Spill Prevention, Containment, and Countermeasures Plan

Walton-Big Bone Natural Gas Pipeline Project

Boone County, KY

April 2016

DUKE ENERGY®

Contents

SECTION 1

1 Spill Prevention

1.1 Preventative Measures

Spills of any amount of petroleum products or polluting materials are to be prevented. The following document outlines the procedures to help avoid spills and minimize the impact of spill if they accidentally occur. The spill prevention and control methods listed in this section are based on approved spill control plans that Duke Energy (Duke) has used successfully in the past. This document addresses actions used to prevent spills in addition to specifying actions that will be taken should any spills occur, including emergency notification procedures. The Walton-Big Bone Natural Gas Pipeline Project (Project) will staff an Environmental Inspector (EI) who will be responsible for ensuring that contractors implement and maintain spill control measures.

1.1.1 Training

The Contractor will instruct personnel on the operation and maintenance of equipment to prevent the accidental discharge or spill of fuel, oil, and lubricants. Personnel will also be made aware of the pollution control laws, rules, and regulations applicable to their work.

Spill prevention briefings with the construction crew will be scheduled and conducted by the EI to insure adequate understanding of spill prevention measures. These briefings will highlight:

- Precautionary measures to prevent spills;
- Sources of spills, such as equipment failure or malfunction;
- Standard operating procedures in case of a spill;
- Equipment, materials, and supplies available for clean-up of a spill; and
- A list of known spill events.

1.1.2 Equipment Inspection/Maintenance

The Contractor will inspect and maintain equipment that must be fueled and lubricated according to a strict schedule. The Contractor will submit to Duke for approval written documentation of the methods used and work performed.

All containers, valves, pipelines, and hoses will be examined regularly to assess their general condition. The examination will identify any signs of deterioration that could cause a spill and signs of leaks, such as accumulated fluids. All leaks will be promptly corrected or repaired.

1.1.3 Refueling Operations

The Contractor will insure that equipment is refueled and lubricated within the ROW and at least 100 feet away from all waterbodies and wetlands with the following exceptions:

- Areas such as rugged terrain or steep slopes where movement of equipment to refueling stations would cause excessive disturbance to the ROW;
- Areas where removing equipment from a wetland for servicing would increase adverse impacts to the wetland;
- When specialized refueling equipment (i.e., low ground weight buggies with a special mounted fuel tank within secondary containment) is used for refueling equipment in lengthy wetlands;
- Sites where moving equipment to refueling stations from pre-fabricated equipment pads is impracticable or where there is a barrier from the waterbody/wetland (i.e., road or railroad);
- Locations where the waterbody or wetland is located adjacent to a road crossing (from which the equipment can be serviced); and

- Refueling of immobile equipment including, but not limited to, bending and boring machines, air compressors, padding machines, and hydro-test fill pumps.

In these areas, auxiliary fuel tanks will be used to reduce the frequency of refueling operations and in no case will refueling take place within 200 feet of any known potable water wells.

The Contractor will assure that all refueling is done pursuant to the following conditions:

- Impact minimization measures and equipment will be sufficient to prevent discharged fluids from leaving the ROW or reaching wetlands or waterbodies, and be readily available for use. These will include some combination of the following:
    - dikes, berms or retaining walls sufficiently impervious to contain spilled oil;
    - sorbent and barrier materials in quantities determined by the Contractor to be sufficient to capture the largest reasonably foreseeable spill;
    - drums or containers suitable for holding and transporting contaminated materials;
    - curbing;
    - culverts, gutters, or other drainage systems;
    - weirs, booms, or other barriers;
    - spill diversion or retention ponds; and
    - sumps and collection systems.
- Spills will be cleaned up immediately. Containment equipment will not be used for storing contaminated material.

1.1.4 Storage

Storage containment areas will not have drains, unless such drains lead to a containment area or vessel where the entire spill can be recovered.

SECTION 2

2 Spill Response Measures

Containment is the immediate priority in the case of a spill. A spill will be contained on Duke's property or the ROW, if possible. Clean up procedures will begin immediately after a spill is contained. In no case will containment equipment be used to store contaminated material.

In case of a spill, the person discovering the spill or release will contact **Duke Energy Spill Reporting Hotline at 1-800-510-**7439. If the **Duke Energy Spill Reporting Hotline** cannot be reached, the person will contact the **National Response Center at 1-800-424-8802** and report the release.

In addition and in accordance with Kentucky 401KAR5.015, the following will be conducted:

- Whenever, by reason of emergency or accident, a spill or discharge occurs from a sewage system or from a container or pipeline used to transport or store substances that could result in, or contribute to, the pollution of the waters, the person in charge of such activity must immediately notify the Kentucky Division of Water, by the most rapid means possible.
- Any person notifying the division, pursuant to Sections 1 and 2 of administrative regulation Kentucky 401KAR5.015, must report the point of discharge, the nature of the material discharged, the quantity of the material discharged, and an assessment of probable environmental impact.
- Notification required under Section 1 of administrative regulation Kentucky 401KAR5.015 can be made by any mode of communication. Notification required by Section 2 of administrative regulation Kentucky 401KAR5.015 must be made by the most rapid means of communication available. If notification is not initially made in writing, it must be confirmed by written notification within ten (10) days, if requested by the Division director or appointed representative. **The Kentucky Emergency Response number is 800-928-2380, or 502-564-2380.**

If a spill should occur, Duke will ensure immediate action is taken to minimize the impact of the spill and to see that appropriate cleanup action is immediately undertaken.

If a spill enters a body of water or a wetland, the Contractor will immediately perform the following:

- The source of the spill will be immediately stopped;
- The spill will be contained by placing sorbing booms or construction dikes;
- The spill will be collected with sorbing materials, skimmed off water surfaces with booms, and/or the contaminated soil will be excavated; and
- The waste materials will be properly stored and disposed in accordance with Duke's policy.

The affected areas will be restored as closely as possible to their previous condition. If the EI determines that a spill is small enough such that the construction crew can safely handle it, the crew will use construction equipment to containerize all spilled material, contaminated soil, and sorbent material in a manner consistent with the spilled material's characterization.

If the EI determines that a spill cannot be adequately excavated and disposed of by the construction crew alone, the Contractor will contact waste containment specialists. The EI will ensure that all excavated wastes are transported to a disposal facility licensed to accept such wastes. Wastes will not be transported to a company facility unless the Environmental Compliance Specialist approves it in writing.

The Contractor will prepare a Construction Site Spill Report Form (attached) to be given to the EI that includes:

- the date, time and location of the occurrence;
- a description of the material spilled;
- the quantity spilled;
- the circumstances that caused the spill;

- a list of waterbodies affected or potentially affected by the spill;
- a statement verifying whether a sheen is present;
- the size of the affected area;
- an estimate of the depth that the material has reached in water or on soil;
- a determination of whether the spill will migrate off of Duke's property or the ROW;
- a determination of whether the spill is under control;
- a statement verifying that clean-up has begun and a description of the methods being used to clean up the spill; and
- the names of the people observing the spill (with their affiliations).

The EI will assure that the Contractor notifies the appropriate agencies if it is determined that a spill exceeds reportable quantity thresholds.

The Duke Energy Spill Reporting Hotline (1-800-510-7439) is to be notified immediately upon the discovery of a spill. **The National Response Center (1-800-424-8802)** will be notified if the Duke Energy Spill Reporting Hotline cannot be reached and if the spill is above threshold levels (Clean Water Act, 40 CFR 110.10) into surface waters or wetlands.

SECTION 3

3 Suggested Spill Equipment List

The Contractor's choice of impact minimization measures and equipment will be tailored to meet the characteristics of the affected terrain as well as the types and amounts of material that could potentially be spilled.

3.1 Terrestrial Construction

General equipment that Duke and/or its Contractor will use for spill containment and cleanup on terrestrial areas includes:

- Absorbents (pillows, socks, and wipe sheets) for containment and pick up of spilled liquids;
- Commercially available spill kits (or the functional equivalent thereof) that are prepackaged, self-contained spill kits containing a variety of absorbents for small to large spills;
- Structures such as gutters, culverts, and dikes for immediate spill containment;
- Shovels, backhoes, etc., for excavating contaminated materials;
- Sumps and collection systems; and
- Drums, barrels, and temporary storage bags to clean up and transport contaminated materials.

3.1.1 Fuels and Lubricating Oil Storage

The Contractor will implement special measures to prevent spills in areas where trucks carrying fuel and where oil barrels are loaded. Containment equipment will be kept close to tanks and barrels to minimize spill response time, and will include absorbent pads or mats. The quantity and capabilities of the mats will be sufficient to capture the largest foreseeable spill, given ROW characteristics and crankcase and other fuel vessel capacities.

3.1.2 Routine Refueling and Maintenance

Absorbent pads and mats will be placed on the ground beneath equipment before refueling and maintenance. Equipment that will be stored on site for routine refueling and maintenance includes small sorbent kits (or their functional equivalent).

3.1.3 Equipment Failure

Kits with the capacity of absorbing up to five gallons of liquid can fit beneath the operator's seat on construction equipment for use in an equipment failure.

3.2 Wetland and Waterbody Crossings

For each wetland and waterbody crossed, the equipment listed below will be available in addition to that needed for terrestrial construction. This equipment will be stored close to the waterbody or wetland to minimize response time, and will include:

- Oil containment booms and the related equipment needed for rapid deployment, and
- Equipment to remove oil from water, such as hydrophobic absorbent booms and mats, and mechanical skimmers.

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Walton-Big Bone Natural Gas Pipeline Project
Spill Report Form

Instructions: Fill in all blanks with the most detailed information available. Write "NA" for any blanks that do not apply.
Call the National Response Center within 1 hour of any wetland or waterbody spills.
Call Kentucky Emergency Response and the Emergency Contractor if a spill is dangerous to the environment or a hazardous material.

Name: _____

Date/Time: _____

LOCATION

MP/St.#:_____ Tract ID:_____
Weather:_____ Ground Condition:_____
Nearest Wetland:_____ Wetland ID/Dir/Dist:_____
Nearest Waterbody:_____ Waterbody Name/Dir/Dist:_____

SPILLED OR RELEASED SUBSTANCE

Check All That Apply: Diesel [ ] Oil [ ] Transmission [ ]
Gasoline [ ] Hydraulic [ ] Other (explain)_____

CAUSE OF SPILL OR RELEASE

_____
_____
_____
_____
_____

RECEIVING MEDIUM (water, paved surface, vegetated pasture, etc)

_____
_____

DESCRIPTION OF ACTIONS TAKEN TO REMEDIATE THE SPILL OR RELEASE

_____
_____
_____
_____
_____

DISPOSAL

Container Type: Bag [ ] Barrel [ ] Drum [ ] Other (explain): _____

Disposal Location: Yard [ ] Other (explain): _____

NOTIFICATION

Spill Reported To:_____ Reported Date/Time:_____

CH2M
400 E. Business Way
Suite 400
Cincinnati, OH 45241
Tel 513.530.5520

April 18, 2016

Mr. Steve Beam
Kentucky Department of Fish and Wildlife Resources
#1 Sportman's Lane
Frankfort, Kentucky 40601

Subject: **State-Listed Threatened and Endangered Species Impact Assessment**
Duke Energy Company
Walton – Big Bone Natural Gas Pipeline Project
Boone County, Kentucky

Dear Mr. Beam:

On behalf of Duke Energy (Duke), CH2M Engineers, Inc. (CH2M) requests Kentucky Department of Fish and Wildlife Resources (KDFWR) determination regarding the potential impacts of the Project on federally-listed threatened and endangered species for the Walton – Big Bone Natural Gas Pipeline Project (the Project).

Duke is proposing to construct a new 12-inch natural gas pipeline in Boone County, Kentucky. The pipeline will largely parallel Chambers Road, Beaver Road, and Richwood Road for approximately 10.3 miles either within road right-of-way easement (ROW) or on private land immediately adjacent to the road ROW. The route begins near U.S. Route 25 north of Walton, Kentucky, crosses beneath Interstate 71 and ends at a future tie-in connection near the Big Bone Lick State Park on Beaver Road. A site location map depicting the proposed pipeline is provided as Attachment 1. Given the planned alignment adjacent to road ROW and previous land-disturbing activities within the corridor, adverse impacts to threatened and endangered species is expected to be very minimal. Big Bone Creek, an Outstanding State Resource Water, will be avoided by using horizontal directional drilling (HDD) technology to bore well beneath the stream bed. An additional two HDD bores are planned on Gum Branch Creek and an unnamed tributary to Mud Lick Creek just east of the intersection of Richwood and Chambers Roads.

Duke also plans to establish up to three laydown yards to be located along the eastern, central and western sections of the pipeline's alignment. Although these specific locations have yet to be finalized, these yards will be located within active farm fields with no impacts to streams, wetlands or woodlots. Each laydown yard will range from three to four acres in size.

Background Information

CH2M reviewed the USFWS Kentucky Ecological Services Field Station website (USFWS, 2013) for information concerning which federally-listed species were known to occur, or to potentially occur, in Boone County. In addition, CH2M submitted a Data License request to the Kentucky State Nature Preserves Commission (KSNPC) on March 18, 2016, for information on known occurrences of federally-listed and state-listed species within a one-mile radius of the Project area. KSNPC responded to the data request on April 12, 2015.

The following Table 1 outlines federally-listed species identified by the USFWS (USFWS, 2013) as occurring, or potentially occurring, in Boone County, Kentucky.

TABLE 1
Federal-Listed Species Identified as Potentially Occurring within Boone County, Kentucky

Common Name/Species Name[1]	Federal Status[1]	General Habitat Notes
Indiana bat / *Myotis sodalis*	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well-developed riparian woods and upland forests[3]
Northern long-eared bat / *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer, roosts and forages in upland forests[4]
Bald eagle / *Haliaeetus leucocephalus*	Protected	Habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts. In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering.[6]
Orangefoot pimpleback/ *Plethobasus cooperianus*	Endangered	Prefers clean, fast-flowing water in silt-free rubble, gravel or sand of medium to large rivers. It buries itself in sand or gravel in water as deep as 29 feet.[2]
Fanshell / *Cyprogenia stegaria*	Endangered	Medium to large rivers. Found in areas with a moderate current that have sand and gravel.[2]
Pink mucket pearly mussel / *Lampsilis abrupta*	Endangered	Found in mud and sand in the shallow riffles of major rivers and their tributaries.[2]
Sheepnose / *Plethobasus cyphyus*	Endangered	Found in shallow areas of large rivers or streams. Prefers swift to moderate current.[2]
Clubshell / *Pleurobema clava*	Endangered	Prefers clean, loose sand and gravel in medium to small rivers and streams. This mussel will bury itself in the bottom substrate to depths of up to four inches.[2]
Rough pigtoe / *Pleurobema plenum*	Endangered	Found in a wide variety of both large and small streams. It buries itself in bottoms of firmly packed sand or gravel.[2]
Ring pink / *Obovaria retusa*	Endangered	Found in shallow water over silt-free sand and gravel bottoms of large rivers.[2]
Running buffalo clover / *Trifolium stoloniferum*	Endangered	Requires periodic disturbance and a somewhat open habitat to successfully flourish, but it cannot tolerate full-sun, full-shade, or severe disturbance. Found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails.[5]

Notes:
[1]USFWS, 2014
[2]USFWS, 2015a
[3]USFWS, 2016a
[4]USFWS, 2016b
[5]USFWS, 2015c
[6]USFWS, 2015b

The KSNPC (2016) identified the following species as known occurrences within one mile of the Project area.

TABLE 2
State-Listed Species Identified as Occurring within One Mile of the Project

Common Name/Species Name[1]	State Status[1]	General Habitat Notes
Running buffalo clover / *Trifolium stoloniferum*	Threatened	Old trails, traces, and roads; grazed bottomlands, streambanks, lawns, shoals, and cemeteries with native vegetation, prairies, well-drained and mesic soils, and filtered to partial light.
Nodding Rattlesnake Root / *Prenanthes crepidinea*	Species of Concern	Calcareous forests and thickets usually in alluvial areas.
Bachman's Sparrow / *Aimophila aestivalis*	Endangered	Early successional areas with scattered saplings (often pines), bushes, or understory, brushy or overgrown hillsides, overgrown fields with thickets and brambles.
Henslow's Sparrow / *Ammodramus henslowii*	Species of Concern	Open fields & meadows with relatively thick/dense grass interspersed with weeds or shrubby vegetation.
Northern Leopard Frog / *Rana pipiens*	Species of Concern	Breeds in natural and manmade ponds. Otherwise uses moist grassland, meadows and margins.
Northern Metalmark / *Calephelis borealis*	Threatened	Open meadows and stream sides in forested areas. Often found near shale or limestone outcrops.[2]
Six-banded Longhorn Beetle / *Dryobuis sexnotatus*	Threatened	Mature hardwood forests with large trees, particularly elm, maple and beech.[3]

[1] KSNPC, 2016
[2] Xeres Society, 2016
[3] Michigan Natural Features Inventory, 2016

Site Observations

CH2M conducted field investigations from March 29 to April 1, 2016, to document existing habitats and hydrological conditions. These field investigations supplemented field investigation previously done by GAI Consultants, Inc. (GAI) in October 2015. CH2M and GAI identified a total of 19 perennial streams, 18 intermittent streams, 35 ephemeral headwaters, and one pond within the Project area. One palustrine scrub-shrub wetland (PSS), nine palustrine emergent wetlands (PEM), and one mixed emergent/scrub shrub/forested wetland (PFO/PSS/PEM) were also identified.

The vegetative cover types present within the Project area include pasture, residential, agricultural field, old field, and secondary growth upland forest. Representative photos of each habitat type can be found in Attachment 2.

Pastureland was located throughout the Project area. Dominant vegetation in these areas consisted of common dandelion (*Taraxacum officinale*), great plantain (*Plantago major*), English plantain (*Plantago*

lanceolata), fescue (*Festuca* sp.), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), multiflora rose (*Rosa multiflora*), broom-sedge (*Andropogon virginicus*), and Queen Anne's lace (*Daucus carota*).

Residences are scattered throughout the Project area. Vegetation observed in residential areas included fescue, white clover, red clover, black walnut (*Juglans nigra*), sugar maple (*Acer saccharum*), meadow garlic (*Allium canadense*), silver maple (*Acer saccharinum*), common dandelion, white pine (*Pinus strobus*), black locust (*Robinia pseudoacacia*), purple dead nettle (*Lamium purpureum*), eastern red-cedar (*Juniperus virginiana*), and amur honeysuckle (*Lonicera maackii*).

Agricultural fields within the Project area are predominantly planted with corn (*Zea mays*).

A small portion of the Project area consisted of old field habitat. Dominant vegetation in old fields included eastern daisy fleabane (*Erigeron annuus*), broom-sedge, purple dead nettle, meadow garlic, multiflora rose, common dandelion, Canadian thistle (*Cirsium arvense*), and American pokeweed (*Phytolacca americana*).

Upland forest areas, though limited within the Project area, were dominated by black walnut, sugar maple, various pine species (*Pinus* sp.), Virginia-creeper (*Parthenocissus quinquefolia*), Eastern poison ivy (*Toxicodendron radicans*), winged sumac (*Rhus copallinum*), sticky-willy (*Galium aparine*), and wood-sorrel species (*Oxalis* sp.).

Palustrine emergent wetlands were identified at several locations along the Project corridor. Dominant vegetation located within PEM wetlands included yellow nutsedge (*Cyperus esculentus*), creeping-jenny (*Lysimachia nummularia*), curly dock (*Rumex crispus*), reed canary grass (*Phalaris arundinacea*), rice cut grass (*Leersia oryzoides*), purple-leaf willowherb (*Epilobium coloratum*), common rush (*Juncus effusus*), arrow-leaf tearthumb (*Persicaria sagittatum*), poverty rush (*Juncus tenuis*), Gray's sedge (*Carex grayi*), hop sedge (*Carex lupulina*), broadleaf cattail (*Typha latifolia*), narrowleaf cattail (Typha angustifolia), straw-color flatsedge (*Cyperus strigosus*), and Kentucky blue grass (*Poa pratensis*).

There were two PSS wetlands within the project survey area. Dominant vegetation located within PSS wetland habitat consisted of black willow (*Salix nigra*), ash-leaf maple (*Acer negundo*), eastern cottonwood (*Populus deltoides*), creeping-jenny, broadleaf cattail, purple-leaf willowherb, reed canary grass, and garlic mustard (*Alliaria petiolata*).

There was one PFO wetland within the project survey area. The dominant vegetation within this wetland included ash-leaf maple, eastern cottonwood, creeping-jenny, and spearmint (*Mentha spicata*).

Listed Species Effect Determination

Species-specific surveys have not been conducted for state or federally–listed species within the Project area. However, during field surveys CH2M biologists documented potential habitat for species of concern. No species of concern were observed during field surveys. Preliminary effect determinations are presented below for the species outlined in Table 1 based on the habitats identified in the Project area and the proposed project location and construction approach that will minimize potential impacts.

Running Buffalo Clover

Suitable habitat for running buffalo clover includes partially shaded woodlots or areas between open forest and prairie. Running buffalo clover requires open areas and periodic disturbance to successfully flourish, but is intolerant of full sun, full shade, or severe disturbances (USFWS, 2015c). The closest population of Running buffalo clover exists within Big Bone State Park but is located approximately 0.2 miles from the planned pipeline corridor. There are an additional five populations of running buffalo clover ranging from 0.4 to 0.95 miles from the proposed Project area.

Nodding Rattlesnake Root

Suitable habitat for the nodding rattlesnake root includes calcareous forests and thickets in alluvial areas (KSNPC 2016). One known population of nodding rattlesnake root occurs approximately 0.2 miles south of the Project area. Tree clearing as well as increased erosion and weed invasion is detrimental to this species (KSNPC 2014). No tree clearing or construction will occur within the nodding rattlesnake root population and best management practices (BMPs) will be used to prevent an increase in erosion or weed introduction.

Bachman's Sparrow

Bachman's sparrows prefer brushy habitats typical of early successional areas. They can be found in overgrown clear cuts, powerline ROWs, old pastures and other similar habitats. Habitat destruction is the biggest threat facing Bachman's sparrow (Audubon, 2016). A known population of Bachman's sparrow is approximately one mile from the Project area. The majority of this Project occurs within residential areas or road ROWs that are maintained. Therefore, the impacts to Bachman's sparrow habitat will be minimal. The proposed ROW will be allowed to revegetate after construction so any impacts will be temporary.

Henslow's Sparrow

Henslow's sparrows prefer grassland or meadows with thick grass as well as interspersed shrubs. As with Bachman's sparrows, the recent decline in the Henslow's sparrow population is largely attributed to habitat loss. Impacts to Henslow's sparrow habitat will be minimal. The majority of this Project occurs within residential areas or road ROWs that are maintained and do not provide adequate habitat for the Henslow's sparrow. The proposed ROW will be allowed to revegetate after construction so any impacts will be temporary.

Northern Leopard Frog

Suitable habitat for northern leopard frog includes wet meadows and grasslands while suitable breeding habitat includes both manmade and natural ponds. According the KSNPC, there is a known occurrence of northern leopard frog in an open, fallow field adjacent to the proposed ROW along Beaver Road. During construction, Duke will use BMPs, including a reduced construction zone width in this specific area, to avoid and minimize impacts to the northern leopard frog to the greatest extent possible.

Northern Metalmark

The northern metalmark is typically found in meadows or along stream sides in forested areas associated with shale or limestone outcrops. There will be minimal tree clearing required for this Project,

approximately 2.8 acres. KSNPC did not provide a location for northern metalmark due to the sensitivity of the species.

Six-banded Longhorn Beetle

Suitable habitat for the six-banded longhorn beetle consists of mature hardwood forests. A location for the six-banded longhorn beetle was not provided by KSNPC due to the sensitivity of this species. However, suitable habitat was not observed along the proposed ROW. Tree clearing will be limited to approximately 2.8 acres and will mainly occur in residential areas.

Conclusion

Tree clearing associated with the Project is estimated at 2.8 acres. This includes the proposed clearing of trees within the planned 30-foot wide, permanently maintained pipeline ROW over the 10.3-mile Project route. Duke plans to conduct all tree removal within the Project area between early March and March 31. Adhering to these tree clearing dates will also minimize impacts to bird species protected under the MBTA.

Wetland impacts within the Project area will be minimized to the extent practical. Based on wetland delineations performed by CH2M, temporary impacts to wetlands may occur during construction of the Project. All PEM wetlands will be allowed to revert to pre-construction conditions. Permanent impacts will be limited to some initial vegetation clearing and continued maintenance of the pipeline ROW. Wetland impacts will be permitted through the U.S. Army Corps of Engineers and Kentucky Division of Water.

We request KDFWR's determination regarding the potential impacts of the Project on state-listed threatened and endangered species. Federally-listed species consultation will be addressed separately with USFWS.

If you have any questions or require additional information, please contact Mike Frank at 513-924-3151 or via email at Mike.Frank@ch2m.com.

Sincerely,

Mike Frank
Project Manager

cc: Mr. Stephen Lane, Duke Energy

Attachments:
1 – Site Location Map
2 – Representative Habitat Photolog

References

Audubon. 2016. Guide to North American Birds: Bachman's Sparrow. https://www.audubon.org/field-guide/bird/bachmans-sparrow. Accessed April 15, 2016.

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Attachment 1

Site Location Map

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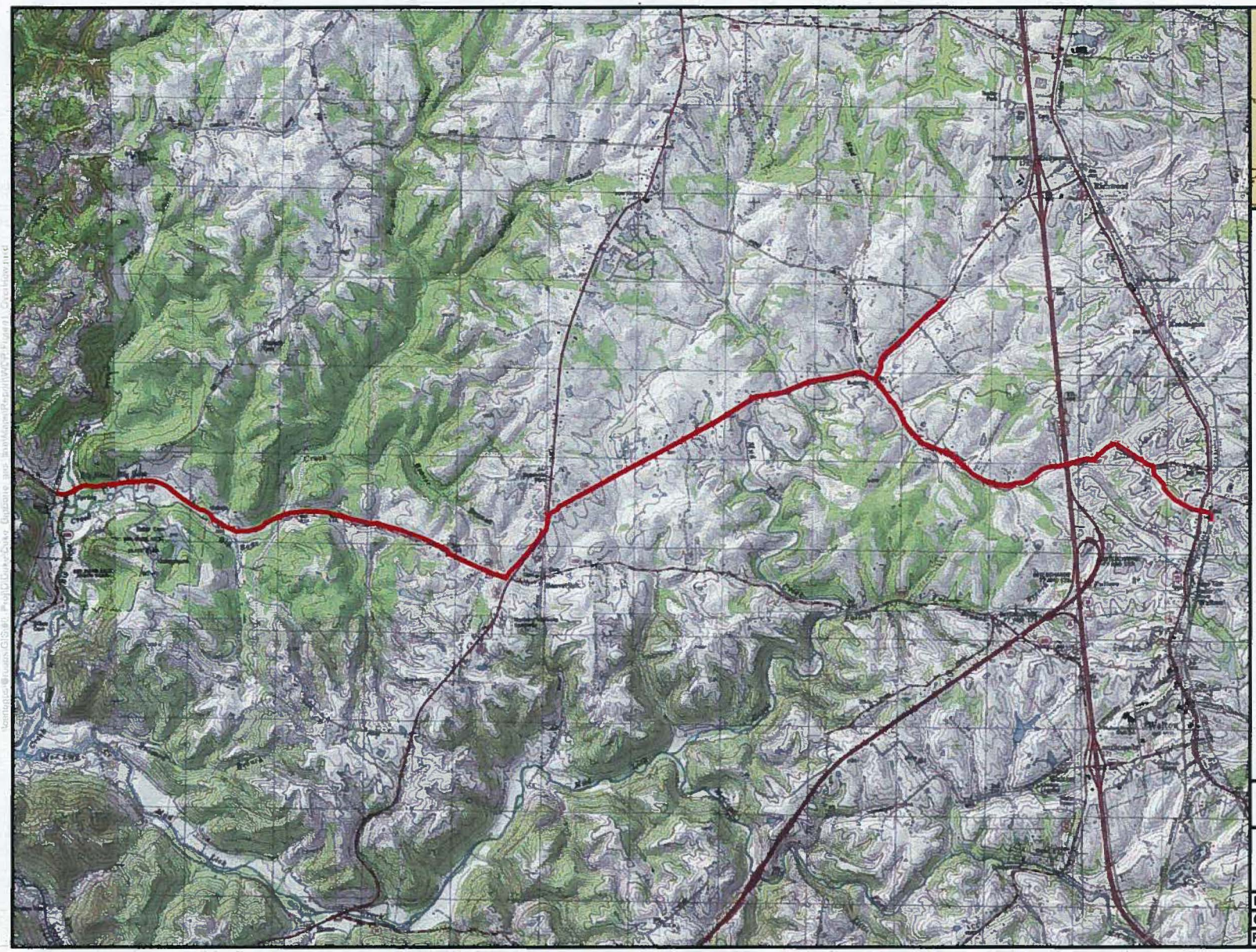

N

LEGEND:

Centerline

BASE MAP SOURCE:
USGS 7.5' Topographic Quadrangles
(Rising Sun 1977, Union 1978,
Independence 1978)

DRAFT

0 0.5 1
Miles

Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 1
OVERVIEW MAP

PN: 673325	DATE: 4/14/2016
CREATED BY:NC	ch2m
REVIEWED BY:	

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Attachment 2

Representative Habitat Photolog

Photograph 1: Representative view of a Palustrine Emergent (PEM) wetland.

Photograph 2: Representative view of PEM wetland in maintained field within a state park.

Photograph 3: Representative view of PEM wetland along road.

Photograph 4: Representative view of palustrine scrub shrub wetland.

Photograph 5: Representative view of intermittent stream and culvert.

Photograph 6: Representative view of a perennial stream.

Photograph 7: Representative view of a perennial stream.

Photograph 8: Representative view of a residential pond.

Photograph 8: Representative view of a residential yard within the proposed ROW.

Photograph 9: View of the Abner Gaines House, listed on the National Register of Historic Places, adjacent to the ROW.

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April 15, 2016

Dr. Michael Floyd
U.S. Fish & Wildlife Service
Kentucky Ecological Services
330 West Broadway, Rm 265
Frankfort, Kentucky 40601

Subject: **Federally-Listed Threatened and Endangered Species Impact Assessment**
Duke Energy Company
Walton – Big Bone Natural Gas Pipeline Project
Boone County, Kentucky

Dear Dr. Floyd:

On behalf of Duke Energy (Duke), CH2M Engineers, Inc. (CH2M) requests United States Fish and Wildlife Service's (USFWS) determination regarding the potential impacts of the Project on federally-listed threatened and endangered species for the Walton – Big Bone Natural Gas Pipeline Project (the Project).

Duke is proposing to construct a new 12-inch natural gas pipeline in Boone County, Kentucky. The pipeline will largely parallel Chambers Road, Beaver Road, and Richwood Road for approximately 10.3 miles either within road right-of-way easement (ROW) or on private land immediately adjacent to the road ROW. The route begins near U.S. Route 25 north of Walton, Kentucky, crosses beneath Interstate 71 and ends at a future tie-in connection near the Big Bone Lick State Park on Beaver Road. A site location map depicting the proposed pipeline is provided as Attachment 1. Given the planned alignment adjacent to road ROW and previous land-disturbing activities within the corridor, adverse impacts to threatened and endangered species is expected to be very minimal. Big Bone Creek, an Outstanding State Resource Water, will be avoided by using horizontal directional drilling (HDD) technology to bore well beneath the stream bed. An additional two HDD bores are planned on Gum Branch Creek and an unnamed tributary to Mud Lick Creek just east of the intersection of Richwood and Chambers Roads.

Duke also plans to establish up to three laydown yards to be located along the eastern, central and western sections of the pipeline's alignment. Although these specific locations have yet to be finalized, these yards will be located within active farm fields with no impacts to streams, wetlands or woodlots. Each laydown yard will range from three to four acres in size.

Background Information

CH2M reviewed the USFWS Kentucky Ecological Services Field Station website (USFWS, 2013) for information concerning which federally-listed species were known to occur, or to potentially occur, in Boone County. In addition, CH2M submitted a Data License request to the Kentucky State Nature Preserves Commission (KSNPC) on March 18, 2016, for information on known occurrences of federally-listed and state-listed species within a one-mile radius of the Project area. Duke is currently waiting for a response from KSNPC and will update USFWS upon receipt.

The following Table 1 outlines federally-listed species identified by the USFWS (USFWS, 2013) as occurring, or potentially occurring, in Boone County, Kentucky. Assessments regarding state-listed species will occur under separate consultation with the KSNPC and Kentucky Department of Fish and Wildlife Resources.

TABLE 1
Federal-Listed Species Identified as Potentially Occurring within Boone County, Kentucky

Common Name/Species Name[1]	Federal Status[1]	General Habitat Notes
Indiana bat / *Myotis sodalis*	Endangered	Hibernacula = Caves and mines; Maternity and foraging habitat = small stream corridors with well-developed riparian woods and upland forests[3]
Northern long-eared bat / *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During late spring and summer, roosts and forages in upland forests[4]
Bald eagle / *Haliaeetus leucocephalus*	Protected	Habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts. In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering.[6]
Orangefoot pimpleback/ *Plethobasus cooperianus*	Endangered	Prefers clean, fast-flowing water in silt-free rubble, gravel or sand of medium to large rivers. It buries itself in sand or gravel in water as deep as 29 feet.[2]
Fanshell / *Cyprogenia stegaria*	Endangered	Medium to large rivers. Found in areas with a moderate current that have sand and gravel.[2]
Pink mucket pearly mussel / *Lampsilis abrupta*	Endangered	Found in mud and sand in the shallow riffles of major rivers and their tributaries.[2]
Sheepnose / *Plethobasus cyphyus*	Endangered	Found in shallow areas of large rivers or streams. Prefers swift to moderate current.[2]
Clubshell / *Pleurobema clava*	Endangered	Prefers clean, loose sand and gravel in medium to small rivers and streams. This mussel will bury itself in the bottom substrate to depths of up to four inches.[2]
Rough pigtoe / *Pleurobema plenum*	Endangered	Found in a wide variety of both large and small streams. It buries itself in bottoms of firmly packed sand or gravel.[2]
Ring pink / *Obovaria retusa*	Endangered	Found in shallow water over silt-free sand and gravel bottoms of large rivers.[2]
Running buffalo clover / *Trifolium stoloniferum*	Endangered	Requires periodic disturbance and a somewhat open habitat to successfully flourish, but it cannot tolerate full-sun, full-shade, or severe disturbance. Found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails.[5]

Notes:
[1]USFWS, 2014
[2]USFWS, 2015a
[3]USFWS, 2016a
[4]USFWS, 2016b
[5]USFWS, 2015c
[6]USFWS, 2015b

Site Observations

CH2M conducted field investigations from March 29 to April 1, 2016, to document existing habitats and hydrological conditions. These field investigations supplemented field investigation previously done by GAI Consultants, Inc. (GAI) in October 2015. CH2M and GAI identified a total of 19 perennial streams, 18 intermittent streams, 37 ephemeral headwaters, and two ponds within the Project area. One palustrine scrub-shrub wetland (PSS), nine palustrine emergent wetlands (PEM), and one mixed emergent/scrub shrub/forested wetland (PFO/PSS/PEM) were also identified.

The vegetative cover types present within the Project area include pasture, residential, agricultural field, old field, and secondary growth upland forest. Representative photos of each habitat type can be found in Attachment 2.

Pastureland was located throughout the Project area. Dominant vegetation in these areas consisted of common dandelion (*Taraxacum officinale*), great plantain (*Plantago major*), English plantain (*Plantago lanceolata*), fescue (*Festuca* sp.), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), multiflora rose (*Rosa multiflora*), broom-sedge (*Andropogon virginicus*), and Queen Anne's lace (*Daucus carota*).

Residences are scattered throughout the Project area. Vegetation observed in residential areas included fescue, white clover, red clover, black walnut (*Juglans nigra*), sugar maple (*Acer saccharum*), meadow garlic (*Allium canadense*), silver maple (*Acer saccharinum*), common dandelion, white pine (*Pinus strobus*), black locust (*Robinia pseudoacacia*), purple dead nettle (*Lamium purpureum*), eastern red-cedar (*Juniperus virginiana*), and amur honeysuckle (*Lonicera maackii*).

Agricultural fields within the Project area are predominantly planted with corn (*Zea mays*).

A small portion of the Project area consisted of old field habitat. Dominant vegetation in old fields included eastern daisy fleabane (*Erigeron annuus*), broom-sedge, purple dead nettle, meadow garlic, multiflora rose, common dandelion, Canadian thistle (*Cirsium arvense*), and American pokeweed (*Phytolacca americana*).

Upland forest areas, though limited within the Project area, were dominated by black walnut, sugar maple, various pine species (*Pinus* sp.), Virginia-creeper (*Parthenocissus quinquefolia*), Eastern poison ivy (*Toxicodendron radicans*), winged sumac (*Rhus copallinum*), sticky-willy (*Galium aparine*), and wood-sorrel species (*Oxalis* sp.).

Palustrine emergent wetlands were identified at several locations along the Project corridor. Dominant vegetation located within PEM wetlands included yellow nutsedge (*Cyperus esculentus*), creeping-jenny (*Lysimachia nummularia*), curly dock (*Rumex crispus*), reed canary grass (*Phalaris arundinacea*), rice cut grass (*Leersia oryzoides*), purple-leaf willowherb (*Epilobium coloratum*), common rush (*Juncus effusus*), arrow-leaf tearthumb (*Persicaria sagittatum*), poverty rush (*Juncus tenuis*), Gray's sedge (*Carex grayi*), hop sedge (*Carex lupulina*), broadleaf cattail (*Typha latifolia*), narrowleaf cattail (Typha angustifolia), straw-color flatsedge (*Cyperus strigosus*), and Kentucky blue grass (*Poa pratensis*).

There were two PSS wetlands within the project survey area. Dominant vegetation located within PSS wetland habitat consisted of black willow (*Salix nigra*), ash-leaf maple (*Acer negundo*), eastern cottonwood (*Populus deltoides*), creeping-jenny, broadleaf cattail, purple-leaf willowherb, reed canary grass, and garlic mustard (*Alliaria petiolata*).

There was one PFO wetland within the project survey area. The dominant vegetation within this wetland included ash-leaf maple, eastern cottonwood, creeping-jenny, and spearmint (*Mentha spicata*).

Listed Species Effect Determination

Species-specific surveys have not been conducted for state or federally–listed species within the Project area. However, during field surveys CH2M biologists documented potential habitat forspecies of concern. No species of concern were observed during field surveys. Preliminary effect determinations are presented below for the species outlined in Table 1 based on the habitats identified in the Project area and the proposed project location and construction approach that will minimize potential impacts.

Indiana Bat

The range of the Indiana bat includes most of the eastern half of the United States and suitable habitat includes caves and mines, and wooded areas (USFWS, 2016a). In addition to White-nose syndrome, a primary threat to the Indiana bat is human disturbance because they hibernate in large numbers in only a few caves. A single event during hibernation has the potential to affect a large population (USFWS, 2016a).

Assessments for potential Indiana bat habitat were conducted during wetland and waterbody surveys of the Project area. During these investigations, potential summer roosting and foraging habitat was observed in fence rows (trees) as well as forested and residential areas. Surveyed woodlots included Shagbark hickory (*Carya ovata*) and larger silver maple and sugar maple trees, all exhibiting exfoliating bark, characteristic of summer roost habitat. However, the amount of wooded habitat within the Project survey area is limited. Although an extensive field survey for caves and mines in the Project vicinity was not performed, none were observed during the wetland delineation field surveys and no mines are known with 5 miles of the project (Kentucky Division of Mine Safety, 2016).

Proposed tree clearing associated with the Project is estimated at only 2.8 acres. This includes the proposed clearing of trees within the planned 30-foot wide, permanently maintained pipeline ROW. All tree clearing will occur adjacent to the county road ROW. No other forest impacts are anticipated. Tree clearing is proposed to begin in the fall of 2016 after October 15th and as such is proposed to occur outside of the maternity roosting season as per USFWS guidelines.

Northern Long-eared Bat

Suitable habitat for the northern long-eared bat includes caves and mines, and wooded areas. The range of the northern long-eared bat includes much of the eastern and north central United States (USFWS, 2016b). However, no known hibernacula or maternity roost trees are documented in Boone County (USFWS, 2016c). The primary threat to the northern long-eared bat is white-nose syndrome, which has resulted up to a 99 percent decline in the northeastern population of this species since the disease was first observed in 2006 (USFWS, 2016b).

Forested areas with potentially suitable northern long-eared bat habitat were observed within the Project area. However, proposed tree clearing associated with the Project is estimated at only 2.8 acres. This includes the proposed clearing of trees within the planned 30-foot wide, permanently maintained pipeline ROW. All tree clearing will occur adjacent to the county road ROW. No other forest impacts are anticipated. Tree clearing is proposed to begin in the fall of 2016 after October 15th.

Bald Eagle

Bald eagles nest near coastlines, rivers, and large lakes (USFWS, 2015b). Suitable roosting and foraging habitat of bald eagles was noted along Big Bone Creek within the Project area, however, nests were not observed during the field survey. Although the bald eagle was removed from the federal list of threatened and endangered species by the USFWS in August 2007, the bald eagle is protected under the Migratory Bird Treaty Act (MBTA); Bald and Golden Eagle Protection Act; and Lacey Act (USFWS, 2015b). If nests are observed during Project construction, Duke will coordinate further with the USFWS.

Mussel Species

Seven mussel species are identified by the USFWS as potentially occurring in Boone County, Kentucky (USFWS, 2013). Suitable habitat for the orangefoot pimpleback, fanshell, pink mucket pearly mussel, clubshell, rough pigtoe, ring pink and sheepnose is described in Table 1. There is one Outstanding State Resource Water (OSRW) crossed by the Project, Big Bone Creek. Horizontal direction drilling will be used to install the pipeline underneath the waterway to avoid impacts. All other streams are not likely to support mussel species based on stream characteristics and high sediment load.

Running Buffalo Clover

Suitable habitat for running buffalo clover includes partially shaded woodlots or areas between open forest and prairie. Running buffalo clover requires open areas and periodic disturbance to successfully flourish, but is intolerant of full sun, full shade, or severe disturbances (USFWS, 2015c). The closest population of running buffalo clover exists within Big Bone State Park but is located approximately 0.25 miles from the planned pipeline corridor.

Migratory Bird Treaty Act (MBTA) Compliance

The MBTA provides federal protection to migratory birds, including nests and eggs. Duke recognizes that the MBTA protects both migratory and non-migratory birds, and loss of an active bird nest site, incubating adults, eggs, or young as a result of construction activities would be in violation of the MBTA.

The primary concern for nesting birds is the cutting, clearing, and removal of existing vegetation. Duke has minimized impacts through the siting process by avoiding large tracts of forested land and paralleling existing ROW of roads where feasible. All clearing of forested land is proposed to occur between October 15th and March 31st thereby minimizing the impact to migratory birds during the primary nesting season (early March through mid-July).

Duke Energy has Avian Protection Planning in place that applies to all company work. The Project will be utilizing Duke Energy's existing SPUT and Salvage permits as appropriate. In all circumstances, whether active, inactive or otherwise, upon finding a nest, personnel will immediately call the Duke Energy Midwest Migratory Bird Hotline at (317)-430-4497. This hotline will also be called if there arise issues of injured birds or bird mortalities.

Conclusion

Tree clearing associated with the Project is estimated at 2.8 acres. This includes the proposed clearing of trees within the planned 30-foot wide, permanently maintained pipeline ROW over the 10.3-mile Project route. In order to reduce the potential for take of Indiana bat and northern long-eared bat, Duke proposes

to conduct all tree removal, including potentially suitable roost trees, within the Project area between October 15 and March 31. Adhering to these tree clearing dates will also minimize impacts to bird species protected under the MBTA.

Wetland impacts within the Project area will be minimized to the extent practical. Based on wetland delineations performed by CH2M, temporary impacts to wetlands may occur during construction of the Project. All PEM wetlands will be allowed to revert to pre-construction conditions. Permanent impacts will be limited to some initial vegetation clearing and continued maintenance of the pipeline ROW. Wetland impacts will be permitted through the U.S. Army Corps of Engineers and Kentucky Division of Water.

We request USFWS's determination regarding the potential impacts of the Project on federally-listed threatened and endangered species. Information that would mitigate potential impacts to listed species and bird species protected under the Migratory Bird Treaty Act is also requested.

If you have any questions or require additional information, please contact Mike Frank at 513-924-3151 or via email at Mike.Frank@ch2m.com.

Sincerely,

Mike Frank
Project Manager

cc: Mr. Stephen Lane, Duke Energy

Attachments:
1 – Site Location Map
2 – Representative Habitat Photolog

References

Kentucky Division of Mine Safety. 2016. Kentucky Mine Mapping Information Service – Interactive Map Services. http://minemaps.ky.gov/Default.aspx?Src=InteractiveMaps. Accessed April 15, 2016.

U.S. Fish and Wildlife Service (USFWS). 2013. Kentucky County Distribution of Federally-Listed Threatened, Endangered, Proposed, and Candidate Species. Revised Nov. 2013. http://www.fws.gov/frankfort/pdf/KY_te_list_by_county.pdf. Accessed March 17, 2016.

U.S. Fish and Wildlife Service (USFWS). 2015a. Freshwater mussels. http://www.fws.gov/midwest/endangered/clams. Accessed March 18, 2016.

U.S. Fish and Wildlife Service (USFWS). 2015b. Bald eagle. http://www.fws.gov/midwest/eagle/recovery/biologue.html. Accessed March 18, 2016.

U.S. Fish and Wildlife Service (USFWS). 2015c. Running Buffalo Clover. http://www.fws.gov/midwest/endangered/plants/rbcl/runningb.html. Accessed March 18, 2016

U.S. Fish and Wildlife Service (USFWS). 2016a. Indiana Bat *Myotis sodalis*. Revised December 2006. http://www.fws.gov/midwest/endangered/mammals/inba/pdf/inbafctsht.pdf. Accessed March 18, 2016.

U.S. Fish and Wildlife Service (USFWS). 2016b. Northern Long-Eared Bat *Myotis septentrionalis*. Revised April 2015. http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/NLEBFactSheet01April2015.pdf. Accessed March 18, 2016.

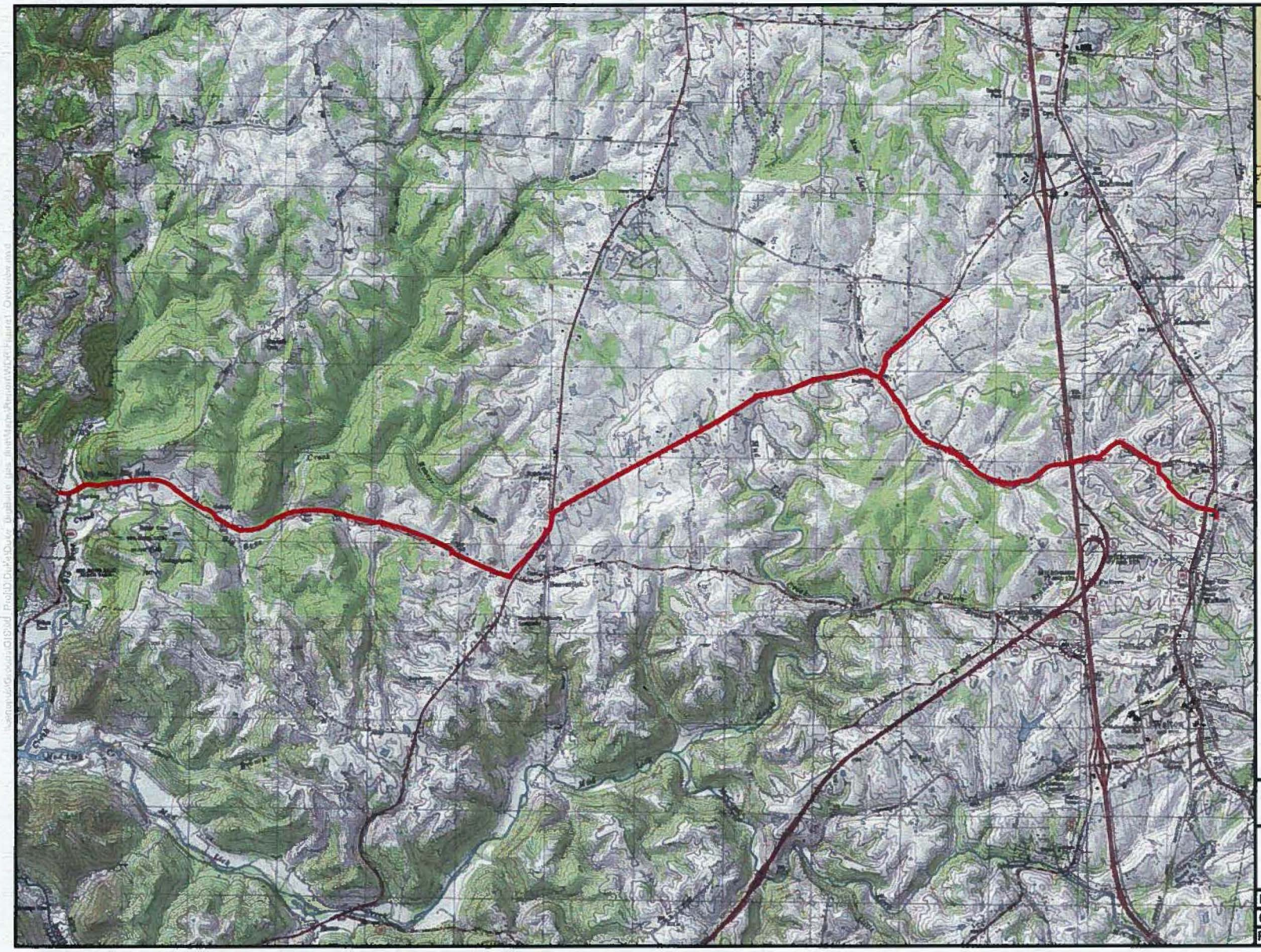
USFWS. 2016c. Kentucky Topographic Quadrangles Containing Northern Long-eared Bat Roost Trees and/or Hibernacula. http://www.fws.gov/frankfort/pdf/KY_NLEB_Quad_List.pdf. Accessed April 5, 2016.

CONFIDENTIAL PROPRIETARY TRADE SECRET

Attachment 1

Site Location Map

CONFIDENTIAL PROPRIETARY TRADE SECRET



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LEGEND:

Centerline

BASE MAP SOURCE:
USGS 7.5' Topographic Quadrangles
(Rising Sun 1977, Union 1978,
Indpendence 1978)

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Duke Energy Walton-Big Bone Natural Gas Pipeline Project, Boone County, Kentucky

FIGURE 1
OVERVIEW MAP

PN: 673325	DATE: 4/14/2016
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REVIEWED BY:	

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Attachment 2

Representative Habitat Photolog

Photograph 1: Representative view of a Palustrine Emergent (PEM) wetland.

Photograph 2: Representative view of PEM wetland in maintained field within a state park.

Photograph 3: Representative view of PEM wetland along road.

Photograph 4: Representative view of palustrine scrub shrub wetland.

Photograph 5: Representative view of intermittent stream and culvert.

Photograph 6: Representative view of a perennial stream.

Photograph 7: Representative view of a perennial stream.

Photograph 8: Representative view of a residential pond.

Photograph 8: Representative view of a residential yard within the proposed ROW.

Photograph 9: View of the Abner Gaines House, listed on the National Register of Historic Places, adjacent to the ROW.

gai consultants

April 18, 2016

G141890.03

Mr. Stephen R. Lane
Lead Environmental Scientist/Planner
Duke Energy
1000 East Main Street
Plainfield, Indiana 46168

Phase I Archaeology Survey Update
Duke Energy
Walton-Big Bone Pipeline Project
Boone County, Kentucky

Dear Mr. Lane:

GAI Consultants, Inc. (GAI) is pleased to provide you with a summary of archaeological survey activities conducted to date for the proposed Walton-Big Bone Pipeline Project (Project) in Boone County, Kentucky. The Walton-Big Bone Pipeline Project involves: (1) a new pipeline section measuring approximately 10.25-mile long, beginning at the northern terminus just west of the town of Walton and travelling south-southeast to just south of the village of Big Bone, Kentucky; (2) a new pipeline section measuring approximately 0.75-mile long, which will connect to the planned Richwood metering station and the new pipeline planned along Richwood Road; and, (3) a 100x100-foot metering or valve station (Richwood Station).

Agency Consultation

GAI submitted a Kentucky Heritage Council (KHC) Project registration form on October 10, 2015. At the same time, site file information was requested from KHC and the Kentucky Office of State Archaeology (OSA) concerning the project (KHC Registration Number FY16-2288 and OSA Registration Number FY16-8644). Both KHC and OSA were provided preliminary information and a map of the project study corridor during this process. Lori A. Frye, GAI's Principal Investigator, discussed the Project with Nick Laracuente, Archaeology Review Coordinator at KHC on April 8, 2016.

GAI provided a description of our field methods to Duke to provide landowners, including Big Bone Lick State Park, for a permit to conduct an archaeological survey within state park property. Duke contacted Alex Thor at the Tourism, Arts, and Heritage Cabinet, Department of Parks, requesting permission for GAI to conduct a cultural resources survey for the Project area located within park property located along Gum Branch Road and the edge of Big Bone Lick Park. Duke has since made the decision to restrict the Project Area of Potential Effect (APE) to within the Beaver Road and Gum Branch Road rights-of-ways (ROWs), in the portion of the Project corridor that skirts the edge of Big Bone State park.

In addition, the Kentucky Transportation Cabinet was notified concerning the Project. The Kentucky Transportation Cabinet holds a preservation covenant for the National Register Listed Abner Gaines House (BE350). The Kentucky Transportation Cabinet submitted information on the planned Project work on the Abner Gaines property to KHC. The KHC responded in a letter dated March 29, 2016 indicating that the project will have "No Adverse Effect on Historic Properties for this project," referring to the Abner Gaines property. For archaeology, shovel testing, including close interval shovel testing at the directional drilling location, was recommended by KHC for the Abner Gaines property (see Attachment A). Ms. Frye contacted Bill Huser, KHC's Transportation Archaeology Review Coordinator, regarding this property on April 11 and April 15, 2016.

Background Research

A review of the KHC's previously recorded architectural and historical resources (Registration Number FY16-2288) and the OSA's previously recorded archaeological sites (Registration Number FY16-8644) was conducted. These data indicated that 31 previously recorded archaeological sites and 147 architectural/historic resources are located within a 1-mile radius of the proposed Project. Of the previously recorded archaeological sites, eight sites (Sites 15Be436, 15Be437, 15Be438, 15Be447, 15Be449, 15Be450, 15Be451, and 15Be577) fall within the Project area. Background research indicates that previous archaeological investigations have occurred within portions of the Project APE. On April 5, 2016, GAI archaeologists visited OSA's Lexington office to collect additional information on archaeological reports and site forms.

One archaeological National Register of Historic Places (NRHP) listed district, Big Bone Lick Archaeological District, fell within the APE. Archaeological Sites 15Be447, 15Be449, 15Be450, and 15Be451 are contributing resources to the Big Bone Lick Archaeological District and located within Big Bone Lick State Park. Due to difficulties obtaining a permit for the archaeological survey, the Project was re-designed to stay within the Road ROW and avoid the park property.

The Abner Gaines House (Be350) and associated archaeological site (15Be577), located along US 25 north of Walton, are listing in the NRHP and fall within the Project area. As mentioned above, the Kentucky Transportation Cabinet holds a preservation covenant on the Abner Gaines property.

Phase I Field Investigations

On October 15, 2015, GAI conducted a Phase Ia (preliminary field view) of the general project corridor to assess the Project's potential to contain unrecorded cultural resources. A large study corridor was used for this study to provide information on cultural resource potential in the general project vicinity.

From March 29 to April 6, 2016, GAI conducted a Phase Ib archaeological survey for most of the Project APE. All of the field survey was completed between Stations 0+00 and 12+20; Stations 20+00 and 25+00; Stations 61+00 and 73+00; Stations 75+0 and 489+63; and the segment running along Richwood Road from its intersection with Chambers Road to its intersection with Hicks Pike (Stations 0+0 to approximately 39+40). During this time period, 507 shovel tests were excavated, of which seven produced historic or prehistoric artifacts (see Table 1).

Table 1. Summary of Phase IB Subsurface Testing Results to April 6, 2016.

Study Area	Coverage area by Stations	Landform	Vegetation	# STPs	# Positive STPs	Comments
1	180+08-213+50	Gently rolling uplands	Lawns and pastures	29	0	
2	213+50-242+50	Rolling uplands	Lawns and pastures	39	0	
3	242+50-272+50	Rolling uplands	Lawns and pastures	42	0	
4	272+50-309+00	Rolling uplands and a moderately steep hillside	Lawns and hay, wheat, and clover fields	48	0	
5	309+00-343+00	Rolling uplands and a moderate hillslope	Grassy fields	38	0	
6	345+00-377+50	Bottomland to toe of slope	Lawns, shrub nursery	38	0	
7	377+50-434+00	Toe of slope	Fallow field, lawns, grassy field	64	0	434+00 is at edge of I-75
8	434+00-489+63	Moderate to steep uplands	Fallow fields and pasture	48	0	
9	343+00-345+00 and 1+00 to 39+50	Stream terrace and base of hillslope	Lawns	52	0	Includes all of the Richwood Road segment

Study Area	Coverage area by Stations	Landform	Vegetation	# STPs	# Positive STPs	Comments
10	75+00-156+00	Terrace, toe of slope, steep hillside, hilltop	Lawns and pasture	37	0	
11	156+00-180+08	Gently sloping uplands	Pasture, lawns	25	0	
12	61+00-73+00	Broad low terrace, narrow high terrace	Scrub, woodlot margin, hayfield	25	4	Ten lithic debitage at 15BE436
13	0+00-12+20	Floodplain, terrace	Fallow fields	12	0	
14	20+00-25+00	Edge of floodplain, steep slope	Tall grasses	0	0	Disturbed and steep slope
15	489+63-501+76	Broad upland flat and gently slope	Lawns	6	3	Directional Drill from 489+63-499+44; 5 artifacts (2 nails, 1 nut, 1 window glass, 1 plastic) at 15Be577 (Abner Gaines Site)
TOTAL				**503**	**7**	Positive STPs fell within 2 previously recorded sites

Field investigations were halted prior to completion of field investigation to resolve issues associated with: (1) testing along Beaver Road where the Project corridor extends into the border of Big Bone Lick State Park; (2) testing along Beaver Road in the area of a former cemetery that was relocated in ca. 1941; and (3) clarifying testing requirements within the Abner Gaines NRHP-listed historic/architectural and archaeological listed resources. Based on resolution of these issues, GAI will complete the field survey. This resolution includes: (1) testing within the Beaver Road ROW where it borders Big Bone Lick State Park; (2) testing a reroute that avoids the former cemetery location; and (3) testing along a 30-foot wide easement across the Abner Gaines Property (approximately between Stations 497+20 and 499+50).

As currently designed, Sites 15Be436, 15Be437, 15Be438, 15Be447, 15Be449, 15Be450, and 15Be451 no longer fall within the Project APE, either due to a re-route or a restriction of the APE to the Beaver Road ROW along its border of Big Bone Lick State Park.

If you have any questions or concerns, please feel free to contact Ms. Frye at 412-399-5262 or via e-mail at l.frye@gaiconsultants.com.

Sincerely,

GAI Consultants, Inc.

Lori A. Frye, M.A., RPA
Senior Project Archaeologist

Eric Scuoteguazza, M.A., M.B.A., RPA
Cultural Resources Group Manager

LAF/pcn

Attachment: Attachment 1 (KHC Correspondence)

ATTACHMENT 1

KHC CORRESPONDENCE

CONFIDENTIAL PROPRIETARY TRADE SECRET

MATTHEW G. BEVIN
GOVERNOR

DON PARKINSON
SECRETARY

TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY HERITAGE COUNCIL
THE STATE HISTORIC PRESERVATION OFFICE
300 WASHINGTON STREET
FRANKFORT, KENTUCKY 40601
PHONE (502) 564-7005
FAX (502) 564-5820
www.heritage.ky.gov

REGINA STIVERS
DEPUTY SECRETARY

CRAIG A. POTTS
EXECUTIVE DIRECTOR
& STATE HISTORIC
PRESERVATION OFFICER

March 29, 2016

Mr. Greg Thomas
Acting Secretary
Kentucky Transportation Cabinet
200 Mero Street
Frankfort, KY 40622

Re: Transportation Enhancements, Easement Review for Plans, Boone County/Walton, Abner Gaines House, Utility Line Burial

Dear Mr. Thomas,

Thank you for your letter and technical information concerning the above-referenced project. As we understand, Duke Energy proposes to install a length of deeply buried pipeline across the northern yard of the Abner Gaines House, a National Register-listed property for which the Kentucky Transportation Cabinet holds a preservation easement. Duke Energy plans to install the pipeline by directional boring, which will require the digging of a 30' x 6' x 6' trench on the Gaines property. As we further understand, Duke Energy plans to conduct an archaeological survey for this project, entailing pedestrian survey and the hand excavation of shovel test probes.

For architecture, as the project will have no above-ground visual expression on the Abner Gaines property, we concur with your recommendation of No Adverse Effect on Historic Properties for this project.

For archaeology, according to our files, an archaeological survey of the Abner Gaines property was conducted in 2008*. That survey, which entailed visual examination, the hand excavation of systematic shovel test probes, remote sensing, and cursory archival research, found no significant archaeological remains within the currently proposed Duke Energy 30' pipeline easement across the property. Nevertheless, we recommended that the Abner Gaines property be investigated by the archaeological survey planned for the pipeline and we specifically recommend that close-interval shovel testing be conducted at the location of the planned pipeline installation trench. For archaeology, we *conditionally concur* with your recommendation of No Adverse Effect on Historic Properties, conditional upon the results of the planned archaeological survey for the project.

Should the project plans change, or should additional information become available regarding cultural resources or citizens' concerns regarding impacts to cultural resources, please submit that information to our office as additional consultation may be warranted. Should you have any questions, feel free to contact Bill Huser of my staff at 502.564.7005, extension 151.

Sincerely,

Craig A. Potts,
Executive Director and
State Historic Preservation Officer

CP: KHC 46553
Cc: Mike Jones (KYTC)

*

Kreinbrink, Jeannine
2008 *Archaeology Survey Results for the Gaines Tavern (15Be577), City of Walton, Boone County, Kentucky*. Prepared by Natural & Ethical Environmental Solutions, West Chester, Ohio. Submitted to Boone County Historic Preservation Review Board, Burlington, Kentucky. Report on file at the Kentucky Heritage Council, Frankfort.

Big Bone to Walton Pipeline Project
Landowner / Address
KY State Parks Department Attn: Alex Thor / Bill Novak 500 Mero Street Frankfort, KY 40601
Nellie Frances Tagert, deceased Attn: Darrell C Tagert, son/executor 3704 Jonathan Drive Hebron, KY 41048
Joseph W & Barbara Hamilton 12058 Kite Lane Union, KY 41091
Ralph Allan & Tracy A Krebs 11996 Kite Lane Union, KY 41091
Thomas E Ollier 2885 Beaver Rd Union, KY 41091
Randall & Gay Hall 2875 Beaver Rd Union, KY 41091
Otis Shackleford Trust Attn: Otis Michael Shackleford 2859 Beaver Rd Union, KY 41091
Morris J & Christina Roland 2847 Beaver Rd Union, KY 41091
Edward & Marie Cornelius 2837 Beaver Rd Union, KY 41091
Edwin D & Myrtle Kay Pierce 11924 Oxford Hills Dr Walton, KY 41094
KY Transportation Cabinet Attn: Matt Bogen, permitting 421 Buttermilk Pike Fort Mitchell, KY 4
James H & Patti J Westphal 2720 Beaver Road Union, KY 41091
Vita Speagle / Mark & Trina M Barnes Attn: Tim Davenport 14978 Cool Springs Blvd Union, KY 41091
John W & Virginia M Huff Trustees 2205 Beaver Road Union, KY 41091

CONFIDENTIAL PROPRIETARY TRADE SECRET

Angela R Evans
2298 Beaver Road
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Adam Webb Reid
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Walton, KY 41094

Andrew Gripshover
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John W & Virginia M Huff Trustees
2205 Beaver Road
Union, KY 41091

John D & Jane S Baker
2093 Beaver Road
Walton, KY 41094

Timothy W Linda K Dawalt
12011 Crouch Road
Walton, KY 41094

Greg A & Chelsea V Schwenke
6300 Browing Trail
Burlington, KY 41005

Happy Trails Tree Farm, LLC
Attn: Todd Trenkamp
P.O. Box 1084
Union, KY 41091

E C Stephenson II & Young C Stephenson
2610 Royal Court
Burlington, KY 41005

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11963 US Hwy 42
Union, KY 41091

James B & Ann Kelley
1700 Lincoln Ridge Road
Williamstown, KY 41097

Ernest & Darlene Keeton
11941 US Hwy 42
Union, KY 41091

Michael J Paul
11931 US Hwy 42
Union, KY 41091

CONFIDENTIAL PROPRIETARY TRADE SECRET

James R & Sherri Wright
2066 Chris Court
Union, KY 41091

Judith Elaine Stone
1934 Richwood Road
Walton, KY 41094

James H & Greta G Stephenson
1914 Richwood Road
Walton, KY 41094

George J Budig Family Limited Partnership II
Attn: Paul Donaldson/Tim Collins
129 Park Road
Fort Mitchell, KY 41011

Peggy Houston, 50% interest
1590 Richwood Road
Walton, KY 41094

Barbara Mosmeier, 50% interest
1598 Richwood Road
Walton, KY 41094

Russell D & Ruth Laverne Caid
988 Chambers Road
Walton, KY 41094

Yadira C. Baker
984 Chambers Road
Walton, KY 41094

Carrol R JR & Brenda Joyce Weber
980 Chambers Road
Walton, KY 41094

Jeff T & Doris J Beierlein
974 Chambers Road
Walton, KY 41094

James M Berger
960 Chambers Road
Walton, KY 41094

Kenneth G & Joyce O Hara
954 Chambers Road
Walton, KY 41094

Kenneth S & Melinda J King
940 Chambers Road
Walton, KY 41094

Julian & Patricia Ivey
926 Chambers Road
Walton, KY 41094

Ronald & Mary Kissinger
894 Chambers Road
Walton, KY 41094

CONFIDENTIAL PROPRIETARY TRADE SECRET

Thomas E & Stephanie A Guard
824 Chambers Road
Walton, KY 41094

James M & Emily E Gillum
872 Chambers Road
Walton, KY 41094

Gregory A Guard
826 Chambers Road
Walton, KY 41094

Franklin A & Sharla R Stenger
800 Chambers Road
Walton, KY 41094

Larry R & Reeda C Compton
790 Chambers Road
Walton, KY 41094

Michael R & Vickie Jean Hager
12183 Decker Lane
Walton, KY 41094

Chris Brook Farm
Attn: Charolette Brewer
233 Chambers Road
Walton, KY 41094

Paul J Kahmann Family Limited Partnership
Attn: Paul Kahmann
10883 Yankee Street
Dayton, OH 45458

Anthony B & Susan Lamb
710 Chambers Road
Walton, KY 41094

Brian Meade
11940 Oxford Hills Drive
Walton, KY 41094

Alumni Development LLC
Attn: Brian Meade
690 Chambers Road
Walton, KY 41094

Shannon D & Jennifer J Craig
12637 Dixie Highway
Walton, KY 41094

Richard A. & Michelle M Hand - 50%
11900 Oxford Hills Drive
Walton, Ky 41094

Chet T & Elizabeth A Hand - 50%
11900 Oxford Hills Drive
Walton, Ky 41094

Arthur & Bonita Jones Revocable Living Trust
646 Chambers Road
Walton, KY 41094

CONFIDENTIAL PROPRIETARY TRADE SECRET

City of Walton
Mayor Mark Carnahan
P.O. Box 95
Walton, KY 41094

James & Faye Hollen
640 Chambers Road
Walton, KY 41094

Fern Perkins
1141 Hicks Pike
Walton, KY 41094

Goldsberry Family Trust
1147 Hicks Pike
Walton, KY 41094

Robert L. & Sue Ellen Stamper
588 Chambers Road
Walton, KY 41094

Stephen K & Donna E Smith
530 Chambers Road
Walton, KY 41094

Daniel & Rebecca Middendorf
510 Chambers Road
Walton, KY 41094

Christopher E & Carrie A Hooten
500 Chambers Road / PO Box 523
Walton, KY 41094

Charles D & Deborah L Worley
490 Chambers Road
Walton, KY 41094

Greenfield Farm Inc.
Attn: Eric Deters
2701 Turkeyfoot Road
Covington, KY 41017

Estates of Richwood HOA LLC
Attn: Nancy Cummins
11652 Agarwood Drive
Walton, KY 41094

Denise E Rusconi
922 Richwood Road
Walton, KY 41094

James P & Audrey O'Brien
890 Richwood Road
Walton, KY 41094

Joyce Ann Hamilton
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Melissa Sims
PO Box 332 / 874 Richwood Road
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Deborah K Noe
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Darlene K. Hoffman
864 Richwood Road
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840 Richwood Road
Walton, KY 41094

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Jamie F. Derby
768 Richwood Road
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Shannon C Kuntz Wisher
758 Richwood Road
Walton, KY 41094

Patricia Workman
11925 Cadillac Drive
Independence, KY 41051

William A. Lewis & Samantha G. Hartman
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Walton, KY 41094

Diana Thomas Sims
722 Richwood Road
Walton, KY 41094

EAST KENTUCKY POWER COOPERATIVE INC
Attn: Bill Sharp
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Winchester, KY 40392