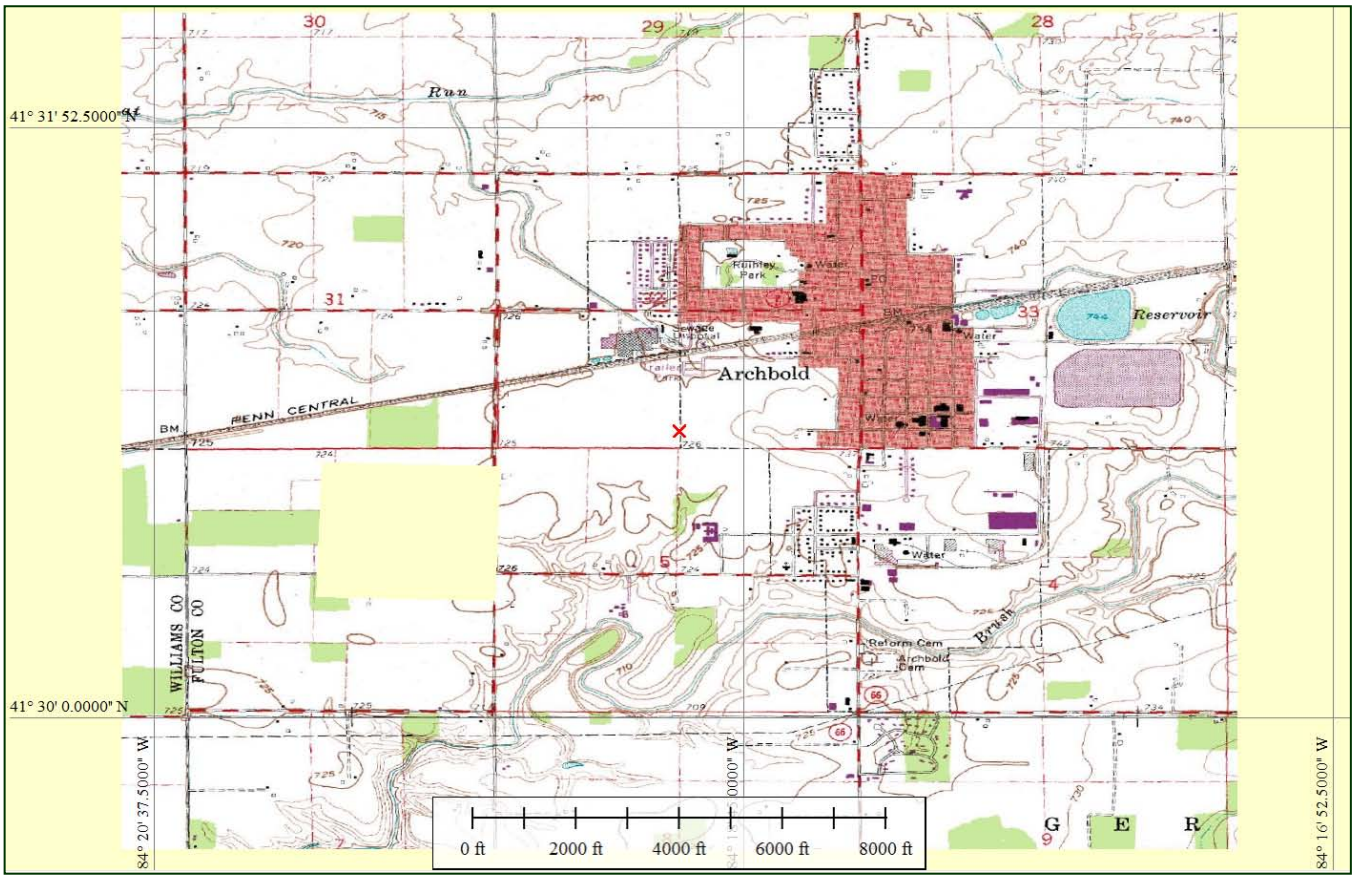
APPENDIX A: FIGURES

Archbold Schools Wind Turbine Location



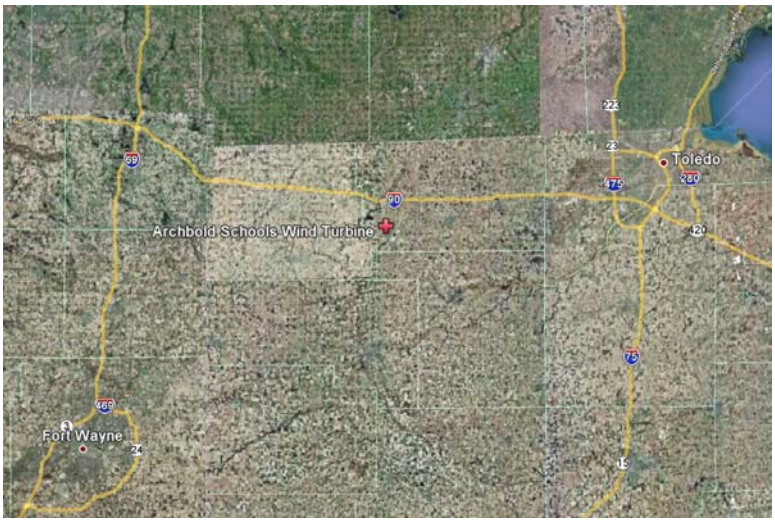
USGS Archbold Quad

✕ Wind Turbine Site Location:

Archbold Local Schools
600 Lafayette Street
Archbold, Ohio 43502

Latitude: 41.515181
Longitude: -84.315900

Elevation: 727 Feet



Project Name: ***Archbold Area Schools Wind Turbine***	THE RENAISSANCE GROUP — A Conserve First Company — TRG
Source Information: *USGS, TRG Survey*	
Notes: ✕ *Turbine Location*	Figure Name*: Turbine Location*

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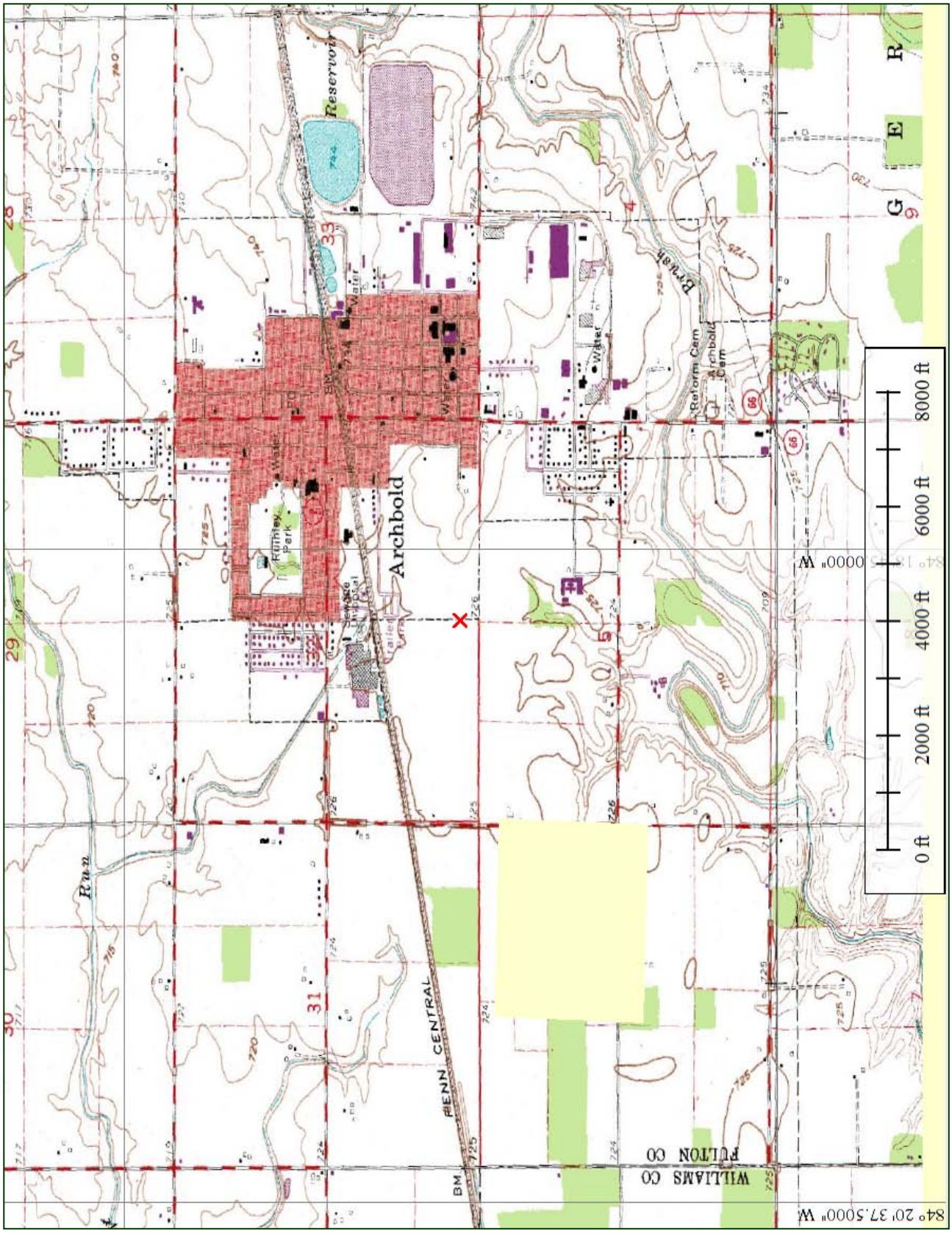

Project Name: ***Archbold Area Schools Wind Turbine***

Source Information: *USGS, TRG Survey*

Notes: ✕ *Turbine Location, USGS Archbold Quad*

THE RENAISSANCE GROUP
A Conserve First Company
TRG

Figure Name*: Topographic Map*

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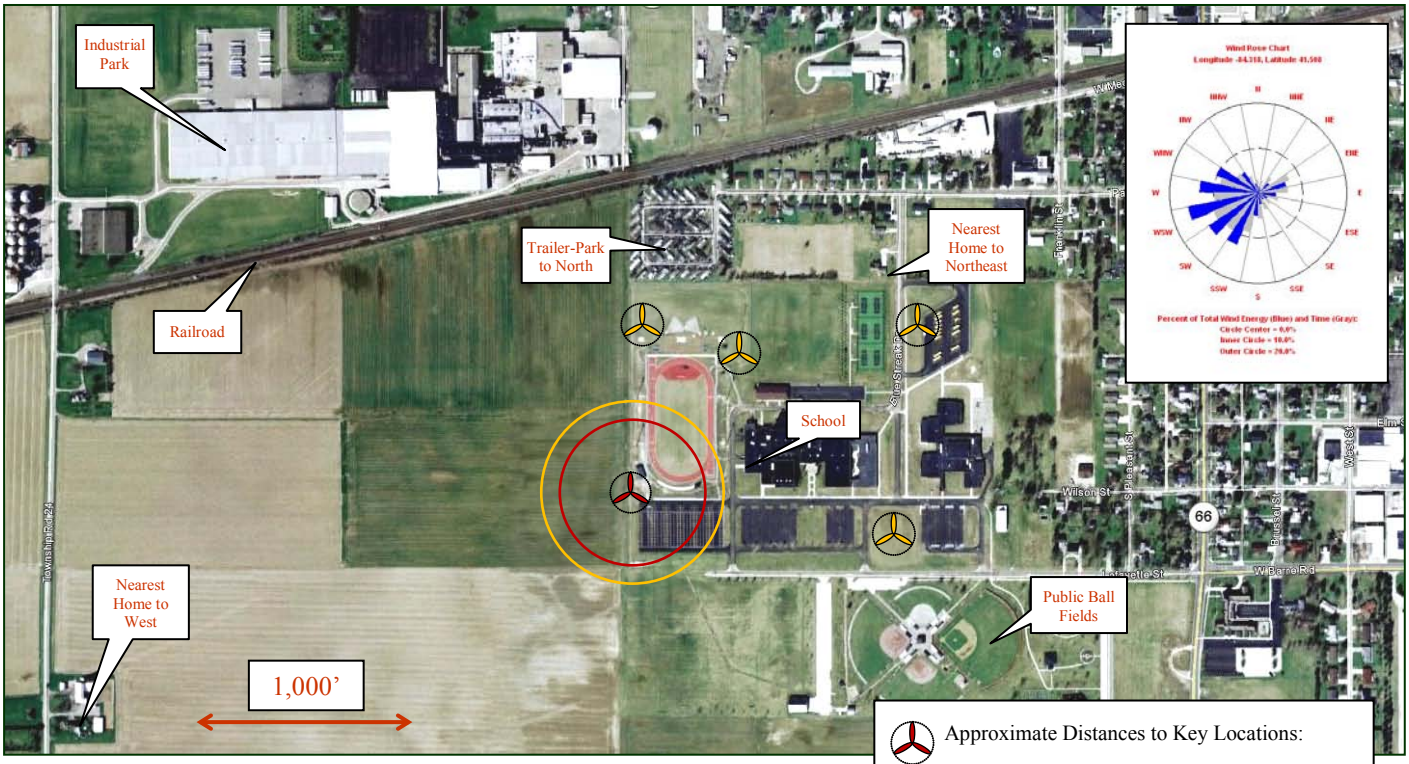
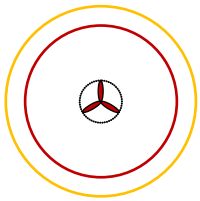
Railroad
Corridor
Proposed Wind
Turbine
Archbold High School
Google
Image State of Ohio / OSIP
Imagery Date: Mar 1, 2006
41°30'59.43" N 84°18'56.07" W elev 727 ft
Eye alt 5052 ft

Archbold Area Schools Turbine Placement, Fall Zone and Alternate Locations



Approximate Distances to Key Locations:

- 988' to nearest residence (trailer-park to North)
- 521' to school
- 350' to planned Lafayette Street extension
- 20' to Rupp property line (farm field to the West) (See support letter, formal easement to be obtained.)
- 1,160' to Public Ball Fields



Maximum Radius (1X Blade Tip Height) 335'
Maximum Radius (1,25X Blade Tip Height) 419'
Maximum Hub Height: 246'
Actual Blade Reach (Critical Fall Zone)

Proposed Turbine Location:

41° 30' 54.65" N
84° 18' 57.24" W
Elevation 727' (above sea-level)

Alternate Locations Considered (Declined Due To Reasons Listed):

- Closer distances to residences and inhabited structures.
- Closer proximities to overall population densities.
- Greater possibility for shadow flicker impacts.
- Poor access for heavy construction equipment.
- Longer electrical interconnect distances.
- Although not expected to be significant for any considered site, greater chance of acoustic propagation.
- Increased installation costs.
- Reduced power production from increased built environment and tree obstruction induced turbulence.

All sites are located on previously developed land and have similar benign environmental resource attributes and thus did not play into the final site selections. (Concurrence from ODNR and USFWS on selected site.)

Project Name: ***Archbold Area Schools Wind Turbine***	THE RENAISSANCE A Conserve First TRG
Source Information: *Aerial Photo, TRG Survey*	
Notes: *Turbine Location*	Figure Name: *Turbine Placement, Fall Zone and Alternate Locations*

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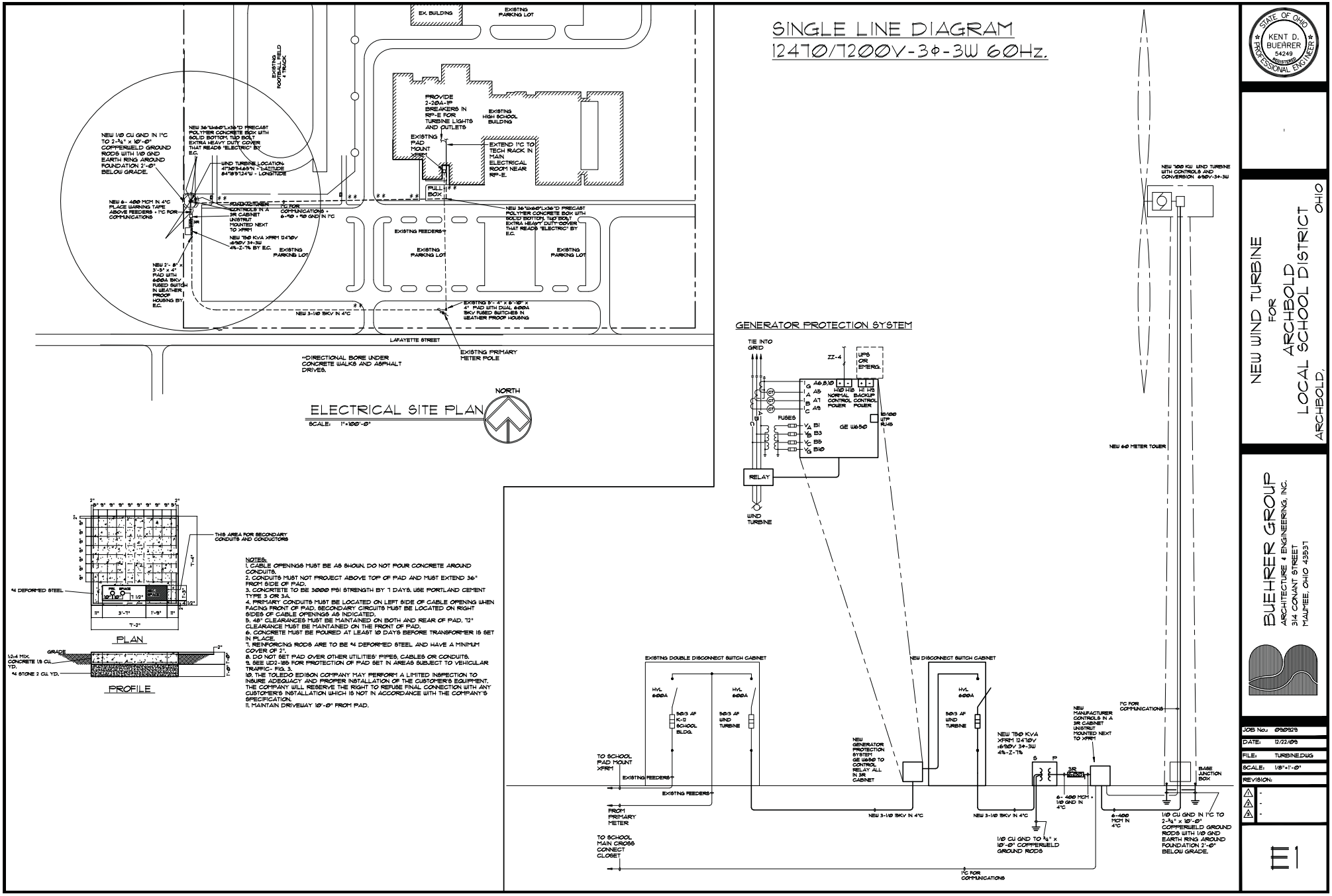

ELECTRICAL SITE PLAN
SCALE: 1"=100'-0"
NORTH
EX. BUILDING
EXISTING PARKING LOT
EXISTING FOOTBALL FIELD & TRACK
PROVIDE 2-20A-1P BREAKERS IN RP-E FOR TURBINE LIGHTS AND OUTLETS
EXISTING HIGH SCHOOL BUILDING
EXISTING PAD MOUNT XFRM
EXTEND 1"C TO TECH RACK IN MAIN ELECTRICAL ROOM NEAR RP-E.
PULL BOX
NEW 1/0 CU GND IN 1"C TO 2-3/4" x 10'-0" COPPERWELD GROUND RODS WITH 1/0 GND EARTH RING AROUND FOUNDATION 2'-0" BELOW GRADE.
NEW 36"W x 60"L x 36"D PRECAST POLYMER CONCRETE BOX WITH SOLID BOTTOM, 1/0 BOLT EXTRA HEAVY DUTY COVER THAT READS "ELECTRIC" BY E.C.
WIND TURBINE LOCATION: 47°09'54.65"N - LATITUDE 84°18'12.14"W - LONGITUDE
NEW 6- 4/0 MCM IN 4"C PLACE WARNING TAPE ABOVE FEEDERS + 1"C FOR COMMUNICATIONS
PLACE CONTROLS IN A 3R CABINET UNISTRUT MOUNTED NEXT TO XFRM
1"C FOR COMMUNICATIONS + 6-#10 + #8 GND IN 1"C
NEW 750 KVA XFRM 12470V 16500V 3Φ-3W 4%-Z-7% BY E.C.
EXISTING PARKING LOT
NEW 2'- 8" x 3'-5" x 4" PAD WITH 600A 15KV FUSED SWITCH IN WEATHER PROOF HOUSING BY E.C.
EXISTING FEEDERS
EXISTING PARKING LOT
EXISTING PARKING LOT
NEW 36"W x 60"L x 36"D PRECAST POLYMER CONCRETE BOX WITH SOLID BOTTOM, 1/0 BOLT EXTRA HEAVY DUTY COVER THAT READS "ELECTRIC" BY E.C.
NEW 3-1/0 15KV IN 4"C
EXISTING 5'- 4" x 8'-10" x 4" PAD WITH DUAL 600A 15KV FUSED SWITCHES IN WEATHER PROOF HOUSING
LAFAYETTE STREET
EXISTING PRIMARY METER POLE
*DIRECTIONAL BORE UNDER CONCRETE WALKS AND ASPHALT DRIVES.
SINGLE LINE DIAGRAM
12470/7200V-3Φ-3W 60Hz.
GENERATOR PROTECTION SYSTEM
TIE INTO GRID
ZZ-4
UPS OR EMERGS.
A6,B,10
NORMAL CONTROL POWER
BACKUP CONTROL POWER
FUSES
GE 16-50
RELAY
WIND TURBINE
NEW 600 KW WIND TURBINE WITH CONTROLS AND CONVERSION 690V-3Φ-3W
NEW 60' METER TOWER
EXISTING DOUBLE DISCONNECT SWITCH CABINET
HVL 600A
50/3 AF K-12 SCHOOL BLDG.
50/3 AF WIND TURBINE
NEW DISCONNECT SWITCH CABINET
NEW GENERATOR PROTECTION SYSTEM GE 16-50 TO CONTROL RELAY ALL IN 3R CABINET
NEW 750 KVA XFRM 12470V 16500V 3Φ-3W 4%-Z-7%
NEW MANUFACTURER CONTROLS IN A 3R CABINET UNISTRUT MOUNTED NEXT TO XFRM
1"C FOR COMMUNICATIONS
TO SCHOOL PAD MOUNT XFRM
EXISTING FEEDERS
FROM PRIMARY METER
TO SCHOOL MAIN CROSS CONNECT CLOSET
NEW 3-1/0 15KV IN 4"C
6- 4/0 MCM + 1/0 GND IN 4"C
6-4/0 MCM IN 4"C
BASE JUNCTION BOX
1/0 CU GND IN 1"C TO 2-3/4" x 10'-0" COPPERWELD GROUND RODS WITH 1/0 GND EARTH RING AROUND FOUNDATION 2'-0" BELOW GRADE.
1/0 CU GND TO 3/4" x 10'-0" COPPERWELD GROUND RODS
1"C FOR COMMUNICATIONS
THIS AREA FOR SECONDARY CONDUITS AND CONDUCTORS
#4 DEFORMED STEEL
PLAN
GRADE
1:2:4 MIX. CONCRETE 1.5 CU. YD.
#4 STONE 2 CU. YD.
PROFILE
NOTES:
1. CABLE OPENINGS MUST BE AS SHOWN. DO NOT POUR CONCRETE AROUND CONDUITS.
2. CONDUITS MUST NOT PROJECT ABOVE TOP OF PAD AND MUST EXTEND 36" FROM SIDE OF PAD.
3. CONCRETE TO BE 3000 PSI STRENGTH BY 7 DAYS. USE PORTLAND CEMENT TYPE 3 OR 3A.
4. PRIMARY CONDUITS MUST BE LOCATED ON LEFT SIDE OF CABLE OPENING WHEN FACING FRONT OF PAD. SECONDARY CIRCUITS MUST BE LOCATED ON RIGHT SIDES OF CABLE OPENINGS AS INDICATED.
5. 48" CLEARANCES MUST BE MAINTAINED ON BOTH AND REAR OF PAD. 72" CLEARANCE MUST BE MAINTAINED ON THE FRONT OF PAD.
6. CONCRETE MUST BE POURED AT LEAST 10 DAYS BEFORE TRANSFORMER IS SET IN PLACE.
7. REINFORCING RODS ARE TO BE #4 DEFORMED STEEL AND HAVE A MINIMUM COVER OF 2".
8. DO NOT SET PAD OVER OTHER UTILITIES' PIPES, CABLES OR CONDUITS.
9. SEE UD2-185 FOR PROTECTION OF PAD SET IN AREAS SUBJECT TO VEHICULAR TRAFFIC- FIG. 3.
10. THE TOLEDO EDISON COMPANY MAY PERFORM A LIMITED INSPECTION TO INSURE ADEQUACY AND PROPER INSTALLATION OF THE CUSTOMER'S EQUIPMENT. THE COMPANY WILL RESERVE THE RIGHT TO REFUSE FINAL CONNECTION WITH ANY CUSTOMER'S INSTALLATION WHICH IS NOT IN ACCORDANCE WITH THE COMPANY'S SPECIFICATION.
11. MAINTAIN DRIVEWAY 10'-0" FROM PAD.
STATE OF OHIO
KENT D. BUEHRER
54249
REGISTERED
PROFESSIONAL ENGINEER
NEW WIND TURBINE FOR ARCHBOLD LOCAL SCHOOL DISTRICT
ARCHBOLD, OHIO
BUEHRER GROUP
ARCHITECTURE & ENGINEERING, INC.
314 CONANT STREET
MAUMEE, OHIO 43537
JOB No.: 090729
DATE: 12/22/09
FILE: TURBINE.DWG
SCALE: 1/8"=1'-0"
REVISION:
E1

U.S. Fish and Wildlife Service

National Wetlands Inventory

Archbold

Aug 2, 2010

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deetwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

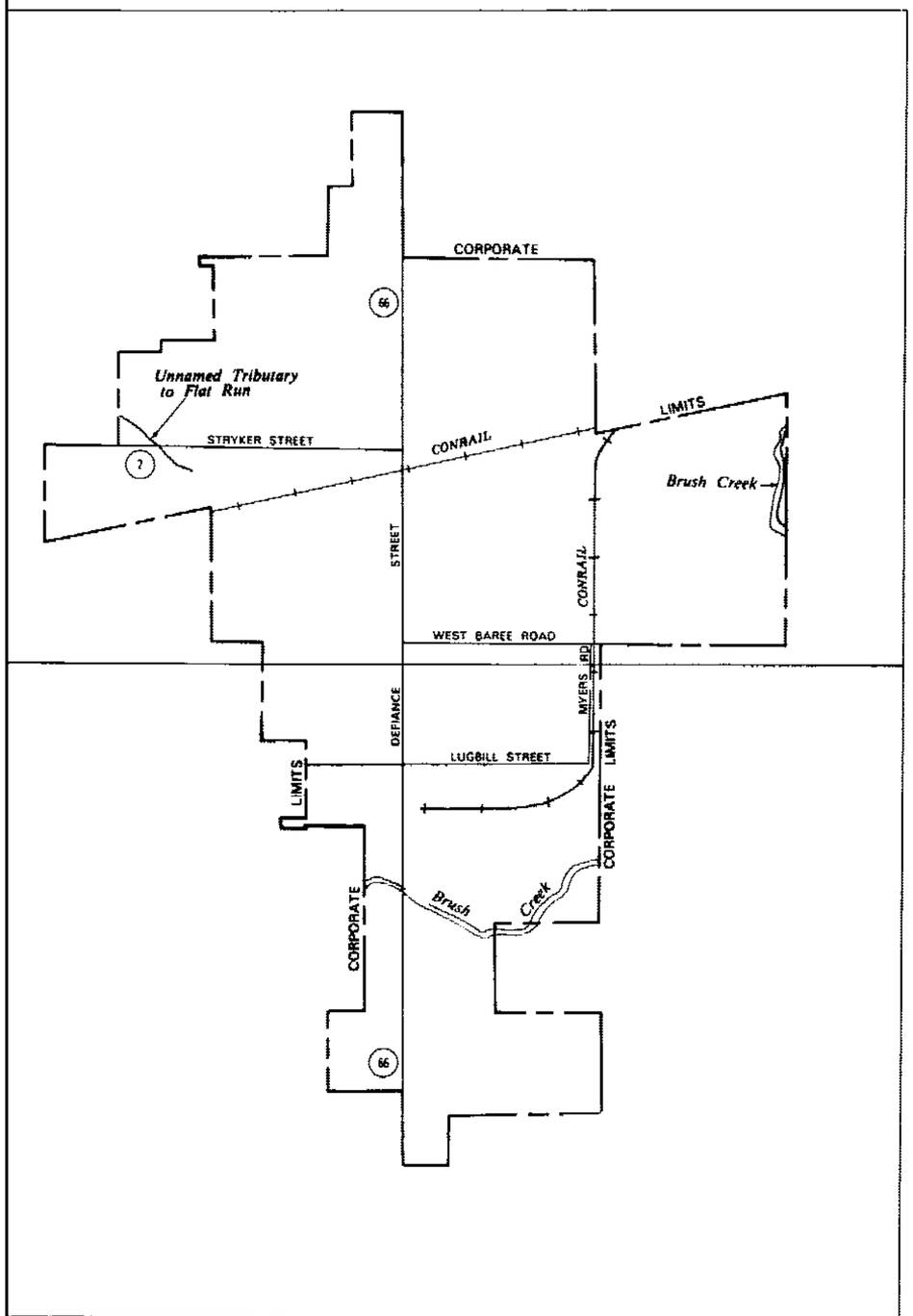
- Herbaceous
- Forested/Shrub

Status

- Digital
- Scan
- Non-Digital
- No Data

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:



KEY TO MAP

ZONE DESIGNATIONS*

ZONE C

ZONE A

ZONE C

Base Flood Elevation Line with elevation in feet	~~ 513 ~~
Base Flood Elevation where uniform within zone	(EL 987)
Elevation Reference Mark	$RM7_x$
River Mile	• M1.5

***EXPLANATION OF ZONE DESIGNATIONS**

A flood insurance map displays the zone designations for a community according to areas of designated flood hazards. The zone designations used by FEMA are

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood (Medium shading)
C	Areas of minimal flooding (No shading)
D	Areas of undetermined, but possible, flood hazards
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

INITIAL IDENTIFICATION: SEPTEMBER 5, 1975

FLOOD HAZARD BOUNDARY MAP REVISIONS:

FLOOD INSURANCE RATE MAP EFFECTIVE: JANUARY 4, 1985

FLOOD INSURANCE RATE MAP REVISIONS:

FEDERAL EMERGENCY MANAGEMENT AGENCY

FIRM

FLOOD INSURANCE RATE MAP 01-02
MAP INDEX
VILLAGE OF ARCHBOLD, OH

FULTON COUNTY

COMMUNITY NUMBER 390603 A

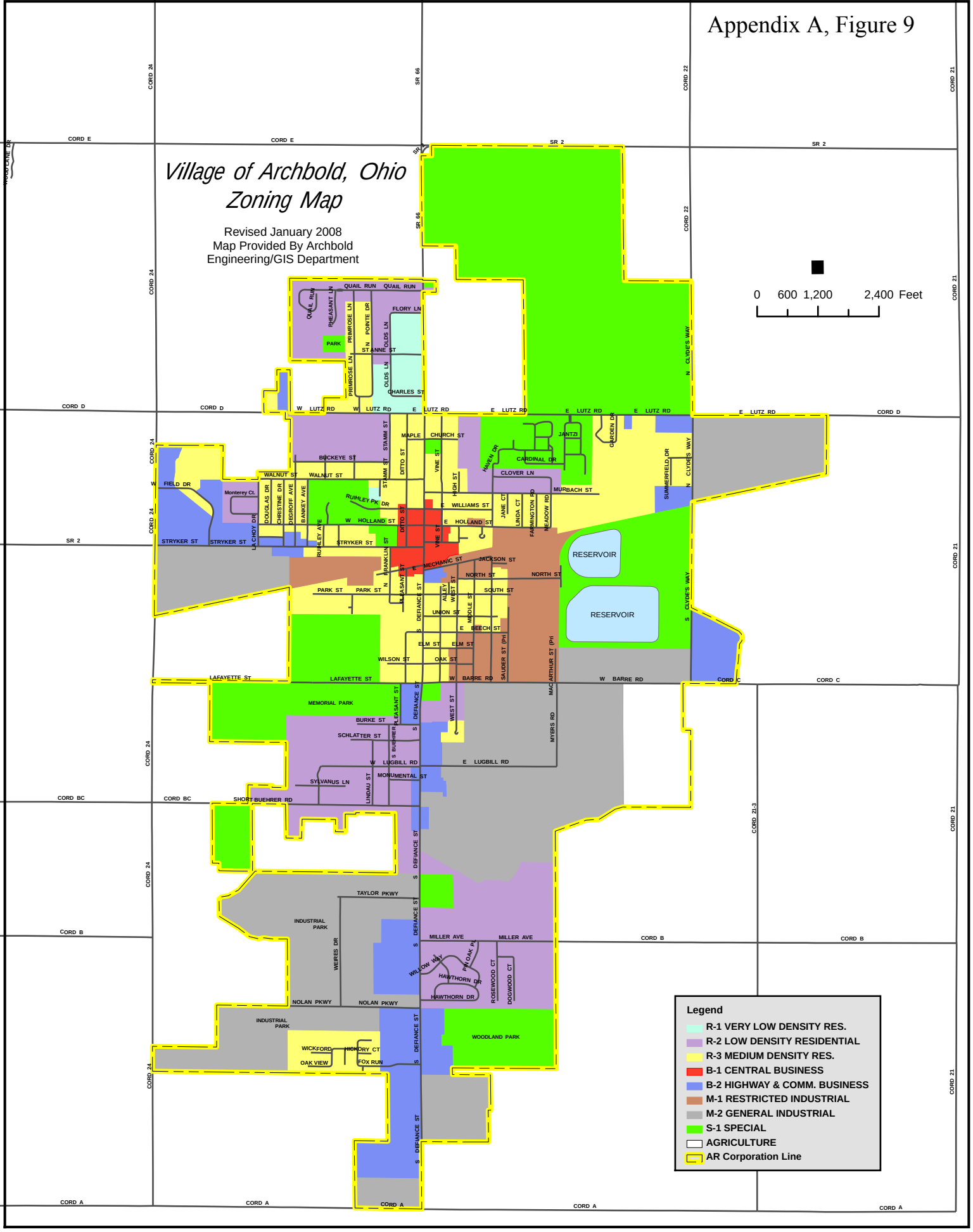
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program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

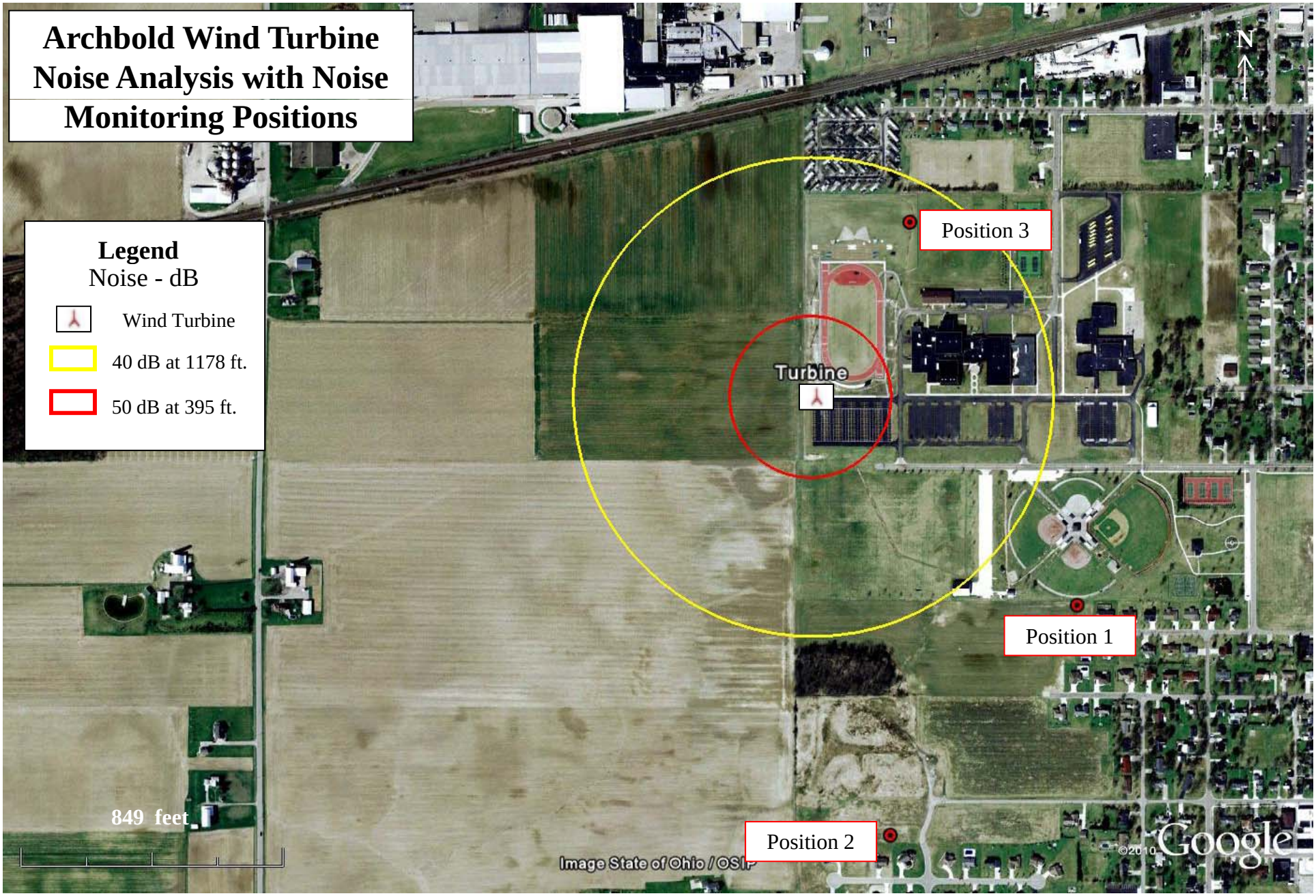
Ohio Department of Natural Resources
Natural Areas, Ohio Scenic Rivers Program
2045 Morse Road, Building C-3
Columbus, OH 43229-6693
(614) 265-6453

Ohio Scenic Rivers Program

Ohio Rivers also listed as National Wild and Scenic Rivers
Little Beaver Creek, Big and Little Darby Creeks and Little Miami River

Appendix A, Figure 9




Archbold Wind Turbine Noise Analysis with Noise Monitoring Positions
Legend
Noise - dB
Wind Turbine
40 dB at 1178 ft.
50 dB at 395 ft.
Position 3
Turbine
Position 1
Position 2
849 feet
N
Image State of Ohio / OSIP
©2010 Google

ARRA SEP - Awarded Wind Turbine Projects in Ohio

Project Name: *Applicable to All Ohio ARRA Wind Turbine Projects*	THE RENAISSANCE GROUP A Conserve First Company TRG
Source Information: *TRG Survey*	
Notes:	Figure Name: *ARRA SEP – Awarded Wind Turbine Projects in Ohio*

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