



Primary Headwater Habitat Evaluation Form

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

44

SITE NAME/LOCATION Sn Lake - Middletown Lake CompanySITE NUMBER 0220-501

RIVER BASIN _____

DRAINAGE AREA (mi²) _____

LENGTH OF STREAM REACH (ft) _____

LAT. _____

LONG. _____

RIVER CODE _____

RIVER MILE _____

DATE 20 Feb 2008SCORER H. Thoma

COMMENTS _____

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

STREAM CHANNEL

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

MODIFICATIONS:

evidence of past manipulation

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

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDL SLABS [16 pts]	_____	<input type="checkbox"/> SILT [3 pt]	<u>10</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>5</u>
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>50</u>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>25</u>	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<u>10</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of
Bladr Slabs, Boulder, Cobble, Bedrock 0(A) 9(B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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

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

COMMENTS Deepest pool at base of 4' waterfall

MAXIMUM POOL DEPTH (centimeters):

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

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

COMMENTS _____

AVERAGE BANKFULL WIDTH (meters)

HHEI
Metric
PointsSubstrate
Max = 4014

A + B

Pool Depth
Max = 3025Bankfull
Width
Max=305

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

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

RIPARIAN WIDTH

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

COMMENTS _____

FLOODPLAIN QUALITY

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

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

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

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

COMMENTS Most likely only flows after rain/snow events

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

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

STREAM GRADIENT ESTIMATE

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

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

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

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
County: Butler Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: _____ Quantity: _____

Photograph Information: _____

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

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

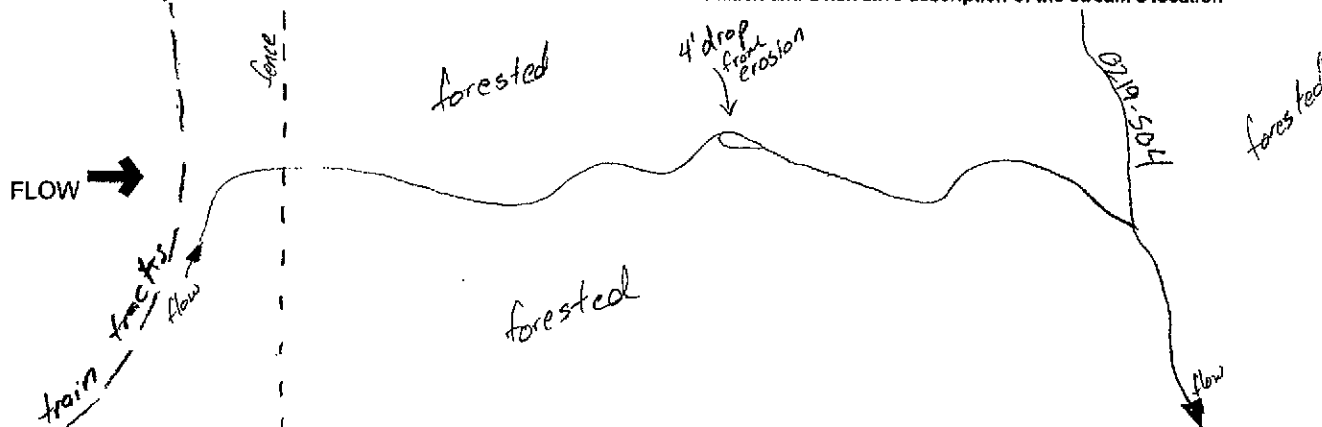
Performed? (Y/N): _____ (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

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

Comments Regarding Biology: _____

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

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





Primary Headwater Habitat Evaluation Form

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

24

SITE NAME/LOCATION Sun Lake - Middletown Coke CompanySITE NUMBER 0220-562 RIVER BASIN _____DRAINAGE AREA (mi²) _____

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

DATE 20 Feb 2008 SCORER H. Thonauer COMMENTS end of stream becomes multiple braided channels

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

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

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

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>10</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>5</u>
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>55</u>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> MUCK [0 pts]	_____
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<u>10</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 9 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9 TOTAL NUMBER OF SUBSTRATE TYPES: 5

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

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

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 3cm

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

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

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): .33m

HHEI Metric Points
 Substrate Max = 40
14
 A + B
 Pool Depth Max = 30
5
 Bankfull Width Max = 30
5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

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

RIPARIAN WIDTH

- (Per Bank)
- ☒ L ☒ R Wide >10m
- ☐ Moderate 5-10m
- ☐ Narrow <5m
- ☐ None

COMMENTS _____

FLOODPLAIN QUALITY

- (Most Predominant per Bank)
- ☒ L ☒ R Mature Forest, Wetland
- ☒ Immature Forest, Shrub or Old Field
- ☐ Residential, Park, New Field
- ☐ Fenced Pasture

- ☐ L ☐ R Conservation Tillage
- ☐ Urban or Industrial
- ☐ Open Pasture, Row Crop
- ☐ Mining or Construction

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

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)
- COMMENTS Most likely only flows after rain/snow event **

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

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

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

** when flow reaches bench above 0219-564, defined channel disappears and multiple braided channels develop. **

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

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

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Butler Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): _____ Date of last precipitation: _____ Quantity: _____

Photograph Information: _____

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

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

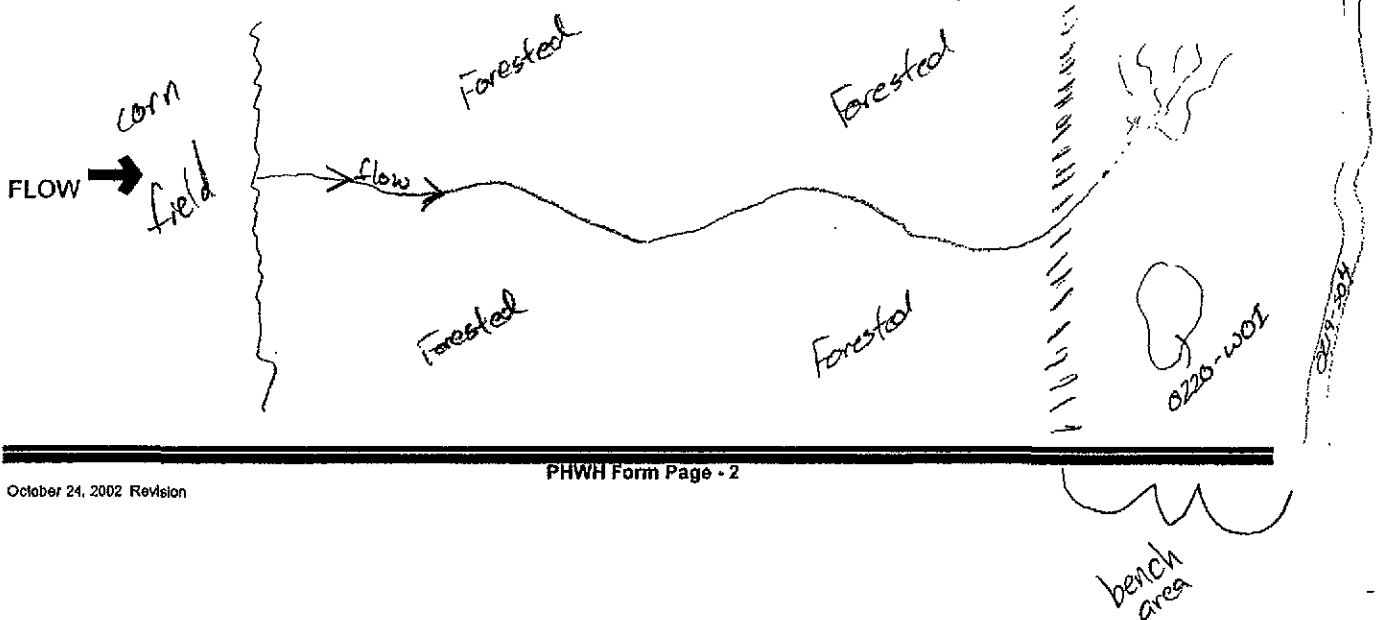
Performed? (Y/N): _____ (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

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

Comments Regarding Biology: _____

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

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



APPENDIX D
OHIO EPA QUALITATIVE HABITAT
EVALUATION INDEX (QHEI) STREAM CHANNEL
ASSESSMENT FORMS AND GRAPH

General Narrative Ranges Assigned to QHEI Scores. Ranges vary slightly in headwaters (≤ 20 sq mi) vs. larger waters (Rankin 2006).

Narrative Rating	QHEI Range	
	Headwaters	Larger Streams
Excellent	≥ 70	≥ 75
Good	55 – 69	60 – 74
Fair	43 – 54	45 – 59
Poor	30 - 42	30 – 44
Very Poor	< 30	< 30



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 51.5

River Code: _____ RM: _____ Stream: Dicks Creek (west of Yankee Road)

Date: 19 Feb 2008 Location: Butler County, Ohio

Scorers Full Name: Matthew Thayer Affiliation: URS Corporation for SunLake Energy

1] SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE		POOL RIFFLE	POOL RIFFLE	SUBSTRATE ORIGIN	SUBSTRATE QUALITY
<input type="checkbox"/> BLDR /SLBS [10]	<input type="checkbox"/> GRAVEL [7]	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)	
<input type="checkbox"/> BOULDER [9]	<input type="checkbox"/> SAND [6]	<input type="checkbox"/> LIMESTONE [1] SILT:		<input type="checkbox"/> SILT HEAVY [-2]	
<input type="checkbox"/> COBBLE [8]	<input type="checkbox"/> BEDROCK [5]	<input type="checkbox"/> TILLS [1]		<input checked="" type="checkbox"/> SILT MODERATE [-1]	
<input checked="" type="checkbox"/> HARDPAN [4] <u>60</u>	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/> WETLANDS [0]		<input type="checkbox"/> SILT NORMAL [0]	
<input checked="" type="checkbox"/> MUCK [2] <u>40</u>	<input type="checkbox"/> ARTIFICIAL [0]	<input checked="" type="checkbox"/> HARDPAN [0]		<input checked="" type="checkbox"/> SILT FREE [1]	
<input type="checkbox"/> SILT [2]	NOTE: Ignore Sludge Originating From Point Sources		<input type="checkbox"/> SANDSTONE [0] EMBEDDED	<input type="checkbox"/> EXTENSIVE [-2]	
		<input type="checkbox"/> RIP/RAP [0] NESS:		<input type="checkbox"/> MODERATE [-1]	
		<input type="checkbox"/> LACUSTRINE [0]		<input type="checkbox"/> NORMAL [0]	
		<input type="checkbox"/> SHALE [-1]		<input type="checkbox"/> NONE [1]	
		<input type="checkbox"/> COAL FINES [-2]			

NUMBER OF SUBSTRATE TYPES: ☒ 4 or More [2] ☐ 3 or Less [0]

(High Quality Only, Score 5 or >)

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)	TYPE: Score All That Occur	AMOUNT: (Check ONLY One or check 2 and AVERAGE)	Cover
<input type="checkbox"/> UNDERCUT BANKS [1]	<input type="checkbox"/> POOLS > 70 cm [2]	<input type="checkbox"/> EXTENSIVE > 75% [11]	<div style="border: 1px solid black; padding: 5px; text-align: center;">14</div> Max 20
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]	
<input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> SPARSE 5-25% [3]	
<input type="checkbox"/> ROOTMATS [1]	COMMENTS: _____	<input type="checkbox"/> NEARLY ABSENT < 5% [1]	

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	Channel
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]	<input type="checkbox"/> SNAGGING	<div style="border: 1px solid black; padding: 5px; text-align: center;">10</div> Max 20
<input checked="" type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> RELOCATION	
<input type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]	<input checked="" type="checkbox"/> CANOPY REMOVAL	
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]		<input checked="" type="checkbox"/> DREDGING	
				<input checked="" type="checkbox"/> BANK SHAPING	
				<input checked="" type="checkbox"/> ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

4] RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) ☒ River Right Looking Downstream ☐

RIPARIAN WIDTH		FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)		BANK EROSION		Riparian
L R (Per Bank)	L R (Most Predominant Per Bank)	L R	L R (Per Bank)			<div style="border: 1px solid black; padding: 5px; text-align: center;">4</div> Max 10
<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]	<input type="checkbox"/> NONE/LITTLE [3]			
<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input checked="" type="checkbox"/> URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> MODERATE [2]			
<input checked="" type="checkbox"/> NARROW 5-10 m [2]	<input checked="" type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]	<input checked="" type="checkbox"/> HEAVY/SEVERE [1]			
<input type="checkbox"/> VERY NARROW < 5 m [1]	<input type="checkbox"/> FENCED PASTURE [1]	<input type="checkbox"/> MINING/CONSTRUCTION [0]				
<input type="checkbox"/> NONE [0]						

COMMENTS: _____

5] POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH	MORPHOLOGY	CURRENT VELOCITY	POOLS & RIFFLES!	Pool/Current
(Check 1 ONLY!)	(Check 1 or 2 & AVERAGE)	(Check All That Apply)		<div style="border: 1px solid black; padding: 5px; text-align: center;">8</div> Max 12
<input checked="" type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> EDDIES [1]	<input type="checkbox"/> TORRENTIAL [-1]	
<input type="checkbox"/> 0.7-1m [4]	<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> FAST [1]	<input type="checkbox"/> INTERSTITIAL [-1]	
<input type="checkbox"/> 0.4-0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE W. [0]	<input checked="" type="checkbox"/> MODERATE [1]	<input type="checkbox"/> INTERMITTENT [-2]	
<input type="checkbox"/> 0.2-0.4m [1]		<input type="checkbox"/> SLOW [1]	<input type="checkbox"/> VERY FAST [1]	
<input type="checkbox"/> < 0.2m [POOL=0]	COMMENTS: _____			

CHECK ONE OR CHECK 2 AND AVERAGE				Riffle/Run
RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS	<div style="border: 1px solid black; padding: 5px; text-align: center;">6.5</div> Max 8
<input checked="" type="checkbox"/> Best Areas > 10 cm [2]	<input checked="" type="checkbox"/> MAX > 50 [2]	<input checked="" type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]	
<input type="checkbox"/> Best Areas 5-10 cm [1]	<input type="checkbox"/> MAX < 50 [1]	<input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input checked="" type="checkbox"/> LOW [1]	
<input type="checkbox"/> Best Areas < 5 cm		<input type="checkbox"/> UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]	
[RIFFLE=0]			<input type="checkbox"/> EXTENSIVE [-1]	<div style="border: 1px solid black; padding: 5px; text-align: center;">4</div> Max 10
COMMENTS: _____	<input type="checkbox"/> NO RIFFLE [Metric=0]			

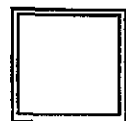
6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq. mi.): _____

%POOL: 30 %GLIDE: 15

%RIFFLE: 10 %RUN: 45

* Best areas must be large enough to support a population of riffle-obligate species

Is Sampling Reach Representative of the Stream (Y/N) Y If Not, Explain:



Subjective Rating (1-10)



Aesthetic Rating (1-10)

Gradient:

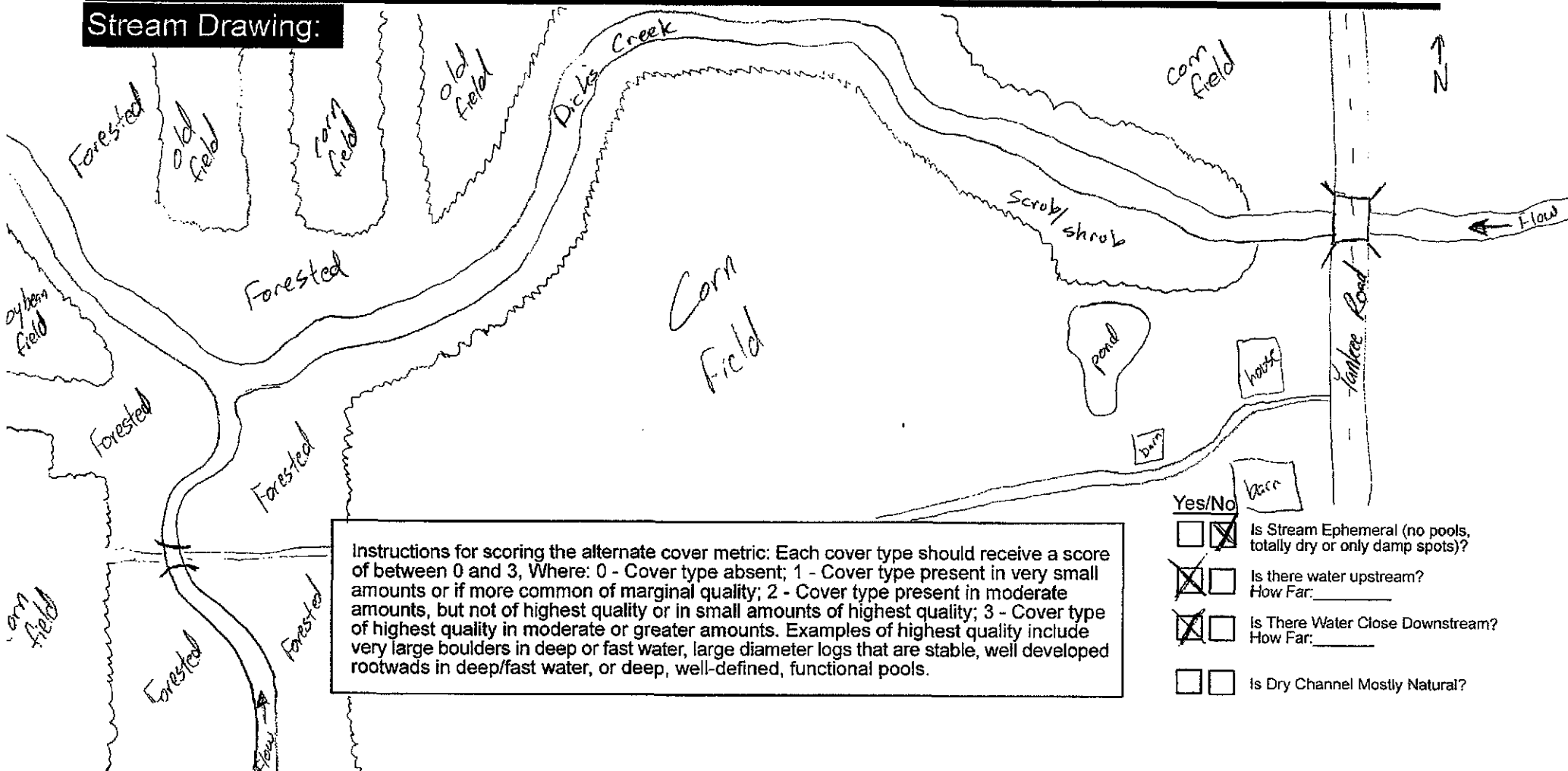
Low, Moderate, High

Gear: Distance: Water Clarity: Water Stage: Canopy -% Open

Stream Measurements:									
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Mean Depth	W/D Ratio	Bankfull Max Depth	Floodprone Area	Entrenchment Ratio	
40'			42'						

- Major Suspected Sources of Impacts (Check All That Apply):
- None ☐
 - Industrial ☒
 - WWTP ☒
 - Ag ☒
 - Livestock ☒
 - Silviculture ☒
 - Construction ☒
 - Urban Runoff ☒
 - CSOs ☒
 - Suburban Impacts ☒
 - Mining ☒
 - Channelization ☒
 - Riparian Removal ☒
 - Landfills ☒
 - Natural ☒
 - Dams ☒
 - Other Flow Alteration ☒
 - Other: _____

Stream Drawing:



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No

- ☒ Is Stream Ephemeral (no pools, totally dry or only damp spots)?
- ☒ Is there water upstream? How Far: _____
- ☒ Is There Water Close Downstream? How Far: _____
- ☐ Is Dry Channel Mostly Natural?

APPENDIX E
SELECTED PHOTOGRAPHS



PHOTOGRAPHIC RECORD

Streams

Client Name:

SunCoke Energy, Inc.

Site Location:

Middletown, Butler County, Ohio

Project No.

14947839

Photo No. 1**Date:**

February, 19, 2008

Description:

Stream-01 looking downstream.

**Photo No. 2****Date:**

February 19, 2008

Description:

Stream-02 looking upstream.





PHOTOGRAPHIC RECORD

Streams

Client Name:

SunCoke Energy, Inc.

Site Location:

Middletown, Butler County, Ohio

Project No.

14947839

Photo No. 3**Date:**

February 19, 2008

Description:

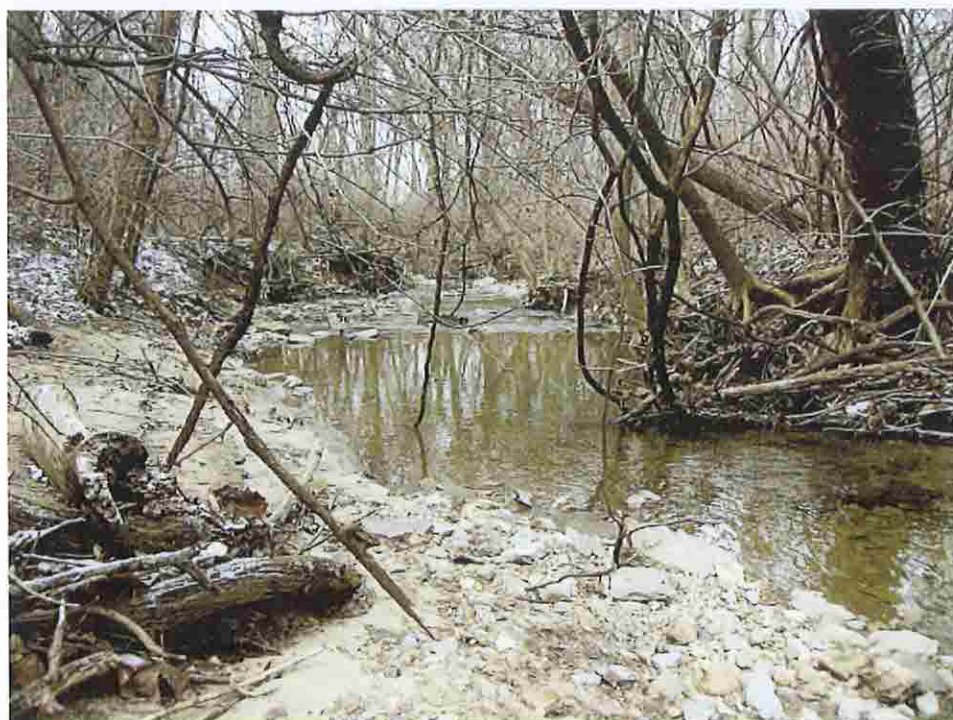
Stream-03 looking upstream.

**Photo No. 4****Date:**

February 19, 2008

Description:

Stream-04 looking downstream.





PHOTOGRAPHIC RECORD

Streams

Client Name:

SunCoke Energy, Inc.

Site Location:

Middletown, Butler County, Ohio

Project No.

14947839

Photo No. 5**Date:**

February 19, 2008

Description:

Stream-05 looking downstream toward confluence with Stream-04.

**Photo No. 6****Date:**

February 19, 2008

Description:

Stream-06 looking upstream.





PHOTOGRAPHIC RECORD

Streams

Client Name: SunCoke Energy, Inc.	Site Location: Middletown, Butler County, Ohio	Project No. 14947839
---	--	--------------------------------

Photo No. 7**Date:**

February 19, 2008

Description:

Stream-07 looking upstream.

**Photo No. 8****Date:**

February 19, 2008

Description:

Stream-08 looking downstream toward confluence with Stream-06.





PHOTOGRAPHIC RECORD

Streams

Client Name: SunCoke Energy, Inc.	Site Location: Middletown, Butler County, Ohio	Project No. 14947839
---	--	--------------------------------

Photo No. 9	 A photograph of a stream in a winter setting. The stream is dark and flows from the background towards the right. The banks are covered in a thick layer of snow. Bare, snow-laden branches hang over the stream from the left bank. The background shows a dense forest of bare trees.
Date: February 20, 2008	
Description: Stream-09 (smaller feature) looking upstream.	

Photo No. 10	 A photograph of a stream in a winter setting. The stream is dark and flows from the background towards the right. The banks are covered in a thick layer of snow. Bare, snow-laden branches hang over the stream from the left bank. The background shows a dense forest of bare trees.
Date: February 20, 2008	
Description: Stream-10 looking downstream.	



PHOTOGRAPHIC RECORD

Streams

Client Name:

SunCoke Energy, Inc.

Site Location:

Middletown, Butler County, Ohio

Project No.

14947839

Photo No. 11**Date:**

February 20, 2008

Description:

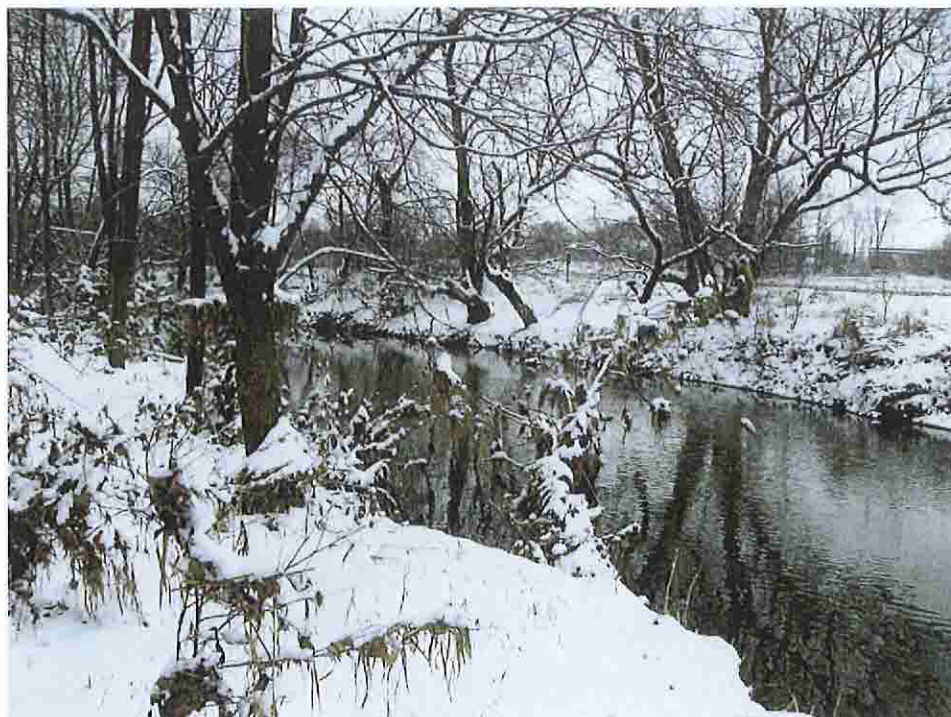
Stream-11 (Dicks Creek) looking upstream toward Yankee Road bridge.

**Photo No. 12****Date:**

February 20, 2008

Description:

Stream-12 (Dicks Cree) looking downstream.





PHOTOGRAPHIC RECORD

Wetlands

Client Name:

SunCoke Energy, Inc.

Site Location:

Middletown, Butler County, Ohio

Project No.

14947839

Photo No. 1**Date:**

February, 19, 2008

Description:

Looking north across
Wetland-01. (Snow
covered areas is ice)



APPENDIX F
AGENCY CORRESPONDENCE



Ohio Department of Natural Resources

TED STRICKLAND, GOVERNOR

SEAN D. LOGAN, DIRECTOR

Division of Natural Areas and Preserves

Steven D. Maurer, Chief

2045 Morse Rd., Bldg. F-1

Columbus, OH 43229-6693

Phone: (614) 265-6453; Fax: (614) 267-3096

February 27, 2008

Matthew Thomayer
URS Corp.
36 E. Seventh St., Suite 2300
Cincinnati, OH 45202

Dear Mr. Thomayer:

Per your request, I have e-mailed you a set of ArcView shape files with our Natural Heritage Database records for the SunCoke Energy Middletown Coke Plant and Electric/Steam Generation Facility Construction project ('data') in Middletown, Lemon Township, Butler County (project # 14947839), including a five mile radius. The files are projected in NAD83 Ohio State Plane South. The units are feet. This data will not be published or distributed beyond the scope of the project description on the data request form without prior written permission of the Natural Heritage Program.

Records included may be for rare and endangered plants and animals, geologic features, high quality plant communities and animal assemblages. Fields included are scientific and common names, state and federal statuses, as well as managed area and date of the most recent observation. State and federal statuses are defined as: E = endangered, T = threatened, P = potentially threatened, SC = species of concern, SI = special interest, FE = federal endangered and FT = federal threatened.

Also included is a layer for managed areas ('ma') which includes state nature preserves, parks, forests and wildlife areas, national wildlife refuges, county metro parks, as well as sites owned by non-profit groups (such as The Nature Conservancy), museums (such as the Cleveland Museum of Natural History), and others. Please be aware that the managed areas layer may not be complete. We are continually updating this layer as additional information becomes available to us.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Please note that although we inventory all types of plant communities, we only maintain records on the highest quality areas.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woischke, Ecological Analyst
Natural Heritage Program

ohiodnr.com





Ohio Department of Natural Resources

TED STRICKLAND, GOVERNOR

SEAN D. LOGAN, DIRECTOR

Division of Wildlife
David M. Graham, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

March 11, 2008

Matthew Thomayer, Environmental Scientist
URS Corporation
36 East Seventh Street
suite 2300
Cincinnati, OH 45202

RE: SunCoke Energy, Inc. project

Dear Mr. Thomayer:

This is in response to your letter to Chief Graham dated February 28, 2008. In that letter you request preliminary comments and information regarding potential for impact to plant and/or animal species of concern in the area of the project referenced above. After reviewing the information provided, the Ohio Department of Natural Resources, Division of Wildlife (DOW) has the following comments.

The project is within the range of the Indiana bat (*Myotis sodalis*), a state and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees: Shagbark hickory (*Carya ovata*), Shellbark hickory (*Carya laciniosa*), Bitternut hickory (*Carya cordiformis*), Black ash (*Fraxinus nigra*), Green ash (*Fraxinus pennsylvanica*), White ash (*Fraxinus americana*), Shingle oak (*Quercus imbricaria*), Northern red oak (*Quercus rubra*), Slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), Eastern cottonwood (*Populus deltoides*), Silver maple (*Acer saccharinum*), Sassafras (*Sassafras albidum*), Post oak (*Quercus stellata*), and White oak (*Quercus alba*). Indiana bat habitat consists of suitable trees that include dead and dying trees of the species listed above with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees of the species listed above with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. If suitable trees occur within the project area, these trees must be conserved. If suitable habitat occurs on the project area and trees must be cut, cutting must occur between September 30 and April 1. If suitable trees must be cut during the summer months of April 2 to September 29, a net survey must be conducted in May or June prior to cutting. Net surveys shall incorporate either two net sites per square kilometer of project area with each net site containing a minimum of two nets used for two consecutive nights, or one net site per kilometer of stream within the project limits with each net site containing a minimum of two nets used for two consecutive nights. If no tree removal is proposed, the project is not likely to impact this species.



PAGE TWO

Matthew Thomayer, Environmental Scientist
March 11, 2008

The project is within the range of the blue corporal (*Ladona deplanata*), a state endangered dragonfly. Due to the mobility of this species, the project is not likely to impact this species.

The project is within the range of the osprey (*Pandion haliaetus*), a state endangered bird. A statewide survey has not been completed for this species. A lack of records does not indicate the species is absent from the area. Therefore, if riparian corridor, forest, or wetland habitat is near the project area, construction must not occur in this habitat during the species' nesting period of May 1 to July 31. If this habitat is not located near the project area, the project is not likely to impact this species.

The project is within the range of the cave salamander (*Eurycea lucifuga*), a state endangered species. Due to the location of the project, the DOW believes the project is not likely to impact this species.

The project is within the range of the Kramer's cave beetle (*Pseudanophthalmus krameri*), a state endangered species, and the Ohio cave beetle (*Pseudanophthalmus ohioensis*), a state endangered species. These species are found only in caves. The Ohio Cave Protection Law, Section 1517.21 of the Ohio Revised Code, protects caves from impacts, in turn, protecting the habitat of these species. Therefore, the project is not likely to have an impact on these species.

Otherwise, the Ohio Department of Natural Resources, Division of Wildlife, is not aware of any threatened or endangered species in the vicinity of this project. However, the Ohio Department of Natural Resources, Division of Natural Areas and Preserves maintains the Natural Heritage Database, the state's most comprehensive record of Ohio threatened and endangered species. If you have not already done so, it is recommended you contact the Division of Natural Areas and Preserves at (614) 265-6453. To process future projects more efficiently, I recommend you contact the Division of Natural Areas and Preserves prior to contacting the Division of Wildlife. To help expedite the process, please include the results of the Division of Natural Areas and Preserves' Natural Heritage Database request when contacting us regarding future projects.

The Ohio Department of Natural Resources, Division of Wildlife is available to provide guidance on avoiding or minimizing impacts to any listed fauna and/or their habitat. If you should need further assistance, please feel free to contact Becky Jenkins at (614) 265-6631.

Sincerely,



JOHN NAVARRO
Program Administrator

JN/BJ/al



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
6950 Americana Parkway, Suite H
Reynoldsburg, Ohio 43068-4132
(614) 469-6923/Fax: (614) 469-6919

**COPY FOR YOUR
INFORMATION**

April 15, 2008

TAILS: 31420-2008-TA-0558
-0441

Thomas Boblenz
Kokosing Construction Company Inc.
6235 Westerville Road, Ste 200
Westerville, OH 43081

Dear Mr. Boblenz:

This is in response to your April 2, 2008 letter requesting endangered species review on a proposed SunCoke Energy project near Middletown, Butler County, Ohio. SunCoke Energy proposes to construct a 100 oven coke facility on a 248-acre site. The majority of the site is agricultural with about 60-acres forested.

On March 5, 2008, U.S. Fish and Wildlife Service (Service) biologist, Sarena Selbo met with Kokosing to discuss project plans and potential impacts to the **Indiana bat** (*Myotis sodalis*). It was determined at the site visit that only a small portion of the property contains suitable habitat for the Indiana bat. Suitable habitat occurs along Dicks and Bourbon Creeks. We identified and marked 10 potential bat roost trees on-site. Kokosing proposes to preserve 16.2 acres of potential Indiana bat habitat. This protected area includes all marked potential roost trees and the forested riparian corridors along the streams. Due to protection of suitable habitat, we do not anticipate adverse affects to the Indiana bat due to project implementation.

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C.661 et seq.), the Endangered Species Act of 1973, as amended, and is consistent with the intent of the National Environmental Policy Act of 1969, and the U.S. Fish and Wildlife Service's Mitigation Policy.

If you have any questions regarding our response or if you need additional information, please contact Sarena Selbo at extension 17.

Sincerely,

Mary Knapp, Ph.D.
Field Supervisor

cc: ODNR, DOW, SCEA Unit, Columbus, OH

James Nicholas & Matthew Thomayer, URS Corporation, 36 E. 7th Street, Ste. 2300,
Cincinnati, OH 45202



"Mitch, Brian"
<Brian.Mitch@dnr.state.oh.us>
04/03/2008 10:02 AM

To <matt_thomayer@urscorp.com>
cc
bcc

Subject 08-0070; Sun Coke Plant, Middletown, Ohio

History: This message has been forwarded.



ODNR COMMENTS TO Matthew Thomayer, URS Corporation, 36 East Seventh Street, Suite 2300, Cincinnati, Ohio 45202.

Location: The site is located in Section 25, Lemon Township, Butler County, Trenton Quadrangle.

Project: The applicant, SunCoke Energy, Inc. is proposing to construct a heat recovery metallurgical coke plant. In addition to the coke plant, SunCoke is proposing to construct an electric/steam generation facility.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Rare and Endangered Species: The ODNR, Division of Natural Areas and Preserves, Natural Heritage Database contains no records of rare species or unique natural features within the proposed project and there are no state nature preserves, state parks, wildlife areas, or scenic rivers in the vicinity of the site. Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area.

Fish and Wildlife: The ODNR, Division of Wildlife (DOW) has the following comments.

The DOW recommends the applicant avoid impacts to unique habitat such as woodlots, streams, and wetlands. We recommend mitigation is provided, as necessary, for stream and wetland impacts that occur as a result of this project.

The project is within the range of the Indiana bat (*Myotis sodalis*), a state and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees: Shagbark hickory (*Carya ovata*), Shellbark hickory (*Carya laciniosa*), Bitternut hickory (*Carya cordiformis*), Black ash (*Fraxinus nigra*), Green ash (*Fraxinus pennsylvanica*), White ash (*Fraxinus americana*), Shingle oak (*Quercus imbricaria*), Northern red oak (*Quercus rubra*), Slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), Eastern cottonwood (*Populus deltoides*), Silver maple (*Acer saccharinum*), Sassafras (*Sassafras albidum*), Post oak (*Quercus stellata*), and White oak (*Quercus alba*). Indiana bat habitat consists of suitable trees that include dead and dying trees of the species listed above with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees of the species listed above with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. If suitable trees occur within the project area, these trees must be conserved. If suitable habitat occurs on the project area and trees must be cut, cutting must occur between September 30 and April 1. If suitable trees must be cut during the summer months of April 2 to September 29, a net survey must be conducted in May or June prior to

cutting. Net surveys shall incorporate either two net sites per square kilometer of project area with each net site containing a minimum of two nets used for two consecutive nights, or one net site per kilometer of stream within the project limits with each net site containing a minimum of two nets used for two consecutive nights. If no tree removal is proposed, the project is not likely to impact this species.

The project is within the range of the blue corporal (*Ladona deplanata*), a state endangered dragonfly. Due to the mobility of this species, the project is not likely to impact this species.

The project is within the range of the osprey (*Pandion haliaetus*), a state endangered bird. A statewide survey has not been completed for this species. A lack of records does not indicate the species is absent from the area. Therefore, if riparian corridor, forest, or wetland habitat is near the project area, construction must not occur in this habitat during the species' nesting period of May 1 to July 31. If this habitat is not located near the project area, the project is not likely to impact this species.

The project is within the range of the cave salamander (*Eurycea lucifuga*), a state endangered species. Due to the location of the project, the DOW believes the project is not likely to impact this species.

The project is within the range of the Kramer's cave beetle (*Pseudanophthalmus krameri*), a state endangered species, and the Ohio cave beetle (*Pseudanophthalmus ohioensis*), a state endangered species. These species are found only in caves. The Ohio Cave Protection Law, Section 1517.21 of the Ohio Revised Code, protects caves from impacts, in turn, protecting the habitat of these species. Therefore, the project is not likely to have an impact on these species.

Geological Survey: The ODNR, Division of Geological Survey has the following comments.

1. Property and proposed site are located on the USGS Trenton, Ohio 7.5-minute (1:24,000-scale) topographic map.
2. Geologically there appears to be nothing of significant concern regarding construction of the plant.
 - a. Estimate approximately 40 feet of drift cover over the actual plant footprint. Please see attachment #1 for map.
 - b. Footprint is most likely underlain by the Mt. Auburn and Corryville Members of the Ordovician-age Grant Lake Formation (see Schumacher, Swinford, and Shrake, 1991 PDF @ https://kb.osu.edu/dspace/bitstream/1811/23430/1/V091N1_056.pdf for unit descriptions). Please see attachment #1 for map.
 - c. For the most part buried bedrock topography drainage parallels the surface drainage system. Please see attachment #1 for map.
 - d. The surficial geology of the proposed plant site is shown as TA8/L-S on the Surficial Geology of the Cincinnati and Falmouth 30x60-minute quadrangles; the TA8 means there can be from 40 to 120 feet of drift in the area. However, as stated in 2a, only about 40 feet or less should be present under indicated plant footprint. Please see attachment #2 for map.
 - e. If any Ordovician-age rock is excavated during construction of the plant or its supporting infrastructure there are no concerns about any potentially significant paleontologic specimens.
 - f. Given that, the plant and its supporting infrastructure will be built on or in Pleistocene-age drift there is the possibility to encounter potentially significant faunal remains. However, the chances of such an encounter should be considered rare or remote. Inquires regarding any such encounters should be directed to the Cincinnati Natural History Museum.
3. General questions regarding plant:
 - a. No infrastructure currently exists for the proposed site. Constructing the supporting infrastructure will generate "cut & fill" material; how will this material be managed? Please see attachment #3 for photo.
 - b. Will the proposed steam electrical generator supply only the plant or will it be tied into the local power grid?
 - c. Proposal says plant is a "zero waste water generator", does this mean it will have "zero water discharge". If there is water discharge will it be via sewer or surface flow. If it is surface flow, how will this flow be regulated to prevent erosion?

Soil and Water Conservation: The ODNR, Division of Soil & Water Conservation has the following comments.

The DSWC has identified a number of concerns with regard to the proposed plants. Will there be additional impacts to Dick's Creek as a result of this project? Are there plans to enclose this section of Dick's Creek resulting in a loss of ecological services that are now being provided? Adjacent to this site, Dick's Creek is scheduled for cleanup and PCB remediation.

Even though the applicant states the facility will not generate any hazardous solid wastes/sludges and is designed as a zero wastewater discharge facility, there are still stormwater concerns that need to be addressed.

Zoning issues need to be resolved with regard to the proposed facilities. Will the facility need to coordinate with the County Planning Department or the City of Middletown? Upon request, will the local Soil and Water Conservation District be able to obtain a copy of the applicant's Stormwater Pollution Prevention Plan?

Special Flood Hazard Area: The ODNR, Floodplain Management Program has reviewed the proposed construction of the Electric Generating Unit. This review was performed to ensure impacts to the floodplain are minimized and the project is adequately floodprotected. Standards for development within the SFHA (*or 100-year floodplain*) are established by the National Flood Insurance Program (NFIP) and implemented through Section 1521 of the Ohio Revised Code.

The proposed construction of the Electric Generating Unit does not appear to be located within the 100-year floodplain of Dicks Creek, as shown on the Butler County Flood Insurance Rate Map (FIRM), Community Panel Number 3900370040C, Effective Date November 16, 1983. Based upon the aerial map identifying the location of the proposed development, the site appears to be located within Zone C. Under the NFIP minimum criteria, there are no Special Flood Hazard Area (SFHA) development permit requirements applicable to this structural development.

Butler County is a participating community in the NFIP and has adopted local floodplain management regulations, which establish permit requirements and performance standards that meet or exceed the minimum NFIP criteria. Butler County must review floodplain development permit applications for development proposed to be located in the identified SFHA. For additional information regarding local floodplain management requirements, it is recommended that the ODNR, Division of REALM contact the community's designated Floodplain Administrator, James Fox, at 513-887-3608 for more information.

The FIRM has been attached for reference.

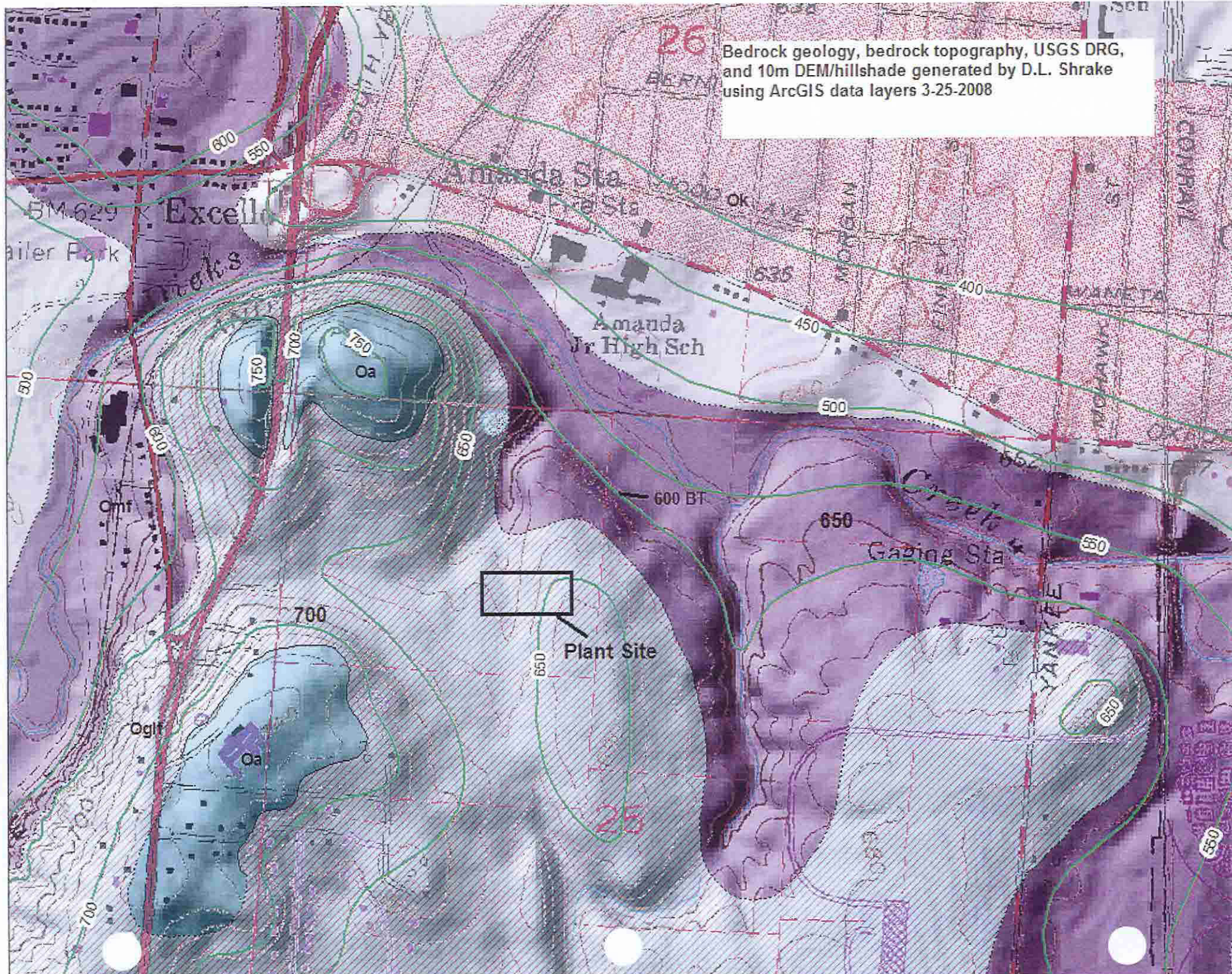
ODNR appreciates the opportunity to provide these comments. Please contact Brian Mitch at (614) 265-6378 if you have questions about these comments or need additional information.

Brian Mitch, Environmental Review Manager
Ohio Department of Natural Resources
Environmental Services Section
2045 Morse Road, Building C-4
Columbus, Ohio 43229-6693
Office: (614) 265-6378
FAX: (614) 267-4764
brian.mitch@dnr.state.oh.us



Attachment #1.bmp Attachment #2.bmp Attachment #3.bmp FM3900370040C.pdf FIRM Legend.pdf

Bedrock geology, bedrock topography, USGS DRG, and 10m DEM/hillshade generated by D.L. Shrake using ArcGIS data layers 3-25-2008



ROUTE_TYPE

SURFICIAL GEOLOGY OF OHIO CINCINNATI AND FALMOUTH 30X60-MINUTE QUADRANGLES

US

SR

Townships

Counties

Shaded Relief

Value

High : 254

Low : 0

Surficial Geology

Lithology

IM - Till and water laid deposits

pit

w - water

m - made land

a - alluvium

C - Clay, Wisconsin age

Cl - Clay, Illinoian age

Ck - Clay, Pre-Illinoian age

G - Gravel, Wisconsin age

Gi - Gravel, Illinoian age

IC - Ice contact materials

L - Silt, Wisconsin age

Li - Silt, Illinoian age

LA - Silt, clay, sand, and gravel, Wisconsin age

S - Sand, Wisconsin age

Si - Sand, Illinoian age

Sk - Clayey to pebbly sand, Pre-Illinoian age

SC - fine sand, clay, and silt, unspecified age

SG - Sand and gravel, Wisconsin age

SGi - Sand and gravel, Illinoian age

SGA - Sand and gravel, Pre-Wisconsin age

SGC - Sand and gravel, silt clay, Wisconsin age

TA - Loam till, Wisconsin age

Ti - Loam till, Illinoian age

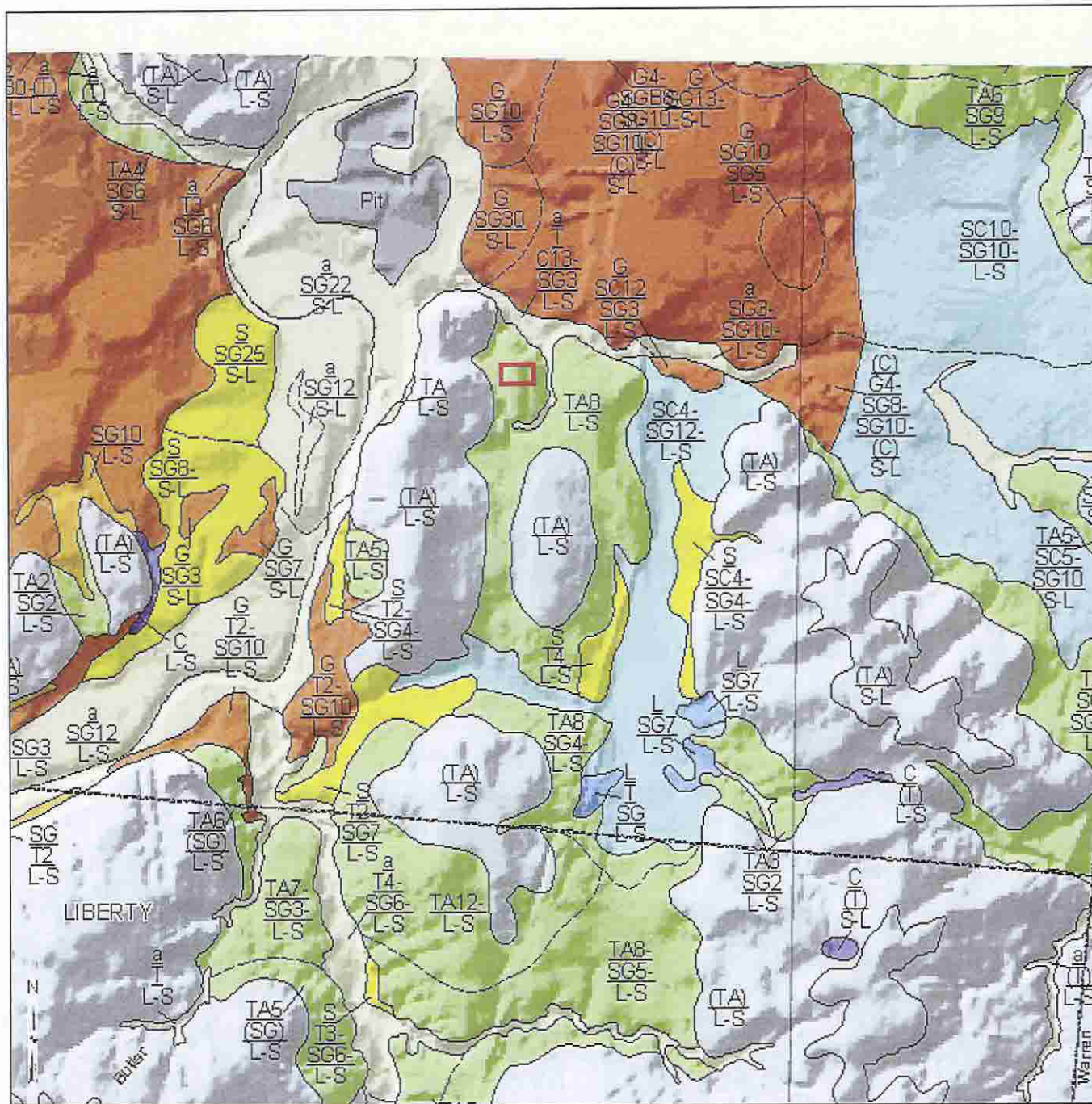
Tk - Clay-loam till, Pre-Illinoian age

Ls - Limestone bedrock

S-L - Shale-dominant bedrock

L-S - Limestone-dominant bedrock

SunCoke Plant



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
NATIONAL MAP INFORMATION
2000

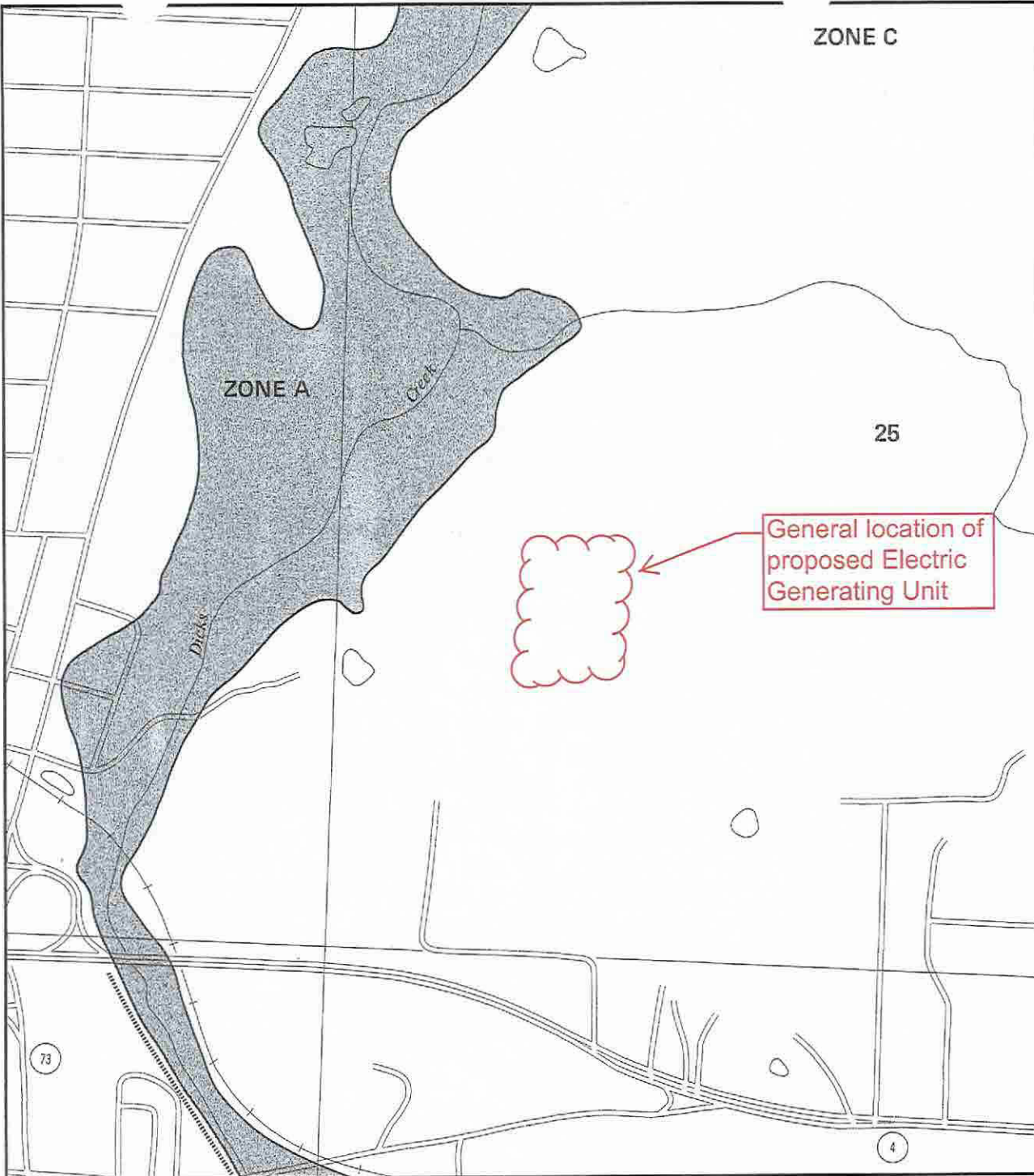
1:61,924

0 0.2 0.4 0.8 Miles

Hybrid map view of the proposed SunCoke plant south of Middletown, Ohio. Map is from <http://maps.live.com> on March 25, 2008

Land owned by SunCoke Proposed plant site





ZONE C

ZONE A

Creek

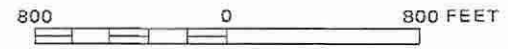
Dike

25

General location of
proposed Electric
Generating Unit



APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

COUNTY OF
BUTLER,
OHIO
(UNINCORPORATED AREAS)

PANEL 40 OF 155
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
390037 0040 C

MAP REVISED:
NOVEMBER 16, 1983



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Federal Emergency Management Agency Flood Insurance Rate Map (FIRM)

LEGEND



SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood event by a federal flood protection system under construction; no base flood elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.



FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.



OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.



OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.



COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS



OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

(EL 987)

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

10/15/2012 5:15:32 PM

in

Case No(s). 12-2719-EL-BLN

Summary: Application Letter of Notification, Appendix 3 of 3 electronically filed by Mrs. Gretchen L. Petrucci on behalf of Middletown Cogeneration Company LLC