Vegetative Protection 7 LB RB 7	More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the stream bank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	
10. Riparian Vegetative Zone Width LB O	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.	

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High Gradient Bioassessment Stream Visit Sheet

STREAM	M NAME	.S009	9			LOCATION:	Bigbon	e, KY			
STATIO						COUNTY: BO		F	ROGRAM	:	
INVEST			JF			DATE: 3/29	1.5	1 CONTRACTOR	itart:		
Verify Sit	te LAT/L	ONG vs	GPS 🗆	YES NO	A	DATE: 3/29	12010	(24hr) F	inish:	The stand	
		Station		Downstre	Rea am	ich Upstrea	m	CANOPY	COVER:	STREAM	
LAT								aded (50-75			
LONG		1.2	1.1.1					Fully Shade	d (75-100%) Intermittent	
WEAT Has there a scourin in the las days?	e been ng rain st 14		Steam	/y rain dy rain mittent showers r/sunny	LOCAL Surfac Deep I Oil Wo Land I Reside	Mining ells Disposal	EATURE	ruction nercial trial	Forest Pasture	est ure/Grazing	
Stream V Maximu Reach Le Riffl (No	m Depth	$\frac{\frac{3}{1}}{9}$ for seque d in Read	ft ft m ence ch)	HYDRAULI STRUCTUR Dams Bridge Abutn Island Waterfalls Other: Cu	ES nents	TREAM FLOW Dry Pooled Low High Normal	Domin Domin Tro Or Numb Tree/S	ARIAN VEGET nate Type: ces Herbaceon asses Shrubs er of strata shrub Taxa	us	CHANNEL ALTERATIONS Dredging Channelization (DFull Partial)	
P-CHEM	1		Instru	ment Used:				Date	Calibrated:	and the second	
Temp(°C	C)	D.0	D. (mg/l)_	%Sat	uration	pH(S.U	J.)	Cond	T	`urb	
		12 3	S. Part		Sample Co	ollection Verific	cation	e de la come			
Algae		Sample:	QualM	IHC 🗌 Other		Visual Assessm	nent	Lead Col	lector:		
Fish			Seine		e: BPEF	Seine		Lead Col			
Habitat Invertebi				ate Other:	1997 - 1997	1997 - 19		Lead Col Lead Col			
Invertebi		and stranger	COLUMN STREET	Cobble Snags	s Veg	Banks Sau	nd M	acrophytes)	
Tissue:	1.11	No. of Sa	amples col	lected S	p:			Lead Col	lector:		
Water Cl				ulk 🗌 Nutrients 🗌 Pesticides 🔲 Ortho				Lead Col	lector:		
Duplica	te Samp	les Tak	en:								
NO PAG	3.1			1	Substrate	e Characteriz	ation				
Substrate	e 🛛 Est.	□P.C.	Riffle	50 %	Ru	m <u>0</u> %	F	ool_50_%		Reach Total	
Silt/Clay	(<0.06	mm)								50	
Sand (0.	06 – 2 m	m)					8		1.	10	
Gravel (2-64 mm)										25	
Cobble ((64 – 256	5 mm)		1 (1997) 1 (1997)						10	
Boulders	s (>256 r	nm)	4					and the second		5	
Bedrock						and the second				0	
NOT	ES/CO	MMEN	TS:				1-1-2-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1				
						SIT	E NO	F SAMPL	ED:	17.12.	

Land owner denial Dry

Other (indicate under comments)

Site not found/Secluded

Too deep/Impounded

Unsafe

RBP High Gradient Habitat

Habitat	Condition Category									
Parameter	Optimal	Suboptimal	Marginal	Poor						
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0						
1.Epifaunal Substrate/ Available Cover 5 Score	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.						
2.Embeddedness 6 Score	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.						
3.Velocity/ Depth Regime Score 8	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast- shallow). (Sow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).						
4. Sediment Deposition 8 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low- gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.						
5.Channel Flow Status Score 8	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.						
6.Channel Alteration 7 Score	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.						
7.Frequency of Riffles (or bends) Score	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.						
Left/Right Bank	10 · 9	8 7 6	5 4 3	2 1 0						
8.Bank Stability LB 5 RB 5	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.						
9. Vegetative Protection 2 LB RB 2	More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the stream bank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.						
10. Riparian Vegetative Zone Width LB 1	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear- cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.						
Tot	tal Score	NOTES/COMMENTS:								

Total Score

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High Gradient Bioassessment Stream Visit Sheet

STREAM NAME	S012				LOCATION:	Bigbon	e, KY		
STATION #: N/A				COUNTY: Boone		P	PROGRAM: PROJECT:		
INVESTIGATORS: SM, JF				1 367/7 31 31 30	DATE: 3/30/2016		TIME Start:		
Verify Site LAT/L	ONG vs G	PS 🗆	YES INO N/A			2010	(24hr) F	inish:	1. 19-14-1
Rea Station Downstream					Unetwoom		OPY COVER:: STREAM Exposed (0-25%) TYPE:		
LAT					Partially Exposed (25-50%) Perer		0%) Derennial		
LONG		1.14					Fully Shade		
TTee Alere Lane		ast 24 ho Heav	urs vy rain	The second second second	WATERSHED F	EATURE	-	t Surroundir	ng Land Use):
a scouring rain in the last 14		Stead	ly rain	Deep	Mining	Com	nercial	D Pasture	
	days? X X Clear/sunny			Oil W	Disposal			Silviculture	
Yes No		Clou	dy	Resid	ential	DID	ARIAN VEGET	ATION	
Stream Width	3	ft ft	HYDRAULI	and the second sec	STREAM FLOW	Domin	nate Type:		
Maximum Depth Reach Length	6	m	Dams	10.20	Dry Pooled	🗐 Gr	es Herbaceou asses Shrubs	13. 1 ¹⁰ .	CHANNEL ALTERATIONS
Riffle/Run/Po (No. Sample)			Bridge Abutm	ients	Low High		er of strata hrub Taxa	Dom.	Dredging Channelization
1 Riffle 1		- 17.5	Waterfalls Other: Catch		Normal	Andr	opogon vir	ginicus	(Full Partial)
P-CHEM	1.23	Instru	ment Used:				Date	Calibrated:	
Temp(°C)	D.O.	(mg/l)_	%Sati	uration	pH(S.U	.)	Cond	T	urb
				Sample C	ollection Verific	ation		1997	
Algae	Sample:	QualM	HC Other		Visual Assessm	ent	Lead Coll	lector:	
and an and a second second second second	BPEF [e: BPEF	Seine		Lead Col		
			ate Other:				Lead Col		2 144 - 145 N M A 24
	□ 1 m ² □ □ 20 Jab	A PROPERTY AND	CobbleSnags	Ve	g. BanksSar	dM	Lead Coll acrophytes		
Tissue:	No. of San	nples col	lected S	p:		1.3.1	Lead Coll	lector:	特別の主義の主義
	Arts Commence	cid/Alk Bulk Nutrients Metals Low Hg Lead Collector:							
Duplicate Samp		bicides 🗋 Pesticides 🗋 Ortho P 🗋 Other:							
Duplicate Samp	ICS TAKE	1 .							
				Substrat	e Characteriz	ation			
Substrate Est.	P.C.	Riffle_8			un <u>10</u> %		ool_10%		Reach Total
Silt/Clay (<0.06	mm)								50
Sand (0.06 - 2 m	m)								30
Gravel (2-64 mm	1)			an ontest					5
Cobble (64 – 256 mm)					+	10			
Boulders (>256 mm)						5			
Bedrock									0
NOTES/CO	MMENT	rs:			STT	FNO	r sampli	ED.	

Land owner denial Dry Too deep/Impounded

Unsafe

Site not found/Secluded

Other (indicate under comments)

RBP High Gradient Habitat

Habitat		Condition	Category		
Parameter	Optimal	Suboptimal	Marginal	Poor	
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2.Embeddedness 10 Score	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.	
3.Velocity/ Depth Regime _{Score} 7	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast- shallow). (Sow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).	
4. Sediment Deposition 10 Score	Little or no enlargement of islands or point bars and less than 5% (<20% for low- gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
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Left/Right Bank	10 9	8 7 · 6	5 4 3	2 1 0	
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9. Vegetative Protection 6 LB RB 6	More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the stream bank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	
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