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With Maps on 2 CD's

American Electric Power
700 Morrison Road
Gahanna, OH 43230
AEP.com

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Vice President Transmission Engineering &
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614-552-2100
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August 12, 2013

Mr. Todd Snitchler, Chairman
Ohio Power Siting Board
State of Ohio
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, Ohio 43215-3793

RE: 345/34.5 kV Ebersole Station Project
Case No. 13-733-EL-BSB

Dear Mr. Snitchler:

In accordance with the rules and regulations of the Ohio Power Siting Board, AEP Ohio Transmission Company, Inc. submits an Application for a Certificate of Environmental Compatibility and Public Need for the 138/34.5 kV Ebersole Station Project and the associated facilities.

The following information is included as per the requirements of the Code of Rules and regulations, 4906-5-03(A)(3) as contained in the Ohio Administrative Code;

(a) Applicant:

AEP Ohio Transmission Company, Inc.
c/o American Electric Power
Energy Transmission
700 Morrison Road
Gahanna, Ohio 43230

(b) Facility to be Certified:

138/34.5 kV Ebersole Station Project and Associated Facilities

This is to certify that the images appearing are an
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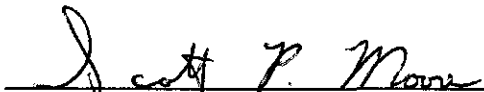
Technician JD Date Processed 8/12/13

(c) Applicant's authorized representative with respect to this application is:

Mr. Edward Gilabert
Project Manager
American Electric Power
700 Morrison Road
Gahanna, Ohio 43230

Sincerely,

AEP Ohio Transmission Company, Inc.



Scott P. Moore

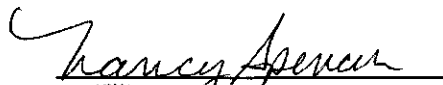
Vice President – Transmission Engineering and Project Services
American Electric Power Service Corporation,
as agent for AEP Ohio Transmission Company, Inc.
an Ohio corporation, ("Owner").

Now comes Scott Moore and says that the information and material contained in the attached
Application is true to the best of his knowledge and belief.

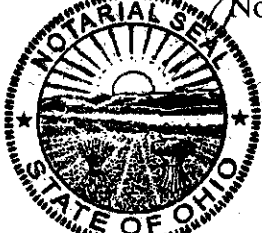


Scott Moore

Sworn to and subscribed before me this 12th day of August, 2013.



Notary



Nancy Spencer
Notary Public, State of Ohio
My Commission Expires 05-10-2016

Chapter 4906-15

Instructions for the Preparation of Certificate Applications for Electric Power, Gas and Natural Gas Transmission Facilities

4906-15-01	Project summary and facility overview.
4906-15-02	Review of need for proposed project.
4906-15-03	Site and route alternatives analyses
4906-15-04	Technical data
4906-15-05	Financial data.
4906-15-06	Socioeconomic and land use impact analysis
4906-15-07	Ecological impact analysis

4906-15-01 Project summary and facility overview

- (A) An applicant for a certificate to site a major electric power, gas, or natural gas transmission facility shall provide a project summary and overview of the proposed project. In general, the summary should be suitable as a reference for state and local governments and for the public. The summary and overview shall include the following:
- (1) A statement explaining the general purpose of the facility.
 - (2) A description of the proposed facility.
 - (3) A description of the site or route selection process, including descriptions of the major alternatives considered.
 - (4) A discussion of the principal environmental and socioeconomic considerations of the preferred and alternate routes or sites.
 - (5) An explanation of the project schedule (a bar chart is acceptable).
- (B) Information filed by the applicant in response to the requirements of this section shall not be deemed responses to any other section of the application requirements.
- (C) If the applicant has prepared the required hard copy maps using digital, geographically referenced data, an electronic copy of all such data, excluding data obtained by the applicant under a licensing agreement which prohibits distribution, shall be provided to the board staff on computer disk concurrent with submission of the application.

Effective: 1/25/09

119.032 review dates: 11/30/13

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 12/27/76, 10/10/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15-02 Review of need for proposed project

- (A) The applicant shall provide a statement explaining the need for the proposed facility, including a listing of the factors upon which it relied to reach that conclusion and references to the most recent long-term forecast report (if applicable). The statement shall also include but not be limited to, the following:
- (1) A statement of the purpose of the proposed facility.

- (2) Specific projections of system conditions, local requirements or any other pertinent factors that impacted the applicant's opinion on the need for the proposed facility.
 - (3) Relevant load flow studies and contingency analyses, if appropriate, identifying the need for system improvement.
 - (4) For electric power transmission facilities, load flow data shall be presented in the form of transcription diagrams depicting system performance with and without the proposed facility.
 - (5) For gas or natural gas transmission projects, one copy in electronic format of the relevant base case system data on diskette, in a format acceptable to the board staff, with a description of the analysis program and the data format.
- (B) Expansion plans.
- (1) For the electric power transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term electric forecast report and the regional plans for expansion, including, but not limited to, the following:
 - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term electric forecast report of the applicant.
 - (b) If no description was contained in the most recent long-term electric forecast report, an explanation as to why none was filed in the most recent long-term electric forecast report.
 - (c) Reference to regional expansion plans, including East Central Area Reliability Coordination Agreement bulk power plans, when applicable (if the transmission project will not affect regional plans, the applicant shall so state).
 - (2) For gas transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term gas forecast report, including the following:
 - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term gas forecast report of the applicant.
 - (b) If no description was contained in the most recent long-term gas forecast report, an explanation as to why none was filed in the most recent long-term gas forecast report.
- (C) For electric power transmission facilities, the applicant shall provide an analysis of the impact of the proposed facility on the electric power system economy and reliability. The impact of the proposed facility on all interconnected utility systems shall be evaluated, and all conclusions shall be supported by relevant load flow studies.
- (D) For electric power transmission lines, the applicant shall provide an analysis and evaluation of the options considered which would eliminate the need for construction of an electric power transmission line, including electric power generation options and options involving changes to existing and planned electric power transmission substations.
- (E) The applicant shall describe why the proposed facility was selected to meet the projected need.
- (F) Facility schedule.
- (1) Schedule. The applicant shall provide a proposed schedule in bar chart format covering all applicable major activities and milestones, including:
 - (a) Preparation of the application.

- (b) Submittal of the application for certificate.
 - (c) Issuance of the certificate.
 - (d) Acquisition of rights-of-way and land rights for the certified facility.
 - (e) Preparation of the final design.
 - (f) Construction of the facility.
 - (g) Placement of the facility in service.
- (2) Delays. The applicant shall describe the impact of critical delays on the eventual in-service date.

Effective: 1/25/09

Replaces: part of 4906-15-04

119.032 review dates: 11/30/13

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15-03 Site and route alternatives analyses

- (A) The applicant shall conduct a site and route selection study prior to submitting an application for an electric power transmission line, electric power transmission substation, gas or natural gas transmission line, or a gas compressor station. The study shall be designed to evaluate all practicable sites, routes, and route segments for the proposed facility identified within the project area.
- (1) The applicant shall provide the following:
- (a) A description of the study area or geographic boundaries selected, including the rationale for the selection.
 - (b) A map of suitable scale which includes the study area and which depicts the general routes, route segments, and sites which were evaluated.
 - (c) A comprehensive list and description of all qualitative and quantitative siting criteria, factors, or constraints utilized by the applicant, including any evaluation criteria or weighting values assigned to each.
 - (d) A description of the process by which the applicant utilized the siting criteria to determine the preferred and alternate routes and sites.
 - (e) A description of the routes and sites selected for evaluation, their final ranking, and the factors and rationale used by the applicant for selecting the preferred and alternate routes and sites.
- (2) The applicant shall provide one copy of any constraint map utilized for the study directly to the board staff for review.
- (B) The applicant shall provide a summary table comparing the routes, route segments, and sites, utilizing the technical, financial, environmental, socioeconomic, and other factors identified in the study. Design

and equipment alternatives shall be included where the use of such alternatives influenced the siting decision.

- (C) The applicant may provide a copy of any route and site selection study produced by or for the applicant for the proposed project as an attachment to the application. The study may be submitted in response to paragraphs (A) and (B) of this rule, provided that the information contained therein is responsive to the requirements of paragraphs (A) and (B) of this rule.

Effective: 1/25/09

119.032 review dates: 11/30/13

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15-04 Technical data

- (A) Site/route alternatives. Information on the location, major features, and the topographic, geologic, and hydrologic suitability of site/route alternatives shall be submitted by the applicant. If this information is derived from reference materials, it shall be derived from the best available and current reference materials.

- (1) Geography and topography. The applicant shall provide map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission line alignment, and the area within the immediate vicinity of a substation site or compressor station site, which shall include the following features:
- (a) The proposed transmission line alignments, including proposed turning points.
 - (b) The proposed substation or compressor station site locations.
 - (c) Major highway and railroad routes.
 - (d) Identifiable air transportation facilities, existing or proposed.
 - (e) Utility corridors.
 - (f) Proposed permanent access roads.
 - (g) Lakes, ponds, reservoirs, streams, canals, rivers, and swamps.
 - (h) Topographic contours.
 - (i) Soil associations or series.
 - (j) Population centers and legal boundaries of cities, villages, townships, and counties.
- (2) Slope and soil mechanics. The applicant shall:
- (a) Provide a brief, but specific description of the soils in the areas depicted on the above map(s) where slopes exceed twelve per cent. This information may be extracted from published sources.
 - (b) Discuss the rationales as to suitability of the soils for foundation construction.

- (B) Layout and construction. The applicant shall provide information on the proposed layout and preparation of route/site alternatives, and the description of the proposed major structures and their installation as detailed below.
- (1) Site activities. The applicant shall describe the proposed site clearing, construction methods and reclamation operations, including:
 - (a) Surveying and soil testing.
 - (b) Grading and excavation.
 - (c) Construction of temporary and permanent access roads and trenches.
 - (d) Stringing of cable and/or laying of pipe.
 - (e) Post-construction reclamation.
 - (2) Layout for associated facilities. The applicant shall:
 - (a) Provide a map of 1:2,400 scale of the site of major transmission line associated facilities such as substations, compressor stations and other stations, showing the following proposed features:
 - (i) Final grades after construction, including the site and access roads.
 - (ii) Proposed location of major structures and buildings.
 - (iii) Fenced-in or secured areas.
 - (iv) Estimated overall dimensions.
 - (b) Describe reasons for the proposed layout and any unusual features.
 - (c) Describe plans for any future modifications in the proposed layout, including the nature and approximate timing of contemplated changes.
- (C) Transmission equipment. The applicant shall provide a description of the proposed transmission lines, as well as switching, capacity, metering, safety and other equipment pertinent to the operation of the proposed electric power and gas transmission lines and associated facilities. Include any provisions for future expansion.
- (1) Provide the following data for electric power transmission lines:
 - (a) Design voltage.
 - (b) Tower designs, pole structures, conductor size and number per phase, and insulator arrangement.
 - (c) Base and foundation design.
 - (d) Cable type and size, where underground.
 - (e) Other major equipment or special structures.
 - (2) Provide a description for electric power transmission substations that includes a single-line diagram and a description of the proposed major equipment, such as:
 - (a) Breakers.

- (b) Switchgear.
 - (c) Bus arrangement and structures.
 - (d) Transformers.
 - (e) Control buildings.
 - (f) Other major equipment.
- (3) Provide the following data for gas transmission lines:
 - (a) Maximum allowable operating pressure.
 - (b) Pipe material.
 - (c) Pipe dimensions and specifications.
 - (d) Other major equipment.
- (4) Provide a description of gas transmission facilities such as:
 - (a) Control buildings.
 - (b) Heaters, odorizers, and above-ground facilities.
 - (c) Any other major equipment.
- (D) Environmental and aviation compliance information. The applicant shall provide:
 - (1) A list and brief discussion of all permits that will be required for construction of the facility.
 - (2) A description, quantification and characterization of debris that will result from construction of the facility, and the plans for disposal of the debris.
 - (3) A discussion of the process that will be used to control storm water and minimize erosion during construction and restoration of soils, wetlands, and streams disturbed as a result of construction of the facility.
 - (4) A discussion of plans for disposition of contaminated soil and hazardous materials generated or encountered during construction.
 - (5) The height of tallest anticipated above ground structures. For construction activities within the vicinity of airports or landing strips, provide the maximum possible height of construction equipment as well as all installed above ground structures.
 - (6) A description of the plans for construction during excessively dusty or excessively muddy soil conditions.

Effective: 1/25/09

119.032 review dates: 11/30/13

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15-05 Financial data.

- (A) Ownership. The applicant shall state the current and proposed ownership status of the proposed facility, including sites, rights-of-way, structures, and equipment. The information shall cover sole and combined ownerships, any leases, options to purchase, or franchises, and shall specify the extent, terms, and conditions of ownership, or other contracts or agreements.
- (B) Electric capital costs. The applicant shall submit estimates of applicable capital and intangible costs for the various components of electric power transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for the utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:
- (1) Land and land rights.
 - (2) Structures and improvements.
 - (3) Substation equipment.
 - (4) Poles and fixtures.
 - (5) Towers and fixtures.
 - (6) Overhead conductors.
 - (7) Underground conductors and insulation.
 - (8) Underground-to-overhead conversion equipment.
 - (9) Right-of-way clearing and roads, trails, or other access.
- (C) Gas capital cost. The applicant shall submit estimates of applicable capital and intangible costs for the various components of gas transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:
- (1) Land and land rights.
 - (2) Structures and improvements.
 - (3) Pipes.
 - (4) Valves, meters, boosters, regulators, tanks, and other equipment.
 - (5) Roads, trails, or other access.

Effective: 12/15/2003

119.032 review dates: 9/30/13

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 3/14/83, 1/15/85, 7/7/88, 6/5/93, 8/28/98

4906-15-06 Socioeconomic and land use impact analysis

- (A) The applicant shall conduct a literature search and map review for the area within one thousand feet on each side of each proposed transmission line centerline and within one thousand feet of the perimeter of each substation or compressor station designed to identify specific land use areas as required in paragraph (B)(3) of this rule. On-site investigations shall be conducted within one hundred feet of each side of each proposed transmission line centerline and within one hundred feet of the perimeter of each substation or compressor station to characterize the potential effects of construction, operation, and maintenance of the proposed facility.
- (B) The applicant shall provide, for each of the site/route alternatives and adjacent areas, map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission alignment, and the area within the immediate vicinity of a substation site, which map(s) shall include the following features:
 - (1) Proposed approximate centerline for each transmission line alternative being proposed.
 - (2) Proposed substation or compressor station locations.
 - (3) General land use, depicted as areas on the maps, including, but not limited to:
 - (a) Residential use.
 - (b) Commercial use.
 - (c) Industrial use.
 - (d) Cultural use (as identified in paragraph (F) of this rule).
 - (e) Agricultural use.
 - (f) Recreational use.
 - (g) Institutional use (e.g., schools, hospitals, churches, government facilities, etc.).
 - (4) Transportation corridors.
 - (5) Existing utility corridors.
 - (6) Noise-sensitive areas.
 - (7) Agricultural land (including agricultural district land) existing at least sixty days prior to submission of the application located within each transmission line right-of-way or within each site boundary.
- (C) The applicant shall provide for each of the site/route alternatives, a description of the impact of the proposed facility on each land use identified in paragraph (B)(3) of this rule. As it relates to agricultural land, the description shall include the acreage impacted and the applicant's evaluation of impacts to cultivated land, permanent pasture land, managed wood lots, orchards, nurseries, and agricultural-related structures.

- (1) Provide the number of residential structures within one thousand feet of the proposed facility, and identify all residential structures for which the nearest edge of the structure is within one hundred feet of the proposed facility.
 - (2) Construction: The applicant shall estimate the probable impact of the proposed facility on each land use (including: (a) buildings that will be destroyed, acquired, or removed as the result of the planned facility and criteria for owner compensation; and (b) field operations [such as plowing, planting, cultivating, spraying, and harvesting], irrigation, and field drainage systems).
 - (3) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on each land use.
 - (4) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize impact to land use, such as effects on subsurface field drainage systems.
- (D) The applicant shall provide the following public interaction information for each of the site/route alternatives:
- (1) A list of counties, townships, villages, and cities within one thousand feet on each side of the centerline or facility perimeter.
 - (2) A list of the public officials contacted regarding the application, their office addresses, and office telephone numbers.
 - (3) A description of the program or company/public interaction planned for the siting, construction, and operation of the proposed facility, i.e. public information programs.
 - (4) A description of any insurance or other corporate program, if any, for providing liability compensation for damages, if such should occur, to the public resulting from construction or operation of the proposed facility.
 - (5) A description of how the facility will serve the public interest, convenience, and necessity.
 - (6) An estimate of the increase in tax revenues as a result of facility placement.
 - (7) A description of the impact of the facility on regional development, referring to pertinent formally adopted regional development plans.
- (E) The applicant shall provide the following health, safety, and aesthetic information for each site/route alternative:
- (1) The applicant shall provide a description of how the facility will be constructed, operated, and maintained to comply with the requirements of applicable state and federal statutes and regulations, including the 2002 edition of the "National Electrical Safety Code", applicable occupational safety and health administration regulations, U.S. department of transportation gas pipeline safety standards, and Chapter 4901:1-16 of the Administrative Code.
 - (2) For electric power transmission facilities, the applicant shall discuss the production of electric and magnetic fields during operation of the preferred and alternate site/route. If more than one conductor configuration is to be used on the proposed facility, information shall be provided for each configuration that constitutes more than ten per cent of the total line length, or more than one mile of the total line length being certificated. Where an alternate structure design is submitted, information shall also be provided on the alternate structure. The discussion shall include:

- (a) Calculated electric and magnetic field strength levels at one meter above ground, under the conductors and at the edge of the right-of-way for:
 - (i) Winter normal conductor rating.
 - (ii) Emergency line loading.
 - (iii) Normal maximum loading.

Provide corresponding current flows, conductor ground clearance for normal maximum loading and distance from the centerline to the edge of the right-of-way. Estimates shall be made for minimum conductor height. The applicant shall also provide typical cross-section profiles of the calculated electric and magnetic field strength levels at the normal maximum loading conditions.
 - (b) References to the current state of knowledge concerning possible health effects of exposure to electric and magnetic field strength levels.
 - (c) Description of the company's consideration of electric and magnetic field strength levels, both as a general company policy and specifically in the design and siting of the transmission line project including: alternate conductor configurations and phasing, tower height, corridor location and right-of-way width.
 - (d) Description of the company's current procedures for addressing public inquiries regarding electric and magnetic field strength levels, including copies of informational materials and company procedures for customer electric and magnetic field strength level readings.
- (3) The applicant shall discuss the aesthetic impact of the proposed facility with reference to plans and sketches, including the following:
- (a) The views of the proposed facility from such sensitive vantage points as residential areas, lookout points, scenic highways, and waterways.
 - (b) Structure design features, as appropriate.
 - (c) How the proposed facility will likely affect the aesthetic quality of the site and surrounding area.
 - (d) Measures that will be taken to minimize any visual impacts created by the proposed facility.
- (4) For electric power transmission facilities, the applicant shall provide an estimate of the level of radio and television interference from operation of the proposed facility, identify the most severely impacted areas, if any, and discuss methods of mitigation.
- (F) The applicant shall provide, for each of the site/route alternatives, a description of the impact of the proposed facility on cultural resources. This description shall include potential and identified recreational areas and those districts, sites, buildings, structures, and objects which are recognized by, registered with, or identified as eligible for registration by the Ohio historical society or the Ohio department of natural resources. It shall include but not be limited to the following:
- (1) Location studies: The applicant shall describe studies used to determine the location of cultural resources within the study corridor. Correspondence with the Ohio historical preservation office shall be included.
 - (2) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on cultural resources.

- (3) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on cultural resources.
- (4) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the operation and maintenance of the proposed facility to minimize impact to cultural resources.
- (G) The applicant shall submit data and related information on noise emissions generated by the proposed transmission line and associated facilities. Construction noise information shall be submitted for only those portions of transmission line routes requiring more than four months of actual construction time to complete in residential, commercial, and other noise-sensitive areas.
 - (1) Construction: To assure noise control during construction, the applicant shall estimate the nature of any intermittent, recurring, or particularly annoying sounds from the following sources:
 - (a) Dynamiting or blasting activities.
 - (b) Operation of earth moving and excavating equipment.
 - (c) Driving of piles.
 - (d) Erection of structures.
 - (e) Truck traffic.
 - (f) Installation of equipment.
 - (2) Operation and maintenance: The applicant shall estimate the effect of noise generation due to the operation or maintenance of the transmission line and associated facilities.
 - (3) Mitigation procedures: The applicant shall describe any equipment and procedures designed to mitigate noise emissions during both the site clearing and construction phase, and during the operation and maintenance of the facility to minimize noise impact.
- (H) The applicant shall provide site-specific information that may be required in a particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impact. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.

Effective: 1/25/09
119.032 review dates: 11/30/13
Promulgated Under: 111.15
Statutory Authority: 4906.03
Rule Amplifies: 4906.06, 4906.03
Prior Effective Dates: 10/10/78, 6/5/93, 8/28/98, 12/15/03

4906-15-07 Ecological impact analysis.

- (A) The applicant shall provide a summary of any studies that have been made by or for the applicant on the natural environment in which the proposed facility will be located. The applicant shall conduct and report the results of a literature search, including map review, for the area within one thousand feet on each side of a transmission line alignment and the area within the immediate vicinity of a substation or compressor station site. On-site investigations shall be conducted within one hundred feet on each side of a transmission line centerline or within one hundred feet of a substation or compressor station site to characterize the potential effects of construction, operation, or maintenance of the proposed facility.

- (B) The applicant shall provide for each of the site/route alternatives a map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of the transmission line alignment and the area within the immediate vicinity of a substation site or compressor station site. The map(s) shall include the following:
- (1) Proposed transmission line alignments.
 - (2) Proposed substation or compressor station locations.
 - (3) All areas currently not developed for agricultural, residential, commercial, industrial, institutional, or cultural purposes including:
 - (a) Streams and drainage channels.
 - (b) Lakes, ponds, and reservoirs.
 - (c) Marshes, swamps, and other wetlands.
 - (d) Woody and herbaceous vegetation land.
 - (e) Locations of threatened or endangered species.
 - (4) Soil associations in the corridor.
- (C) The applicant shall provide for each of the site/route alternatives a description of each stream or body of water (and associated characteristics including floodplain) that is present and may be affected by the proposed facility, including but not limited to the following:
- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on streams and bodies of water. This shall include the impacts from route clearing.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on streams and bodies of water. This shall include the permanent impacts from route clearing.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on streams and bodies of water.
- (D) The applicant shall provide for each of the site/route alternatives a description of each wetland that is present and may be affected by the proposed facility. The applicant shall describe the probable impact on these wetlands, including but not limited to the following:
- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on wetlands and wildlife habitat.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on wetlands and wildlife habitat. This would include the permanent impacts from route clearing and any impact to natural nesting areas.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on wetlands and wildlife habitat.
- (E) The applicant shall provide for each of the site/route alternatives a description of the naturally occurring vegetation that is present and may be affected by the proposed facility. The applicant shall describe the

probable impact to the environment from the clearing and disposal of this vegetation, including but not limited to the following:

- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on the vegetation. This would include the impacts from route clearing, types of vegetation waste generated, and the method of disposal or dispersal.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.
- (F) The applicant shall provide for each of the site/route alternatives a description of each major species of commercial or recreational value and species designated as endangered or threatened, in accordance with U.S. and Ohio species lists, that is present and may be affected. The applicant shall describe the probable impact to the habitat of the species described above, including but not limited to the following:
- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on commercial, recreational, threatened, or endangered species. This would include the impacts from route clearing and any impact to natural nesting areas.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.
- (G) The applicant shall provide for each of the site/route alternatives a description of the areas with slopes and/or highly erodible soils (according to the natural resource conservation service and county soil surveys) that are present and may be affected by the proposed facility. The applicant shall describe the probable impact to these areas, including but not limited to the following:
- (1) Construction: The applicant shall provide a description of the measures that will be taken to avoid or minimize erosion and sedimentation during the site clearing, access road construction, facility construction process, and any other temporary grading. If a storm water pollution prevention plan is required for the proposed facility, the applicant shall include the schedule for the preparation of this plan.
 - (2) Operation and maintenance: The applicant shall describe and estimate the probable impact of the operation and maintenance of the proposed facility after construction on the environment. This would include permanent impacts from sites where grading has taken place.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during operation and maintenance of the proposed facility to minimize the impact on the environment due to erosion from storm water run-off.
- (H) The applicant shall provide site-specific information that may be required in this particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impacts. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.

4906-15

-14-

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4906-15-01
Project Summary & Facility Overview

4906-15-01 PROJECT SUMMARY AND FACILITY OVERVIEW**(A) PROJECT SUMMARY AND FACILITY OVERVIEW**

This Application seeks a Certificate of Environmental Compatibility and Public Need from the Ohio Power Siting Board (OPSB) for AEP Ohio Transmission Company, Inc.'s (AEP or Applicant) proposed Ebersole Station Project (Project). AEP is proposing to construct a 138 kV switching substation with 138 kV to 34.5 kV transformation and associated electric transmission line interconnections in Cass Township of Hancock County, Ohio. A Preferred Site and an Alternate Site, and an associated transmission line interconnection for each site, are proposed in this Application. The Preferred and Alternate Sites and the majority of their interconnects are located on an AEP-optioned property south of County Road 216, approximately 1.7 miles northeast of the City of Findlay.

The OPSB has jurisdiction over major electric transmission line installations located wholly within the state of Ohio. Moreover, Ohio's Power Siting Law requires AEP to file this application with the OPSB for a Certificate of Environmental Compatibility and Public Need for the proposed Project. This Application contains required project details regarding environmental, socioeconomic, technical, ecological, justification of need, and financial matters.

(1) General Purpose of the Facility

AEP has a critical need to reinforce its transmission system in northwestern Ohio and Hancock County to address reliability concerns about potential low voltages and thermal overloads under certain conditions. AEP studies indicate that without this reinforcement plan, the performance of the company's transmission system will be inadequate to provide the level of service that its customers expect. Without this substation, in a worst-case scenario, uncontrolled widespread power outages affecting major portions of Hancock County and nearby counties may materialize.

(2) Summary Description

AEP proposes to construct a 138 kV switching substation and associated electric transmission interconnections in Cass Township of Hancock County. The Preferred and Alternate Sites of the Ebersole Station and the majority of their associated interconnections are located on an approximately 67-acre property situated adjacent to the south of County Road 216, approximately 0.25 mile west of Township Road 238. AEP holds an option to purchase this predominantly agricultural property. Access to the substation at either site is proposed from County Road 216 using a new permanent access drive. The total fenced footprint of either the Preferred Site or Alternate Site is approximately four acres. Interconnections to the new station will be provided from the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension. These lines intersect approximately 250 feet west of the AEP-optioned property. The associated interconnection to the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension would extend predominantly across the overall property. The new lines will require new right-of-

way for approximately 250 feet across adjacent properties to the west. The new interconnections to the station are considered associated facilities within this Application.

The Preferred and Alternate Sites, and associated transmission lines, are shown on Figures 01-1 and 01-2. Figure 04-1 shows the Preferred and Alternate Sites and surrounding vicinity. Detailed layouts of the Preferred and Alternate Sites are included as Figures 04-2 and 04-3.

(3) Site Selection Process

A Site Selection Study was conducted to identify and evaluate potential sites for the substation. The goal of the Site Selection Study was to identify viable locations based on the siting criteria, while avoiding or limiting impacts to sensitive land uses, ecological, and cultural features in the project vicinity. The Site Selection Study is provided as Appendix 03-1 of this Application.

The following conditions were considered "must haves" for the proposed Project:

- Adequate undeveloped acreage for the minimum substation footprint of approximately ten acres. Additional acreage on a property is desirable because it may allow adjustment of the substation footprint and setbacks from the property line to avoid potential impacts to ecological, land use, or cultural features.
- Minimal tree removal
- Dry conditions on most of the property (few, if any, wetlands)
- Relatively flat terrain
- No existing man-made obstructions
- Location at or near the existing Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension.
- Other adjacent or proximate linear corridors which may aid in the routing of 138 kV line exits.

The study area was reviewed based on desktop data and a windshield survey. While many properties within the extended area were initially considered, 11 sites that appeared to provide the best opportunities for a substation site were evaluated further. These sites were evaluated, compared and ranked. The results of the Site Selection Study suggested that Sites 2 and 6 appeared to be the most viable candidates. AEP approached the owners of the overall properties of Sites 2 and 6. AEP reported that the owner of the Site 2 overall property was not receptive to selling that property, while the owner of the Site 6 property was receptive. AEP also approached the owner of the Site 4 property, who was not receptive to selling the property. AEP then revisited the potential reconfiguration of the original Site 5 and Site 6 to reduce impacts. Specifically, the original Site 5 approximate fence line was moved further to the south and the area reduced. This reconfiguration increased the distances to nearby homes to make it a more viable candidate. In May 2013, AEP negotiated an option to purchase the 67-acre overall property containing Sites 5 and 6 and decided to carry these two candidates forward for additional

evaluation although a determination of which one would be the Preferred Site was not made. These two sites (Blue and Red Sites) were presented at a public meeting held July 11, 2013. Five comment cards were received at the Public Meeting. Two of the comment cards indicated a preference for the blue site (Site 6). No preference was identified on the remaining three cards. Based on the results of the Site Selection Study, public meeting, and field surveys, AEP selected Site 6 as the Preferred Site and the modified Site 5 as the Alternate Site.

Due to the short distances and relatively inflexible engineering and design of the transmission line interconnections associated with the substation, detailed alternatives evaluation for the lines was not performed. Rather, the Preferred and Alternate Sites and their associated interconnections were considered based on their total layout.

(4) Principal Environmental and Socioeconomic Considerations

A general socioeconomic survey of the study area was performed and included preparation of a land use map, current population estimates and projections for the area, consideration of compatibility of the Project with local and regional development plans, and a qualitative assessment of the impact of the proposed substation on the surrounding community.

(a) Land Use Impacts: The Preferred and Alternate Sites, including the proposed 138 kV transmission line interconnections and access roads, are located within existing agricultural fields. No residences were identified within 100 feet of either site. Table 01-1 provides the number of residences identified within 1,000 feet of the Preferred and Alternate Sites.

No residences were identified within 1,000 feet of the Preferred Site fence line. The closest residence to the fence line is approximately 1,100 feet to the northeast. Eleven residences were identified within 1,000 feet of the associated 138 kV interconnections of the Preferred Site, all of which are also within 1,000 feet of existing transmission lines. None of the eleven residences identified within 1,000 feet of the Preferred Site transmission interconnections will be closer to electric transmission lines than they are currently. Eight residences were identified within 1,000 feet of the proposed access road, three of which are also within 1,000 feet of the transmission line interconnections. The closest residence to the Preferred Site footprint is approximately 150 feet northwest of the end of the access road.

Seven residences were identified within 1,000 feet of the fenced substation area of the Alternate Site, the closest of which is approximately 220 feet to the northeast. Thirteen residences were identified within 1,000 feet of the associated interconnections, the closest of which is approximately 160 feet away and the same as the closest one to the fence line. This residence would be approximately 200 feet closer to one of the proposed interconnections than it is to the existing transmission lines. Eight residences are within 1,000 feet of the proposed access road, seven of which are also within 1,000 feet of the station fence line.

Table 01-1		
Number of Residences within 1,000 feet of the Preferred and Alternate Sites		
	Preferred Site	Alternate Site
Station Fence Line	0	7
Associated Transmission Interconnections	11	13
Access Road	8	8
Total*	16	15
Number of Counted Residences within 1,000 feet of Existing Transmission Line	11	11
* Total includes residences within 1,000 feet of fence line, interconnections, and/or access road. Some residences are within 1,000 feet of multiple portions of the sites.		

No commercial, industrial, cultural, recreational, or institutional land uses were identified within 1,000 feet of either site. Based on contacts with local officials and review of planning documents, no conflicts with zoning or development issues were identified. With the exception of converting approximately four acres of agricultural land to use as the proposed substation, existing land use will not be altered by the Project as proposed.

(b) Economic Impacts: The proposed Project is necessary to ensure adequate and reliable electric service to northwestern Ohio and Hancock County. By improving the transmission system, the Project will help meet the power requirements necessary to ensure continued business development and growth in the area. Approximately 20 construction jobs are anticipated at peak construction. The Project will also produce additional tax revenue for local schools and communities annually. AEP projects that the new substation will contribute approximately \$436,000 in property taxes to Hancock County and the local community.

(c) Ecological Impacts: An ecological study of the Preferred and Alternate Sites and associated interconnections was performed. The study included analysis of published literature and maps to assess the presence of endangered plant and animal species and wetlands. The Preferred and Alternate Sites were field surveyed for vegetation, habitat of endangered plants and animals, streams, and wetlands. The results of this survey are discussed in detail in Section 7 of this Application. No streams or wetlands were delineated within 100 feet of the Preferred or Alternate Sites substation fence lines or access roads. One intermittent stream is crossed by the 138 kV interconnection to the Fostoria-East Lima line. This stream is crossed by a portion of the line that will be rebuilt within existing right-of-way. The stream will be spanned similar to the existing crossing by the Fostoria-East Lima line. No in-water work is planned.

Based on a desktop review of United States Fish and Wildlife Service (USFWS) published documentation, records in Ohio Department of Natural Resources' (ODNR's) Biodiversity Database, and correspondence from the ODNR and USFWS, a total of three threatened or endangered species of concern are listed within Hancock County. None of these species were observed during the field investigation. No potential impacts to threatened or endangered species were identified.

Storm water best management practices such as placement of silt fencing will be employed where necessary to mitigate potential erosion and degradation during construction.

(d) **Other Environmental Impacts:** No other potential environmental impacts beyond those discussed above are expected as a result of this project.

(5) Project Schedule Summary

AEP plans to start construction of the substation in the spring of 2014, with an estimated in-service date around December of 2015. Figure 02-2 provides additional details regarding the proposed Project schedule.

(B) INFORMATION FILED IN RESPONSE TO REQUIREMENTS

The information filed in response to the requirements of section 4906-15-01 of the Ebersole Station Project Application for a Certificate of Environmental Compatibility and Public Need are not deemed to be responses to any other section of the Application for a Certificate of Environmental Compatibility and Public Need.

Ohio Power Siting Board Process

The OPSB has jurisdiction over major substation installations located wholly within the state of Ohio. As such, AEP is required to file an application with the Board for a Certificate of Environmental Compatibility and Public Need. This Application contains specific project details regarding environmental, socioeconomic, technical, ecological, justification of need, and financial matters.

The Board process is initiated with a pre-application public information meeting to be held by the Applicant within the general project area. This meeting is intended to provide general project information to the local residents and to detail upcoming OPSB activities and was held on July 11, 2013. Next, the Application is filed with the OPSB. The OPSB then has 60 days to either certify the application filing as complete, or identify the Application as incomplete, notifying the Applicant by mail of the specific grounds. Upon a certified completeness determination, the OPSB orders the Applicant to serve a copy of the certified Application on the chief executive officer of each municipal corporation and county, and the head of each public agency charged with the duty of protecting the environment or of planning land use in the area in which any portion of the project is to be located.

After certified applications have been served in the general project area, the Board schedules public hearings. The Applicant is then required to provide two separate public notices of the project and upcoming hearings in newspapers of general circulation within the project area. The first public notice is to be published within seven days of the certified Application service date, and the second public notice is to be published at least seven but not more than 21 days prior to the public hearing. In addition, the Applicant shall send a letter describing the facility to each property owner within the planned site or right-of-way of the proposed facility and to each

property owner who may be approached by the Applicant for any additional easement necessary for the construction, operation, or maintenance of the facility. The OPSB Staff is to conduct an investigation of the certified Application and submit a written report not less than 15 days prior to the beginning of public hearings.

One session of the public hearings for the project is usually held at a convenient location within the general project area with the other session(s) held at the principal office of the OPSB. An Administrative Law Judge appointed by the Chairman of the OPSB will preside over the hearings. The Administrative Law Judge will regulate the proceedings and provide members of the public an opportunity during a portion of the hearing to offer testimony. Within a reasonable time after conclusion of the hearings, the Board shall issue a final decision based on the record of the proceedings.

(C) PREPARATION OF HARD COPY MAPS

Digital, geographical referenced data used in the preparation of maps for the Project Application for a Certificate of Environmental Compatibility and Public Need will be provided under separate cover and submitted concurrent with the Application.



Findlay Area Improvements
Ebersole Station

FIGURE 01-1
PREFERRED SITE

J:\Project\AEP\14951096 Ebersole Station 138kV Line OPSB\Data-Tech\GIS\Figure01-2.mxd



Findlay Area Improvements
Ebersole Station

FIGURE 01-2
ALTERNATE SITE

Image courtesy
NAWTEQ

JOB NO. 14951096



4906-15-02
Review of Need for the Project

4906-15-02 REVIEW OF NEED FOR PROPOSED PROJECT**(A) JUSTIFICATION OF NEED****(1) Purpose of the Proposed Facility**

The purpose of the Ebersole Station Project and associated 138 kV transmission line work (not included in this Application) is to improve and maintain the quality of electric service and reliability to the Northwestern Ohio area, including AEP's load area. This area includes, but is not limited to, the communities of Findlay, New Liberty, Fostoria, and East Lima.

(2) System Conditions, Local Requirements and Other Pertinent Factors

The Findlay load area of the transmission system provides service to approximately 170 megawatts (MW) of peak summer electric demand, and also helps support other neighboring transmission systems. The area load is summer peaking and mainly consists of residential and commercial load, with some industrial load.

The Findlay load area is served primarily by two 138 kV lines originating from the East Lima and Fostoria Central areas. Loss of these two lines (N-2 contingency) can result in system criteria violations for the area. The applicable criteria for this area include the following requirements:

- Voltage levels must be maintained between 95-105% of nominal for normal conditions.
- Voltage levels must be maintained between 92-105% of nominal for contingency conditions.
- Contingency-caused voltage changes of more than 8% are deemed unacceptable.
- No facility may exceed its normal rating under normal conditions.
- No facility may exceed its emergency rating under contingency conditions.

Under the worst likely voltage scenario, the N-2 voltage experienced in the area is 83% of nominal on the 138 kV system and 89% of nominal on the 34.5 kV system. Under the worst likely thermal scenario, the worst N-2 loading on an element is 99% of the emergency rating on the 138 kV system.

AEP proposes to improve the transmission reliability by constructing new transmission facilities in the Northwestern Ohio area, as shown on Figure 02-1. This includes but is not limited to the following:

- Construct Ebersole Station with a 138/69/34.5 kV, 90MVA three winding transformer. This substation will be inserted into the East Lima – Fostoria Central 138 kV line and will integrate into the Northwestern Ohio grid via the existing double circuit line asset Fostoria Central – East Lima 138 kV lines. New Ebersole Station will contain nine circuit breakers configured in a breaker and a half switching scheme. Since all line work associated with this project will be performed on existing easements and right of way, no OPSB applications will be required for the 138 kV line work. There will be six (6) line exits from the new Ebersole 138 kV Station.
 - North Findlay – Ebersole 138 kV
 - New Liberty – Ebersole 138 kV
 - Fostoria Central #1 – Ebersole 138 kV
 - Fostoria Central #2 – Ebersole 138 kV
 - Findlay Center – Ebersole 138 kV
 - Plaza Street – Ebersole 34.5 kV
- Retirement of the existing Northeast Findlay Station and associated station assets

(3) Load Flow Studies

Power flow analysis was performed using the PTI PSS/E power system simulator. Load flow analysis identified several double contingency conditions that would result in low voltage and thermal loading criteria violations. Table 02-1 below summarizes the results of the load flow analysis depicting the summer 2015 peak load conditions. The most severe forecasted issues are summarized in this table. The table shows Northwestern Ohio area facility thermal overloads for credible double contingency outage conditions. In order to meet AEP Transmission Planning Criteria, system voltage must be maintained at or above 92% of nominal for contingencies, and equipment thermal loadings may not exceed 100% of the equipment's emergency rating. Furthermore, normal system voltages should not go below 95% for steady state conditions and should not change by more than 8% for any applicable contingency condition. If equipment is allowed to remain in service when loaded above its permissible loading, it may produce an unsafe operating condition and can lead to system/customer outages.

TABLE 02-1
Northwestern Ohio Area Transmission System Performance:
Summer 2015 Peak Conditions with Existing System

N-2 Contingency Description: East Lima – New Liberty 138 kV line and the Fostoria Central – Northeast Findlay 138 kV line.

Station	Contingency Voltage N-2 Per Unit	Base Voltage Per Unit	Voltage Magnitude Violation?	Violation (< 0.92)
New Liberty 138 kV	0.833	0.999	Yes	Low Voltage
East Lima 138 kV	1.018	1.022	No	No
Fostoria Central 138 kV	0.945	1.012	No	No
New Liberty 34.5kV Bus #1	0.887	1.023	Yes	Low Voltage
New Liberty 34.5 kV Bus #2	0.900	1.012	Yes	Low Voltage
North Findlay 138 kV	0.971	1.006	No	No

Voltage performance in the Northwestern Ohio area mentioned in section (3) above was substantiated in load flow analysis. Analysis has shown that voltage levels after the specified double contingency would subject portions of Northwestern Ohio to transmission voltages below the 0.92 Per Unit (PU) planning criteria level for emergency conditions, and in some cases would produce voltage drops greater than 8%.

(4) Base Case Model Data

An electronic copy of the base case will be provided upon request of the OPSB staff.

(5) Base Case Data for Natural Gas Transmission Line

As the proposed Project is an electric substation project, this section does not apply.

(B) EXPANSION PLANS

(1) Long-Term Forecast; and Regional Transmission Planning

(a) Reference in Long Term Forecast

The proposed Ebersole 138 kV Station is listed in the 2012 "Ohio Power Company Long Term Forecast report to the Public Utilities Commission of Ohio", Forms FE-T9 and FE-T10.

(b) Explanation if Not Referenced

Not applicable. The proposed facility is referenced in the aforementioned report.

(c) Effect on Regional Expansion Plans

This project is direct mitigation for reliability, voltage and potential thermal concerns of the Northwestern Ohio AEP transmission system and thus should not adversely impact neighboring utilities or regional bulk transmission planning. PJM has approved this project as a Baseline Project and has studied the impact of the Findlay Area Improvement (Ebersole) Project on the Regional Transmission System. PJM has not identified any issues for other neighboring electric utilities.

(2) Gas Transmission Lines and Associated Facilities

This application is for an electric substation and associated transmission line interconnections. Therefore, this section is not applicable.

(C) SYSTEM ECONOMY AND RELIABILITY

The proposed improvements will reinforce the AEP transmission system in the Northwestern Ohio area by providing 138/69/34.5 kV transformer capacity and two additional 138 kV sources (East Lima & Fostoria Central) into the Findlay 34.5 kV sub transmission area. These new sources to the area transmission system will result in (1) improved grid reliability by adding 138 kV sources and protective devices, (2) improved Northwestern Ohio transmission system voltage profile so voltages are maintained within AEP Planning Criteria, and (3) rectified forecasted thermal overloads on area transmission facilities maintaining equipment loading levels with AEP Planning Criteria.

Table 02-2 compares the existing system (with credible double contingency outage conditions) to the same system incorporating the proposed transmission system facilities as recommended in this proposal. System voltages violations and equipment overloads will be alleviated with the proposed system upgrades.

TABLE 02-2
Northwestern Ohio Area Transmission System Performance:
Summer 2015 Peak Conditions with Proposed Improvements in Place

Station	Contingency Voltage N-2 PU	Base Voltage PU	Voltage Magnitude Violation?	Violation (< 0.92)
New Liberty 138 kV	0.991	1.000	No	No
East Lima 138 kV	1.004	1.006	No	No
Fostoria Central 138 kV	1.007	1.006	No	No
New Liberty 34.5kV Bus #1	0.991	1.015	No	No
New Liberty 34.5 kV Bus #2	1.004	1.0141	No	No
North Findlay 138 kV	0.987	0.996	No	No
Ebersole 138 kV	0.990	0.998	No	No

(D) OPTIONS TO ELIMINATE THE NEED FOR THE PROPOSED PROJECT

AEP considered adding a third 138 kV source in the area, originating from East Lima 138 kV station. However, this was not pursued due to the cost and inability to meet the necessary in-service date. Also considered was a capacitor bank addition at New Liberty 138 kV station, however, subsequent load flow studies indicated this would not alleviate single contingency thermal overload conditions on the area's 34.5 kV sub transmission system.

(E) FACILITY SELECTION RATIONALE

The plan to establish a new 138/69/34.5 kV substation (Ebersole) and associated line and station upgrades was selected over the other alternatives considered because it is the most effective and robust solution that will address the reliability, voltage and potential thermal issues on the Northwest Ohio transmission system under a wide range of potential system conditions. This solution can be built upon for future improvements as conditions warrant. The other alternatives considered are only effective under extremely limited contingency conditions and for a limited time frame

(F) FACILITY SCHEDULE

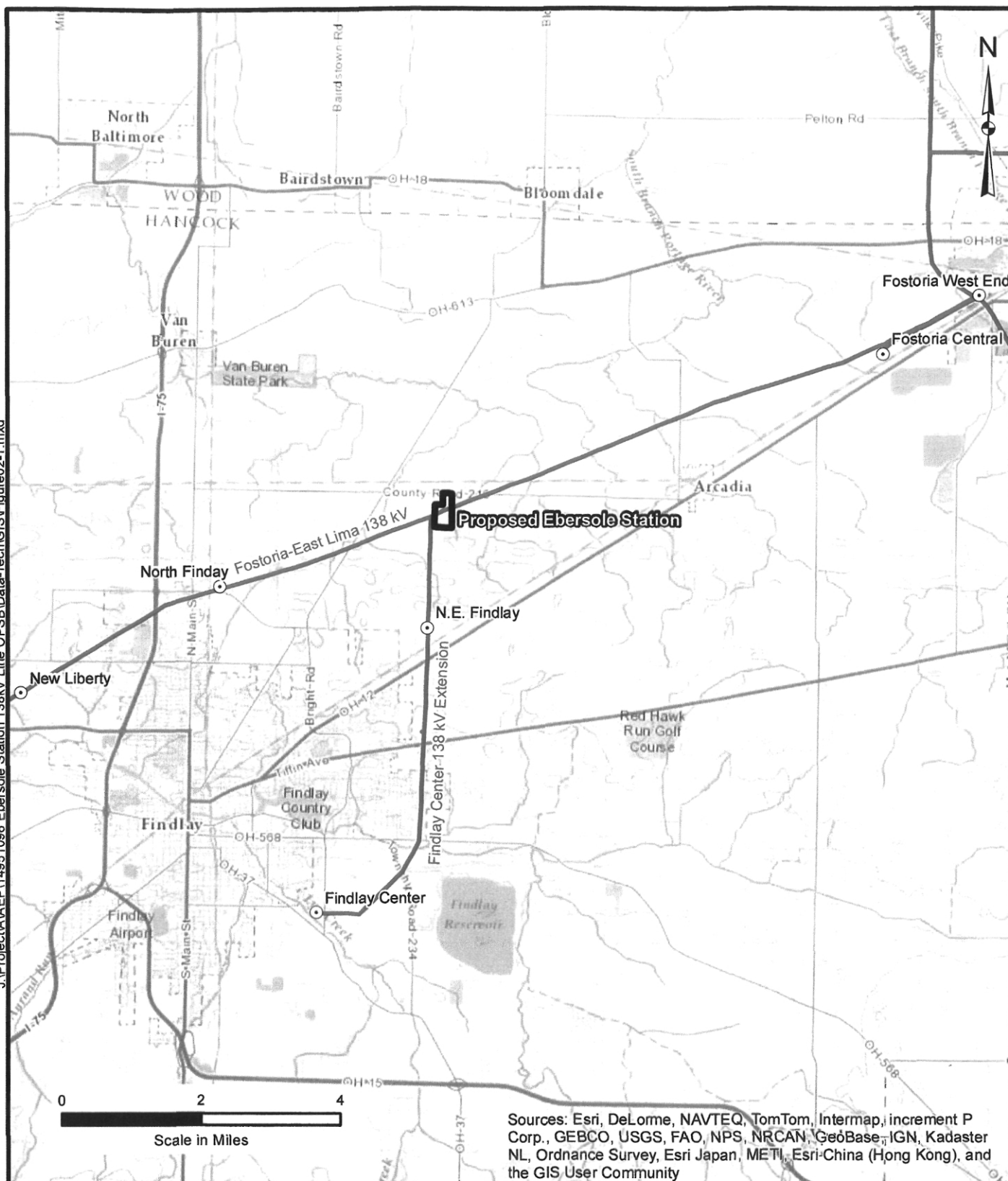
(1) Schedule Bar Chart

The major scheduled activities associated with the Preferred and Alternate Sites are shown in bar chart form on Figure 02-2.

(2) Delays

Any critical delays that affect the major activities as outlined in the schedule would further delay the in-service date of the project. If the in-service date is delayed beyond December 2015, approximately 170 MW of load will continue to be at an increased risk of an area-wide extended service interruption and low voltages, while some facilities may fail due to thermal overloads.

J:\Project\AEP\14951096 Ebersole Station 138kV Line OPSB\Data-Tech\GIS\Figure02-1.mxd



LEGEND:

- Proposed Ebersole Station Property
- Existing 138 kV Substation
- Existing 138 kV Transmission Line



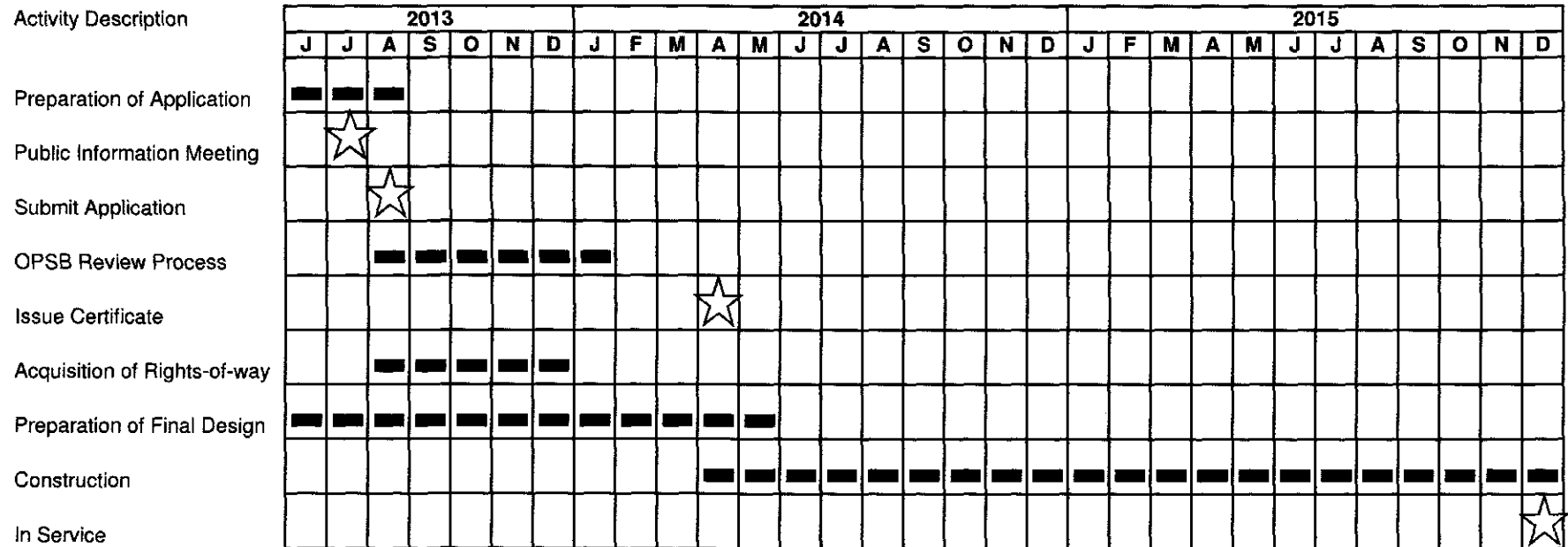
Findlay Area Improvements
Ebersole Station

FIGURE 02-1
OVERVIEW OF EBERSOLE
STATION PROJECT AND
MAJOR CONSTRUCTION ITEMS

JOB NO. 14951096

URS

Figure 02-2 Project Schedule



4906-15-03
Site and Route Alternatives Analysis

4906-15-03 SITE AND ROUTE ALTERNATIVES ANALYSES

Section Summary

This section of the Application provides the substation Site Selection Study for the proposed Ebersole Station Project. This includes a description of the study area with related maps, identification of evaluated sites, siting criteria and factors, evaluation process, and rationale for selecting the Preferred and Alternate Sites.

In this Application, AEP is proposing to install a 138 kV transmission switching substation near Findlay, Hancock County, Ohio. AEP also is proposing to construct transmission line interconnections to Ebersole Station from the existing Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension. For the purposes of this Application, these interconnects are considered associated facilities necessary to construct and operate the substation. Due to the short distance and necessary engineering and design of the transmission line interconnections associated with the substation, the ability to compare true alternatives for the proposed individual transmission interconnections is extremely limited. In fact, hypothetical transmission line interconnect candidates would be nearly identical and would not represent the spirit of Preferred and Alternate Routes. Therefore, a detailed alternatives evaluation for the lines was not performed. Rather, the Preferred and Alternate Sites and their associated interconnections were considered based on their total layout.

The Applicant's consultant, URS Corporation ("URS") conducted the substation Site Selection Study for the proposed Project in October 2012. The goal of the Site Selection Study was to identify viable site locations based on the siting criteria, while avoiding or limiting impacts to sensitive land uses, ecological resources, and cultural features in the project vicinity. The study area was reviewed based on desktop data and a windshield survey. While many properties within the extended area were initially considered, eleven sites that appeared to provide the best opportunities for locating a substation were evaluated further. These eleven potential sites were evaluated, compared and ranked to aid the selection of the best candidates. The Site Selection Study, attached as Appendix 03-1 of this Application, is provided in accordance with the OPSB's regulations as outlined by Section 4906-15-03(C) of the Ohio Administrative Code to satisfy the requirements of parts (A) and (B) of Section 4906-15-03 of the Ohio Administrative Code.

The results of the Site Selection Study suggested that Sites 2 and 6 appeared to be the most viable candidates. AEP approached the owners of the overall properties of Sites 2 and 6. AEP reported that the owner of the Site 2 overall property was not receptive to selling that property, while the owner of the Site 6 property was receptive. AEP also approached the owner of the Site 4 property, who was not receptive to selling the property. AEP then revisited the potential reconfiguration of the original Site 5 and Site 6 to reduce impacts. Specifically, the original Site

5 approximate fence line was moved further to the south and the area was reduced. This reconfiguration increased the distances to most nearby homes to make it a more viable candidate. In May 2013, AEP negotiated an option to purchase the 67-acre overall property containing Sites 5 and 6 and decided to carry these two candidates forward for additional evaluation, although a determination of which one would be the Preferred Site was not made.

Ecological and archaeological field studies conducted in May 2013 revealed no significant ecological or archaeological impacts on the overall property of Sites 5 and 6. These two sites (Red and Blue Sites) were presented at a public meeting held July 11, 2013. Five comment cards were received at the Public Meeting. Two of the comment cards indicated a preference for the blue site (Site 6). No preference was identified on the remaining three cards. Based on the results of the Site Selection Study, public meeting, and field surveys, AEP selected Site 6 as the Preferred Site and the modified Site 5 as the Alternate Site.

APPENDIX 03-1

SITE SELECTION STUDY

FINDLAY AREA IMPROVEMENTS PROJECT

EBERSOLE SUBSTATION

SITE SELECTION STUDY REPORT

Prepared for:
American Electric Power Service Corporation
700 Morrison Road, 2nd Floor
Gahanna, Ohio 45230



Prepared by:

URS

525 Vine Street, Suite 1800
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Project #: 14950880

October 2012

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Number

FIGURE 1	PROJECT OVERVIEW
FIGURE 2	CONSTRAINTS MAP

1.0 INTRODUCTION

As part of the Findlay Area Improvements Project, American Electric Power (AEP) is proposing to construct a new 138 kV transmission switching substation in Hancock County, Ohio. The substation will be called the Ebersole Station. In order to improve the 138 kV system in the Findlay, Ohio area, six new 138 kV transmission line exits are proposed from the new station to Findlay Center, North Findlay, New Liberty, Fostoria Center #1, Fostoria Center #2, and Northeast Findlay. Based on preliminary review, the ideal location of the new station from an electrical standpoint appears to be at or near the intersection of Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension, which will provide the 138 kV sources for the new station. The transmission line loops between the two source lines and the new Ebersole Station are the only planned new 138 kV lines to be constructed as part of the overall project. Figure 1 illustrates the existing transmission infrastructure and substations in the project vicinity.

AEP is required to submit an Application for a Certificate of Environmental Compatibility and Public Need to the Ohio Power Siting Board (OPSB) for the new substation project. Part of that application process involves the preparation of a site selection study to evaluate practical project alternatives. A Site Selection Study involves collection and evaluation of engineering, environmental, cultural, and socioeconomic data in order to identify potential sites for the substation. The Study identifies major siting criteria and uses an evaluation process to compare alternatives that avoid or minimize adverse effects to the extent practical. AEP retained URS to assist with the evaluations of environmental, socioeconomic, cultural, and engineering/construction issues during the study. Based on the functional requirements for the proposed station, a minimum fenced station size was determined by AEP to be approximately 10 acres. Other priority site conditions include:

- Additional acreage on a property to allow adjustment of the substation footprint and setbacks from the property line to avoid potential impacts to ecological, land use, or cultural features, and for flexibility in developing multiple potential layouts.
- Minimal tree removal.
- Dry conditions on most of the property (few, if any, wetlands).
- Relatively flat terrain.
- No existing man-made obstructions.
- Location at or near the existing Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension.
- Other adjacent or proximate linear corridors which may aid in the routing of 138 kV line exits.

The Fostoria-East Lima 138 kV and the Findlay Center 138 kV Extension transmission lines intersect in Cass Township of Hancock County approximately 1.7 miles north-northeast of the City of Findlay. The project is located in a rural, but developing setting with a mixture of mostly agricultural and residential land uses. Topography in the extended vicinity is generally flat. Based on the nature of the study area, the options primarily involve placing the substation in one of the agricultural or fallow fields crossed at or

near the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension. This site selection study details the available options and evaluates them relative to one another by both quantitative and qualitative criteria.

2.0 PURPOSE AND OBJECTIVES

The purpose of this site selection study is to assist in identifying sites best suited for the substation and to support the required regulatory filings for the project. AEP intends to prepare and submit an Application for a Certificate of Environmental Compatibility and Public Need to the OPSB for the project. The site selection study will assist in the preparation of the application and has been developed in accordance with the provisions of Ohio Administrative Code (OAC) 4906-15-03 for electricity transmission facilities.

The site selection study is designed to identify and compare suitable sites that minimize the overall effects on ecology, sensitive land uses, and cultural features to the greatest extent possible while maintaining economic and technical feasibility. The result of the study will provide AEP with comparative data to aid in the selection of a viable substation property.

3.0 METHODOLOGY

There are numerous methods available for site selection studies, ranging from purely quantitative to purely qualitative with degrees in between. Where there are a great number of possible outcomes and constraints are numerous, a system of numeric data collection, grouping (to simplify) and scoring is typically necessary to help with valid comparison and ranking. In this study, the study area is potentially relatively large with numerous similar agricultural fields possibly suitable for a substation. However, review of the project area clearly indicates candidates closer to the existing transmission lines that will provide the sources to energize the substation are superior to those farther away. These candidates limit length of transmission line extensions that may cause greater impacts than the proposed substation. Thus, possible candidates are numerous while practical sites are very limited. Ultimately, eleven sites on ten different properties with the potential to meet the project's requirements were identified. In general, the sites are similar with very few constraints, and the exact locations of the fenced substations are approximate pending detailed engineering. Therefore, data simplification through scoring and weighting is not considered necessary, and may, in fact, unnecessarily hide data resolution.

AEP and URS collected and tabulated land use, ecological, cultural, and technical data, and that data was used to compare the sites. Therefore, based on the limited number of practical sites, it was considered most appropriate to use relevant raw data counts in conjunction with qualitative assessments of each site to assess the final ranking.

3.1 STUDY AREA

The proposed substation will tap the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension electric transmission lines. The Fostoria-East Lima 138 kV line extends generally from east to west through Hancock County and beyond. The Findlay Center 138 kV Extension heads south from the Fostoria-East Lima 138 kV line into the City of Findlay in central Hancock County. Six new 138 kV

transmission line exits are proposed from the new Ebersole Station to Findlay Center (6.8 miles to the southwest), North Findlay (3.2 miles to the west), New Liberty (6.5 miles to the west), Fostoria Center #1 and Fostoria Center #2 (7.1 miles to the east), and Northeast Findlay (1.6 miles to the south).

Theoretically, it would be possible to locate the new Ebersole Station anywhere in the vicinity of the existing substations, although the electrical sources provided by the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension would remain the same. Thus, the only practical sites are those in close proximity to the intersection of these two existing source lines because new transmission lines will be constructed from the source lines to the new substation and impacts associated with the new transmission lines are important to consider.

3.2 STUDY AREA MAP

The study area is shown in Figure 1, and is characterized by large agricultural tracts, wooded areas, and scattered residences. Land suitable for the project was identified within the study area, but may be limited based on availability.

3.3 SITING CRITERIA

For the site selection study, the proposed substation was assumed to require a fenced-in area of 4000 feet by 415 feet with a pad area of 450 feet by 450 feet. It is assumed that grading, stormwater management, and other site development requirements will necessitate a site of approximately 10 acres. The goal of the site selection study was to identify viable site locations based on the siting criteria, while avoiding or limiting impacts to sensitive land uses, ecological, and cultural features in the project vicinity. It is desirable to maximize certain criteria at a given site location, (e.g. available acreage). These criteria are known as attributes. Undesirable criteria, such as wetlands, historic properties, etc. are termed constraints and the study seeks to avoid/minimize their occurrence. Therefore, the goal of siting is to maximize attributes while minimizing constraints. The criteria considered in the siting study are listed in Table 1.

TABLE 1 QUANTITATIVE SITING CRITERIA	
Criteria	Data Source
Ecological	
Area of Woodlots (acres) on site	Woodlots as digitized from aerial photography
Area of National Wetland Inventory (NWI) Wetlands (acres) on site	NWI wetland areas as identified by United States Fish and Wildlife Service (USFWS)
Linear Feet of Streams on site	USGS topographic maps, aerial photography, and National Hydrography Dataset (U.S. Geological Survey)
Threatened and Endangered Species Listings within 1,000 feet of site	Ohio Department of Natural Resources (ODNR) Biodiversity Database

**TABLE 1
QUANTITATIVE SITING CRITERIA**

Criteria	Data Source
Cultural	
National Register of Historic Places and Districts within 1,000 feet of site	Ohio Historic Preservation Office (OHPO) online database
Structures greater than 50 years old within 1,000 feet of site	Hancock County Auditor parcel data and attributes
Known Archaeological Sites within 1,000 feet of site	OHPO online database
Cemeteries within 100 feet of site	OHPO online database
Land Use	
Residences within 100 feet of site	Hancock County Auditor GIS data, aerial photography, and field observation
Residences between 100 and 1,000 feet from site	Hancock County Auditor GIS data, aerial photography, and field observation
Institutional Land Uses within 100 feet of site	Schools and places of worship - USGS maps, ESRI GIS data layer, field observation
Institutional Land Uses between 100 and 1,000 feet from site	Schools and places of worship - USGS maps, ESRI GIS data layer, field observation
Other Sensitive Land Uses within 100 feet of site	Includes airports, air strips, parks, preserves, park district property, designated managed areas, conservation and observatory sites, and golf courses; sources: USGS, ESRI GIS data, and field observation
Other Sensitive Land Uses between 100 and 1,000 feet from site	Includes airports, air strips, parks, preserves, park district property, designated managed areas, conservation and observatory sites, and golf courses; sources: USGS, ESRI GIS data, and field observation
Engineering	
Size of Overall Property (acres)	Parcel data
Straight Line Distance to existing Fostoria-East Lima 138 kV Transmission Line (miles)	Calculated by GIS software
Straight Line Distance to existing Findlay Center 138 kV Transmission Line Extension (miles)	Calculated by GIS software
Straight Line Distance to nearest road (length of probable access road) (feet)	Calculated by GIS software

In addition to the ecological, land use, cultural, and engineering constraints, several qualitative factors were considered. These issues include viewshed issues from surrounding sensitive land uses and other public vantage points, preliminary evaluations of 138 kV lines exiting the new station, and potential land availability.

4.0 RESULTS

4.1 SITE SELECTION PROCESS

Based on the identified needs and technical requirements of the project, the study area was evaluated to identify candidate locations for a substation. A constraint map of the study area was developed using ArcMap GIS software. Georeferenced data layers for the identified constraints, obtained from published State and Federal materials and local planning documents, were superimposed on available parcel boundaries and 2010 aerial photography obtained from the Hancock County Auditor. Based on the constraint map, potentially suitable substation sites consisting of agricultural or fallow fields within the study area were identified. Sites closest to the potential interconnection locations were identified first. As possible sites were initially considered beyond the first inner ring of candidates near the intersection of the Fostoria-East Lima 138 kV and the Findlay Center 138 kV Extension electric transmission lines, it became clear that impacts from potential 138 kV interconnection lines would be significantly greater than closer locations because direct and indirect impacts to constraints such as residences and woodlots would be unavoidable for sites in the broader study area.

A windshield survey of the project area was conducted on October 7, 2012 to verify the nature of the study area and status of the candidate sites. Once initial site alternatives were selected, they were each quantitatively and qualitatively assessed based on their impacts and effects on the suite of evaluation criteria listed in Table 1. Both the quantitative and qualitative criteria were then considered for each site.

4.2 IDENTIFIED SITES AND EVALUATION

Eleven candidate sites were identified and are shown on Figure 2. These sites were assigned an identification number based on the order in which they were identified. This number did not have any significance with respect to initial preference.

Site 1: Site 1 is located on a property adjacent to the south of County Road 216 in Cass Township, approximately 1,500 feet east of County Road 236. The site is approximately 900 feet north of the intersection of the Fostoria-East Lima 138 kV and the Findlay Center 138 kV Extension electric transmission lines. The approximately 39-acre overall property is an active agricultural field. No buildings, streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the windshield survey. The site appears to be accessible from County Road 216, located approximately 350 feet to the north.

Site 2: Site 2 is located on a property adjacent to the east of County Road 236 in Cass Township, approximately 1,000 feet northeast of the intersection County Road 236 and Township Road 216. The site is approximately 200 feet north of the Fostoria-East Lima 138 kV line and 800 feet west of the Findlay Center 138 kV Extension line. The intersection of these lines is in the southwestern portion of the overall property for this site. The approximately 54-acre overall property is predominantly an active agricultural field, with a farmstead located on the western portion of the property along County Road 236. The buildings of the farmstead are approximately 500 feet away from the site. No streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on

desktop review and the windshield survey. One area within the site appears to be a farmed wet area that could revert to a wetland if unfarmed for an extended period, although field verification would be necessary to fully investigate this likelihood. The site appears to be accessible from County Road 236, located approximately 700 feet to the west.

Site 3: Site 3 is located on a property at the southeast corner of County Road 236 and Township Road 216 in Cass Township. The site is approximately 1,500 feet northwest of the intersection of the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension line. The approximately 38-acre overall property is predominantly an active agricultural field, with a farmstead located on the western portion of the property along County Road 236. The buildings of the farmstead are approximately 350 feet away from the site. No streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the windshield survey. The site appears to be accessible from Township Road 216 located approximately 200 feet to the north or County Road 236 located approximately 500 feet to the west.

Site 4: Site 4 is located on a property adjacent to the east of County Road 236 in Cass Township. The site is approximately 150 feet south of the Fostoria-East Lima 138 kV line and 300 feet west of the Findlay Center 138 kV Extension line. Both lines cross the overall property at their closest points to the site, although the intersection is on an adjacent property. The approximately 63-acre overall property is predominantly an active agricultural field, with a farmstead located near the northwestern corner of the property along County Road 236. The buildings of the farmstead are approximately 1,100 feet away from the site. No streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the windshield survey. The site appears to be accessible from County Road 236 located approximately 1,300 feet to the west.

Site 5: Site 5 is located on a property adjacent to the south of Township Road 216 in Cass Township. The site is approximately 100 feet north of the Fostoria-East Lima 138 kV line and 1,200 feet northeast of the Findlay Center 138 kV Extension line. The Fostoria-East Lima 138 kV line crosses the overall property but the Findlay Center 138 kV Extension line is on an adjacent property. The approximately 67-acre overall property is an active agricultural field. One modified stream/drainage ditch is located along the eastern property boundary, although potential impacts to this feature appear very unlikely. No buildings, additional streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the windshield survey. The site appears to be accessible from Township Road 216 located approximately 300 feet to the north.

Site 6: Site 6 is located on the same property as Site 5, adjacent to the south of Township Road 216 in Cass Township, but Site 6 is situated on the southern portion of the overall property. The site is approximately 200 feet south of the Fostoria-East Lima 138 kV line and 500 feet east of the Findlay Center 138 kV Extension line. The Fostoria-East Lima 138 kV line crosses the overall property but the Findlay Center 138 kV Extension line is on an adjacent property. The approximately 67-acre overall property is an active agricultural field. No buildings, additional streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the

windshield survey. The site appears to be accessible from Township Road 216 located approximately 1,800 feet to the north.

Site 7: Site 7 is located on a property adjacent to the north of Township Road 216 in Cass Township. The site is approximately 2,000 feet north-northwest of the intersection of the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension line. Neither line crosses the site property. The approximately 42-acre overall property is an active agricultural field. A railroad is adjacent to the north. No buildings, streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the windshield survey. The site appears to be accessible from Township Road 216 located approximately 150 feet to the south.

Site 8: Site 8 is located on a property adjacent to the north of Township Road 215 in Cass Township. The Findlay Center 138 kV Extension line is approximately 400 feet west of the site. The site is approximately 1,200 feet south of the Fostoria-East Lima 138 kV line. Neither line crosses the site property. The approximately 24-acre overall property is an active agricultural field. No buildings, streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the windshield survey. The site appears to be accessible from Township Road 215 located approximately 200 feet to the south.

Site 9: Site 9 is located on a property adjacent to the west of Township Road 238 in Cass Township. The site is approximately 500 feet south of the Fostoria-East Lima 138 kV line, which crosses the overall property. The Findlay Center 138 kV Extension line, which does not cross the overall property, is approximately 1,800 feet west of the site. The approximately 46-acre overall property is an active agricultural field. One modified stream/drainage ditch is located along the western and northern overall property boundaries, although potential impacts to this feature appear very unlikely. No buildings, additional streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the windshield survey. The site appears to be accessible from Township Road 238 located approximately 300 feet to the east.

Site 10: Site 10 is located on a property adjacent to the east of Township Road 238 in Cass Township. The site is approximately 1,800 feet south of the Fostoria-East Lima 138 kV line and 3,300 feet east of the Findlay Center 138 kV Extension line. Neither line crosses the overall site property. The approximately 78-acre overall property is an active agricultural field. One apparent outbuilding is located on the northern portion of the overall property, approximately 300 feet north of the site. The building is associated with a farmstead on the adjacent property to the north. Both the site property and the adjacent property to the north reportedly have the same owner. Based on the windshield survey, the house associated with the homestead appears to be vacant. A woodlot and a stream are located near the southeast corner of the overall property, approximately 800 feet east and southeast of the site. No additional streams, wetlands, wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the windshield survey. The site appears to be accessible from Township Road 238 located approximately 400 feet to the west.

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Site 11: Site 11 is located on a property adjacent to the southwest corner of County Road 236 and Township Road 215 in Cass Township. The site is crossed the Fostoria-East Lima 138 kV line, which would need to be temporarily relocated during construction of the substation. The Findlay Center 138 kV Extension line, which does not cross the overall property, is approximately 2,700 feet east of the site. The approximately 63-acre overall property is an active agricultural field and woodlot. A small NWI area is mapped on the western portion of the property. The site location is situated within the agricultural portion of the site with the woodlot and NWI area to the west. One modified stream/drainage ditch is located along the eastern property boundary, although potential impacts to this feature appear very unlikely. No buildings, streams, other wetlands, other wooded areas, or other potential constraints were identified on the site or overall property based on desktop review and the windshield survey. A natural gas pipeline parallels the Fostoria-East Lima 138 kV line across the site. The site appears to be accessible from Township Road 215 located approximately 150 feet to the north or County Road 236 located approximately 300 feet to the east.

Table 2 provides a comparison of the quantitative siting criteria.

TABLE 2 QUANTITATIVE SITING COMPARISON											
Criteria	Site										
	1	2	3	4	5	6	7	8	9	10	11
Ecological											
Area of Woodlots (acres) on site	0	0	0	0	0	0	0	0	0	0	0
Area of National Wetland Inventory (NWI) Wetlands (acres) on site	0	0	0	0	0	0	0	0	0	0	0
Linear Feet of Streams on site	0	0	0	0	0	0	0	0	0	0	0
Threatened and Endangered Species Listings within 1,000 feet of site	0	0	0	0	0	0	0	0	0	0	0

**TABLE 2
QUANTITATIVE SITING COMPARISON**

Criteria	Site										
	1	2	3	4	5	6	7	8	9	10	11
Cultural											
National Register of Historic Places and Districts within 1,000ft of site	0	0	0	0	0	0	0	0	0	0	0
Potential Historic Properties (Structures greater than 50 years old) within 1,000 feet of site	2	2	1	0	4	0	2	2	0	0	4
Known Archaeological Sites within 1,000-ft of site	0	0	0	0	0	0	0	0	0	0	0
Cemeteries within 100-ft of site	0	0	0	0	0	0	0	0	0	0	0
Land Use											
Residences within 100 feet of substation property	0	0	0	0	0	0	0	0	0	0	0
Residences between 100 and 1,000 feet from site	3	5	5	13	8	0	3	9	4	1	12
Institutional Land Uses within 100 feet of site	0	0	0	0	0	0	0	0	0	0	0
Institutional Land Uses between 100 and 1,000 feet from site	0	0	0	0	0	0	0	0	0	0	1
Other Sensitive Land Uses within 100 feet of site	0	0	0	0	0	0	0	0	0	0	0
Other Sensitive Land Uses between 100 and 1,000 feet from site	0	0	0	0	0	0	0	0	0	0	0
Engineering											
Size of Overall Property (acres)	39	54	38	63	67	67	42	24	46	78	63
Straight Line Distance to existing Fostoria-East Lima 138 kV Transmission Line (feet) (Bold indicates overall property is crossed)	900	200	1,500	150	100	200	2,000	1,200	500	1,800	0
Straight Line Distance to existing Findlay Center 138 kV Transmission Line Extension (feet) (Bold indicates overall property is crossed)	900	800	1,500	300	1,200	500	2,000	400	1,800	3,300	2,700
Straight Line Distance to nearest road (length of proposed access road) (feet)	350	700	200	1,300	300	1,800	150	200	300	400	150

4.3 SITE RANKING

The quantitative comparison for the overall property candidates provided in Table 2 suggests that ecological, land use, and cultural constraints are limited in the study area. Very few quantitative attributes provide significant differentiation between the candidates. No ecological features were identified. The apparent lack of wetlands and streams on any of the sites suggests U.S. Army Corps of Engineers (USACE) and Ohio Environmental Protection Agency (OEPA) permitting would not be required beyond a standard Stormwater Pollution Prevention Plan (SWPPP) and Notice of Intent (NOI).

No known cultural resources were identified within 1,000 feet of any of the candidate sites. Based on Hancock County Auditor records, a small number of properties with structures that are greater than 50 years old and could be considered of historic importance are located within 1,000 feet of certain candidates. These properties provide some differentiation between the sites regarding potential sensitivity associated with station visibility, but distance, age, and likely lack of historic significance suggests only minimal risks. However, an architectural history review would be necessary to document the potential inclusion of these properties on the National Register of Historic Places. The quantitative comparison suggests Sites 4, 6, 9, and 10 are the best candidates from a cultural perspective pending a field investigation.

Land use constraints within 1,000 feet of the site candidates are limited to residences and one church. The church is located within 1,000 feet of only one of the sites (Site 11). No residences were identified within 100 feet of any of the sites. The number of residences between 100 and 1,000 feet from the candidates ranges from 0 (Site 6) to 13 (Site 4). The closest residence is approximately 160 feet from Site 5. The second closest residence is also within approximately 230 feet of Site 5. Overall, the quantitative land use evaluation suggests Site 6 is the best candidate followed by Sites 10, 1, and 7. Sites 4, 5, and 11 appear to be the least desirable from a land use perspective based on the quantitative data.

The engineering factors provide the most differentiating factors between the candidate sites. However, certain engineering aspects often have competing interests relative to the other categories. For example, the intent to reduce the length of access roads to the candidate sites means the sites closer to roads are generally closer to more residences. Overall, the engineering factors suggest Site 5 is the best engineering candidate followed by Sites 2, 4, 5, and 11.

Given the general lack of constraints and differentiators, the most effective system of ranking the candidates appears to be a comparison of the positives and negatives associated with each site utilizing both quantitative and qualitative conditions. Each site is discussed below:

Site 1 offers several relative advantages over the other candidates. Only three residences were identified within 1,000 feet, the closest of which is approximately 570 feet away. No buildings, streams, wetlands, or other constraints were identified on the overall property currently used for agriculture. Sufficient flexibility to shift the site within the overall property boundary appears to exist without

significant increases in potential impacts to the surrounding vicinity. The measured distances to the existing source transmission lines and adjacent road are generally about average compared to the other candidates, although neither source transmission line crosses the overall property, which means right-of-way would need to be acquired from adjacent property owners. Overall, the site appears to be a viable candidate with no identified fatal flaws.

Based on the quantitative evaluation, Site 2 appears to be one of the best candidates. The value of five residences within 1,000 feet is below the median of 5.7 for the collective candidates. The closest residence is approximately 600 feet from the site. The distances to the source transmission lines are below the median values and both lines cross the overall property eliminating the need for right-of-way from other land owners. The site could likely be moved further to the east to further increase distances to residences and reduce lengths of transmission line interconnections, but the access road length would increase. No fatal flaws were identified with Site 2 and it compares favorably to all of the candidates.

The quantitative land use evaluation suggests Site 3 is similar to Site 2 with 5 residences within 1,000 feet, although the closest residence is 440 feet away. The distances to the source transmission lines are slightly above the median values and neither line crosses the overall property. While Site 3 is viable with no identified fatal flaws, it does not compare favorably to other candidates.

Site 4 exhibits several positive factors in terms of engineering, as it is one of the closest sites to the source transmission lines, one of which crosses the overall property is the other is only a short distance onto an adjacent property. Thirteen residences were identified within 1,000 feet of Site 4, which is the highest value amongst the candidates considered. However, all of these residences are at least 690 feet away and the site is situated at the rear of their properties. A small wooded fence row is position between the site and the 13 homes within 1,000 feet. Bolstering this fence row with additional screening trees or a earthen berm would likely mitigate potential visual impacts associated with these residences. Site 4 appears to be a viable site that compares favorably to the other candidates, although it does not appear to be the very best site from a siting perspective.

The quantitative evaluation of Site 5 suggests it may be one of the better candidates due to favorable comparison in the engineering categories. However, eight residences were identified within 1,000 feet with the two closest ones located approximately 160 and 200 feet away, respectively. The position of the site within the overall property suggests mitigation with screening trees or berms may not be possible. The overall property is the only that includes two candidates. This could be a positive for the logistical planning when purchasing or leasing the property. However, the negative factor of the residences appears to supersede this scenario and the positive engineering comparison. No definite fatal flaws were identified, but Site 5 does not appear to compare favorably to the majority of the other candidates.

Site 6 compares favorably to the other sites in almost all of the quantitative categories evaluated. No residences were identified within 1,000 feet of the site, with the closest one approximately 1,200 feet away. No other site provided this distance between the site and the closest residence. Site 6 is also in close proximity to the source transmission line with one crossing the site and the other only a short distance away onto an adjacent property. The biggest negative associated with this site appears to be

the distance to the nearest road, which is approximately 1,800 feet. An access road of this distance likely creates operational and safety concerns associated with maintaining clear access to the substation and protecting it from vandalism and theft. Overall, Site 6 is one of the most favorable sites relative to the others, if the access road concerns can be accepted or mitigated through design.

Site 7 is the northernmost of the candidates. It compares favorably in terms of potential residential impacts with only three identified within 1,000 feet, the closest of which is approximately 740 feet away. However, the distances to the source transmission lines are collectively the greatest. While no fatal flaws were identified, the benefits of siting the substation further from the source lines appear to be minimal when other similar sites are closer.

The quantitative evaluation suggests Site 8 compares unfavorably to the other candidates in most of the categories. Nine residences were identified within 1,000 feet, with the closest approximately 260 feet away. Distances to the source lines are greater than the median for the candidates. The size of the overall property is also the smallest limiting potential flexibility in design of the substation. Overall, Site 8 does not appear to be one of the better candidates, although no fatal flaws were identified.

Four residences were identified within 1,000 feet of Site 9, the closest of which is approximately 440 feet away. One of the source lines crosses the overall property, but the other is 1,800 feet away. No fatal flaws with Site 9 were identified, but there do not appear to be any obvious advantages to the site over many of the other candidates.

Site 10 is the easternmost candidate. It compares favorably to the majority of the other candidates in terms of potential residential impacts with only one within 1,000 feet. This residence is located approximately 680 feet away. Distances to the source lines are above the median values. Similar to Sites 7 and 9, Site 10 does not appear to have any fatal flaws, but it does not appear to stand out amongst the candidates.

Twelve residences were identified within 1,000 feet of Site 11, the second highest value in this category. The closest residence is approximately 340 feet away and all of the fronts of these homes face toward Site 11. Due to the size and shape of the overall property and the presence of wooded and wetland areas on the property, the site is situated with one of the source lines crossing the proposed fenced area. This position would likely require a temporary relocation of the Fostoria-East Lima 138 kV line. In addition, at least one natural gas pipeline parallels the Fostoria-East Lima 138 kV line across the site. A permanent relocation of the pipeline would likely be required prior to construction on Site 11. This may represent a fatal flaw for this site. Based on the quantitative and qualitative evaluations, Site 11 compares unfavorably to the other candidates and it may not be a viable candidate.

The overall rankings of the sites based on the desktop review, windshield reconnaissance, and available information as of the date of this report are provided in Table 3.

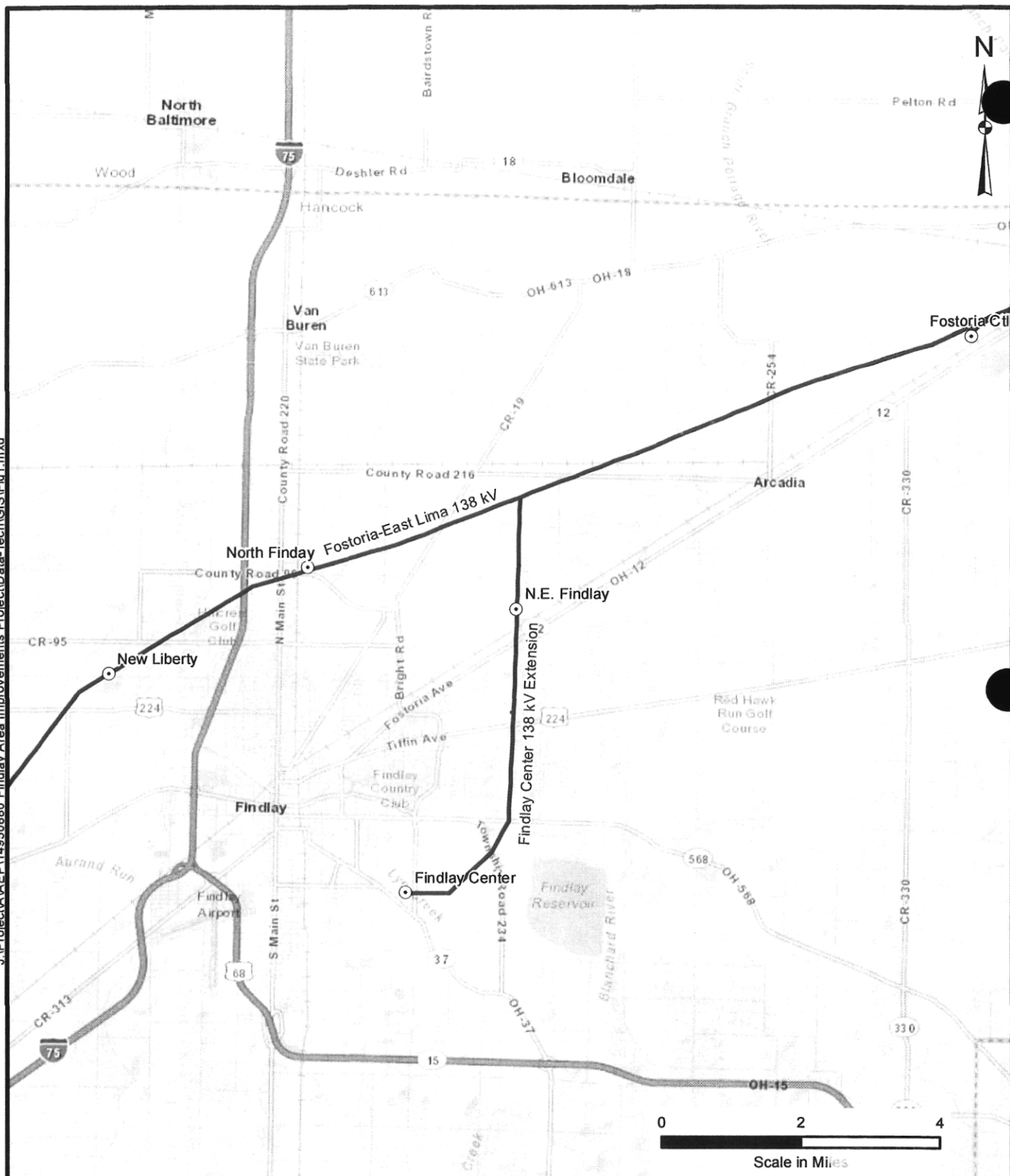
TABLE 3 EVALUATED SITE RANKINGS	
Rank	Site
1	2
1	6
3	1
4	4
5	9
6	10
7	7
8	3
9	5
10	8
11	11

5.0 CONCLUSIONS

Based on the quantitative and qualitative evaluations, Sites 1, 2, 4, and 6 appear to be the most viable candidates for the substation project. Sites 2 and 6 appear to limit potential impacts to surrounding residences and provide close proximity to the source transmission lines, but have increased access road lengths which may compromise security and increase difficulties associated with station maintenance. Site 1 limits residential impacts and reduces access road length, but would require new right-of-way to both source lines across an adjacent property. Site 4 has provides close proximity to the source lines on the overall property, but additional measures to mitigate residential impacts would likely be necessary. Sites 3, 5, 7, 8, 9, and 10, while potentially viable, do not appear to be as favorable candidates based on the evaluations explained in this report. Site 11 appears to be the worst of the candidates evaluated and the existing pipeline may represent a fatal flaw.

Land availability is a major component of siting a substation. This may be especially difficult when subdividing parcels of land, some of which have residences and other buildings, as is the case with some of the candidates identified in this Site Selection Study. The balance between acquiring sufficient land for design flexibility versus increased cost for unnecessary and undeveloped acreage must also be weighed. The likelihood of successfully appropriating land from an unwilling seller for a substation is low and AEP has avoided this scenario on other similar projects. While multiple suitable candidates for the substation appear to exist, ultimately, the selection of the candidate for the project will be dependent on successfully negotiating the acquisition of one of them.

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LEGEND:

- 138 kV Destination Substation
- Existing 138 kV Transmission Line

BASE MAP SOURCE:
ESRI Map Service
World StreetMap



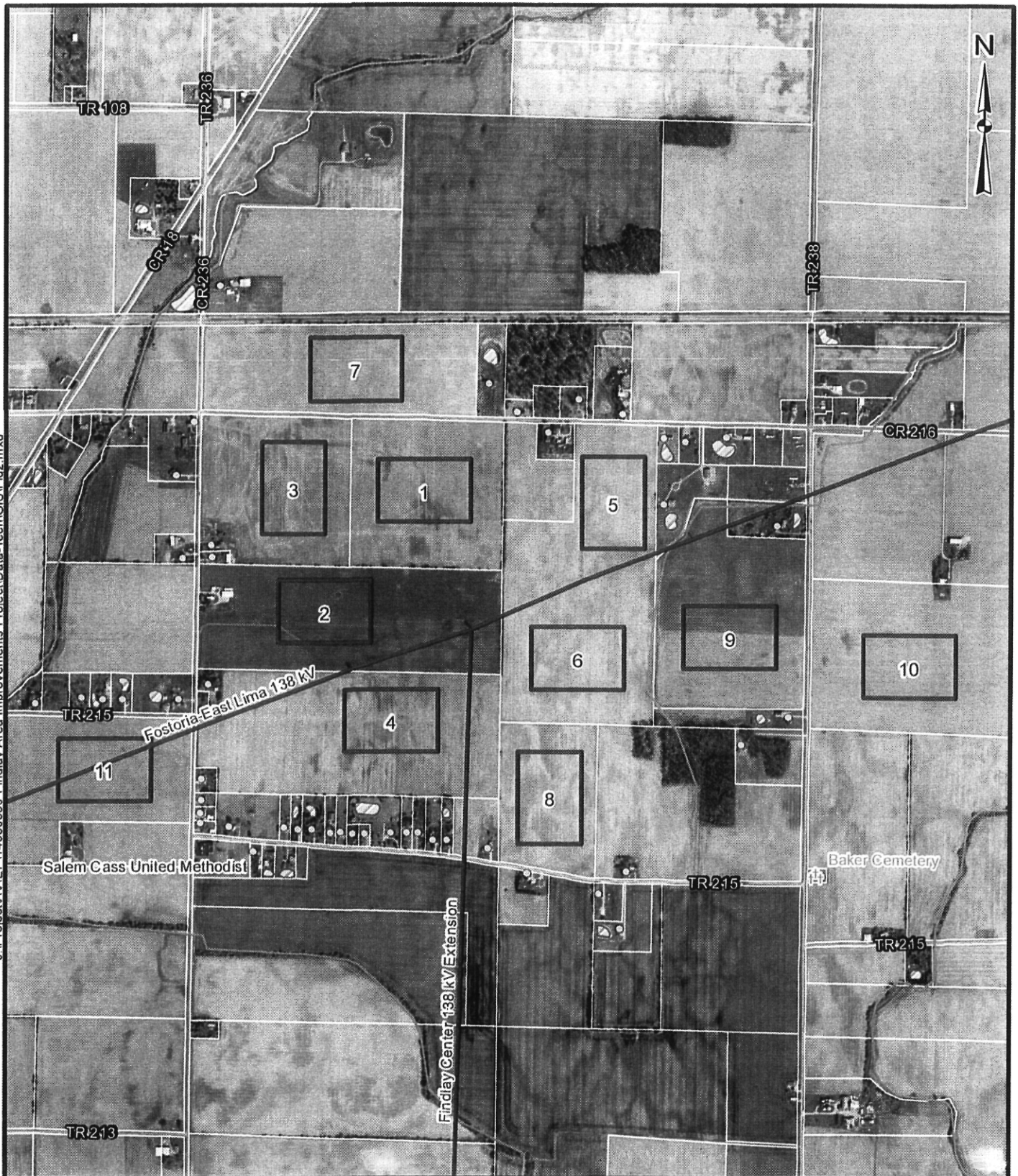
Findlay Area Improvements
Ebersole Station

FIGURE 1
PROJECT OVERVIEW

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LEGEND:

- | | |
|-----------------------------------|---------------------------------|
| Approximate Candidate Site | Cemetery |
| Existing 138 kV Transmission Line | National Wetland Inventory Area |
| Residence | Stream |
| Church | Parcel Boundary |

BASE MAP SOURCE:
ESRI Map Service
World StreetMap

0 1,200 2,400

Scale in Feet



Findlay Area Improvements
Ebersole Station

FIGURE 2
CANDIDATE SITES

JOB NO. 14950880

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4906-15-04
Technical Data

4906-15-04 TECHNICAL DATA**SECTION SUMMARY**

This section of the Application provides data on the proposed substation and associated interconnections, including data on location, major features, and the topographic, geologic, and hydrologic suitability of the site alternatives for the Ebersole Station Project. This section also provides data on the layout and construction of the proposed substation and the associated interconnections, and provides information on the proposed substation equipment.

(A) ALTERNATIVE SITES/ROUTES OF PROJECTS**(1) Geography and Topography**

A map at 1:24,000 scale, showing the proposed substation and associated lines for the Project is presented as Figure 04-1. This map includes the area 1,000 feet around each of the proposed substation locations. The map was developed from the United States Geological Survey (USGS) 7.5 minute topographic map of the Arcadia, Ohio (1972) quadrangle.

The information on the map was updated through review of aerial photography, property parcel data from the Hancock County Auditor, and field reconnaissance conducted in October 2012 and May 2013. The aerial photographs are ortho-corrected color images that directly overlay the USGS electronic quadrangle maps in Geographical Information Systems (GIS) software packages.

(a) *Proposed Transmission Line Alignments:* Ebersole Station will be energized by looping the existing and adjacent Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension through the station, as shown on Figures 01-1 (Preferred Site), 01-2 (Alternate Site), and 04-1. These lines intersect approximately 250 feet west of the AEP-optioned property. The associated interconnection to the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension would extend predominantly across the overall property. The new lines will require new right-of-way for approximately 250 feet across adjacent properties to the west. The new interconnections to the station are considered associated facilities within this Application.

(b) *Proposed Substation Locations:* The proposed locations for the Preferred and Alternate Sites for the substation can be seen on Figure 04-1.

(c) *Major Highway and Railroad Routes:* No interstate, U.S., or state highways, or railroads are located within 1,000 feet of the Preferred and Alternate Sites or associated 138 kV interconnections. State Route 12 is located approximately 1.5 miles to the southeast and Interstate 75 is located approximately four miles to the west.

(d) **Air Transportation Facilities:** According to the Federal Aviation Administration's (FAA) Office of Aeronautical Information Services, 14 airports, landing strips, or heliports are located in Hancock County. The closest of these facilities is a private airport located approximately four miles to the east-southeast of the Preferred and Alternate Sites.

(e) **Utility Corridors:** AEP's Fostoria-East Lima 138 kV line and Findlay Center 138 kV Extension are located adjacent or nearly adjacent to the Preferred and Alternate Sites, as shown on Figure 04-1. A North Coast Gas Transmission natural gas pipeline parallels the Fostoria-East Lima 138 kV line nearly adjacent to the Preferred and Alternate Sites. No other major utility corridors were identified within one mile of the sites.

(f) **Proposed Permanent Access Roads:** A permanent access road from Township Road 17 to the fence lines will be necessary for a substation installed at the Preferred or Alternate Sites. The proposed locations of the access roads for the Preferred and Alternate Sites are shown on Figure 04-2 and Figure 04-3.

(g) **Lakes, Ponds, Reservoirs, Streams, Canals, Rivers, and Swamps:** No streams, wetlands, ponds, or threatened and endangered species habitat areas were identified within 100 feet of the Preferred or Alternate Sites. A full description of the lakes, ponds, reservoirs, streams, canals, rivers, and swamps (i.e. wetlands) located within 1,000 feet of the proposed Preferred and Alternate Sites and associated interconnection is provided in Section 4906-15-07(B)(3) of this Application. A map at 1:24,000 scale showing water bodies in the study area is included as Figure 04-1.

(h) **Topographic Contours:** Topographic contours of the study area, provided at five foot contour intervals, are shown on Figure 04-1. The topographic relief of the study area is very flat. Elevations range from 805 to 810 feet above mean sea level at the Preferred and Alternate Sites. No steep slopes are located within the proposed construction area for the Preferred and Alternate Sites.

(i) **Soil Associations at the Preferred and Alternate Sites:** The Blount-Pewamo-Glynwood soil association is mapped at the Preferred and Alternate Sites and associated interconnections (U.S. Department of Agriculture [USDA], 1990). Figure 04-1 shows the soil associations in the study area. No soil conditions were found that would potentially limit construction of the proposed project.

(j) **Population Centers and Legal Boundaries:** Population centers and legal boundaries within the vicinity of the proposed substation locations are shown on Figure 04-1. Both of the proposed substation locations and associated interconnection are located in Cass Township in Hancock County.

(2) Slope and Soil Mechanics

Slopes in the areas of the Preferred and Alternate Sites and associated interconnections do not exceed 12 percent. No soil conditions were identified that might cause problems for the project.

(B) LAYOUT AND CONSTRUCTION**(1) Site Activities**

The following paragraphs provide data on the layout, engineering design process, and construction of the Project.

(a) *Surveying and Soil Testing:*

Aerial photographs, Hancock County maps, and USGS topographic maps have been used in selecting the Preferred and Alternate Sites and to prepare station layouts. A contour map has been prepared using USGS contour data. Topographic features and man-made structures in the vicinity of the proposed substation that may affect the design were located during the survey. This survey work did not require the cutting or clearing of any trees and only minimal clearing of brush. Substation boundaries will be staked prior to construction.

Soil tests will be performed for the substation and associated lines, as foundations for equipment and structures are necessary. Auger borings will be made by a machine driven auger at least four inches in diameter. Soil samples will be obtained at approximately 2.5-foot intervals for the first 10 feet and five-foot intervals below 10 feet, and at any identified change in strata. Sampling will include split barrel samples in non-cohesive soils and thin walled tube samples in cohesive soils. Typically, the testing will be performed to a depth of 50 feet. If rock is encountered, the rock coring will be performed with NX-size, double-tube rock coring techniques. An appropriate core bit will be selected with respect to rock types encountered to provide for optimum sample recovery. If auger refusal is encountered at a depth of 10 feet or less, a minimum of 20 feet of rock will be cored. If auger refusal is encountered between 11 feet and 20 feet, a minimum of 15 feet of rock will be cored. If rock is encountered deeper than 21 feet, a minimum of 10 feet of rock will be cored.

(b) *Grading and Excavation:* Drilled shaft anchor bolted foundations will be installed for transmission line structures. These drilled shafts will be excavated by auger. The excess material from these augered holes will be hauled away and disposed of properly, or will be spread evenly around the structure.

Both the Preferred and Alternate Sites are located on agricultural land currently used for row crops. Since land at both sites is relatively flat, no major grading will be required. Minor grading will involve several steps. The first step in this grading process is the removal and stockpiling of the topsoil. The station site will be graded to a 0.5% slope. The immediate substation vicinity

will be graded and compacted in preparation for construction and installation of the necessary equipment.

Aggregate surfacing will be placed within the fence line of the new substation, extending to five feet outside the fence line. Aggregate surfacing will be comprised of washed limestone. Total thickness of aggregate surfacing will be five inches. The topsoil stockpiled earlier will then be spread around the remaining disturbed areas. Only areas directly around the station fence and road will be seeded. All other areas will be returned to prior "farming" condition.

Similar to the transmission line structures, reinforced concrete pier foundations in augered holes will be used for most of the station structures. Other facilities, such as the circuit breakers and transformers, will be placed on reinforced concrete pads. The excess material from the augered holes will be hauled away and disposed of properly, or will be spread evenly around the site. The grading plan was designed to meet all local and state drainage requirements. The proposed grading of the Preferred Site of the substation is shown in Figure 04-2. The proposed grading of the Alternate Site of the substation is shown in Figure 04-3.

(c) Access Roads and Trenches: The substation access road will be graded and compacted. The access road will be comprised of a five- inch thick base course of aggregate and a four-inch surface course of aggregate. At the Preferred Site, a 24-foot wide by approximately 1,600-foot long access road will be constructed between the station and County Road 216. For the Alternate Site, the access road will be approximately 700 feet long. Space will be provided at the station site for the cleaning of mud from equipment prior to entry onto any road. Temporary access roads for the construction of the proposed interconnections may be from County Road 215 and County Road 238.

(d) Stringing of Cable: Stringing of cable associated with the Project is primarily associated with construction of the transmission pole line and connections to the substation, but also include some cables inside the substation fenced area. The transmission lines include extensions to the existing Fostoria-East Lima 138 kV line and Findlay Center 138 kV Extension. Conductor installation for these lines will be accomplished using the tension stringing method. Lightweight guy cables or ropes will be fed through the stringing sheaves of the sections of line that require stringing. Conductors will then be pulled through under sufficient tension to keep the conductor "in the air." This protects the conductor from surface damage.

(e) Post Construction Reclamation: As construction work proceeds, the construction area will be kept clean of all rubbish and debris resulting from the work. Refuse and cleared vegetation will be properly disposed of in an approved landfill or other appropriate location.

(2) Layout for Associated Facilities

(a) Map of Associated Facilities: Figure 04-2 shows the preliminary engineering layout and grading plan of the Preferred Site. Figure 04-3 shows the preliminary layout and grading plan of the Alternate Site. These figures show the property boundary, fenced area of the

substation, general arrangement of the substation equipment, the access roads to the substation, and general details of site grading. Figures 01-1, 01-2, and 04-1 show general routes of the associated 138 kV transmission line loops. Figures 04-4 and 04-5 provide cross section views of the equipment to be installed at the Preferred and Alternate Sites, respectively.

(The 11" by 17"-size copies of Figures 04-2 and 04-3 included in the Application have been produced in accordance with OAC § 4906-5-03(C) which allows the scale to be reduced by a factor not to exceed four times. Full size copies of these at the scale required in OAC § 4906-15-04(B)(2)(a) have been provided separately to the OPSB and included in copies of the Application provided to persons referenced by OAC §4906-5-06. Full size copies of these figures are available and may be obtained by contacting Rebekah Hovermale in writing at AEP, 700 Morrison Road, Gahanna, Ohio 43230, or via phone at 614-552-1890 or via e-mail at rhovermale@aep.com)

The loops to the existing Fostoria-East Lima 138 kV and Findlay Center 138 kV Extension transmission lines are shown on Figures 01-1, 01-2, and 04-1.

It should be noted that the layout and dimensions provided on Figures 04-2 through 04-5, as well as the approximate dimensions from roads and property boundaries to the substation at the Preferred and Alternate Sites provided throughout the Application, represent AEP's current best estimate of the details of the substation. These details have been significantly refined for the Preferred and Alternate Sites from the approximate details used in the initial stages of the project and are based on preliminary substation engineering layout and design work. It is expected that the final engineering design of the substation will incorporate minor refinements to the layout and facilities of the substation.

(b) Reasons for Proposed Layout and Unusual Features: There are no unusual features associated with construction of this project.

The Preferred and Alternate Sites are specifically engineered with due consideration to equipment types, manufacturer's specifications, adequate working clearances around equipment and structures, and safe engineering practices.

(c) Future Modification Plans: AEP's planning engineers generally forecast future transmission projects in a five-year planning window. AEP currently has no plans for future modifications of the proposed substation. Future modifications will not require any expansion to the fenced area of the substation. The interconnections from the Preferred and Alternate Sites to the existing Fostoria-East Lima 138 kV line and Findlay Center 138 kV Extension are predominantly on land optioned by AEP. Approximately 250 feet of new right-of-way on adjacent properties to the west will be necessary for each new interconnection.

(C) TRANSMISSION EQUIPMENT**(1) Electric Transmission Line Data**

(a) Design voltage: Consists of 138 kV transmission lines.

(b) Poles, Conductors, and Insulators: A summary of the various components of the transmission lines is provided below.

138 kV lines – These lines will consist of 795 kcmil 26/7 strand ACSR, utilizing one conductor per phase. One 7#8 alumoweld overhead groundwire will be used as a shield wire. The insulator assemblies will consist of polymer insulators for each phase.

Types of steel pole types will vary depending on the substation site that is constructed. Interconnections to the Preferred Site station will utilize a combination of dead end and angle structures, while the Alternate Site station will utilize a combination of dead end and tangent structures. Typical pole configurations with approximate dimensions are shown on Figures 04-6, 04-7, and 04-8.

(c) Base and Foundation Design: Drilled shaft anchor bolted foundations will be installed for transmission line structures. These drilled shafts will be excavated by auger. The excess material from these augered holes will be hauled away and disposed of properly, or will be spread evenly around the structure.

(d) Underground Cable Type and Size: Not applicable.

(e) Other Major Equipment or Special Structures: No other major equipment or special structures are planned.

(2) Electric Transmission Substation Data

The equipment and facilities described below will be installed within the fenced area of the proposed substation at either the Preferred or Alternate Sites. A single-line diagram of the proposed substation is provided in Figure 04-9 for the Preferred and Alternate Sites. The fenced area of the substation also includes sufficient open space for the potential installation of two 138 kV lines, one 138/69/34.5 kV transformer, and associated breakers and bus work that are not included in the facilities described below. Details regarding the future need for and schedule to install the additional facilities are not currently identified. A description of the various components of the station is provided below in Table 04-1.

(a) Breakers: There will be nine 138 kV breakers and one 69kV breaker (operated at 34.5 kV) installed at the substation. These breakers are SF₆ gas insulated, dead tank breakers. The 138 kV breakers are ganged 3-pole operation on a common frame along with the 69kV circuit breaker.

(b) **Switchgear:** The 138 kV switches will consist of 18 group-operated three-phase disconnect switches. The 69 kV switches consist of three group-operated three phase disconnect switches.

(c) **Bus Arrangement and Structures:** The bus arrangement is shown in Figures 04-2 and 04-3 (layout plans) and Figure 04-9 (one line diagram).

The 138 kV yard will utilize a one and one-half breaker bus configuration, while the 69kV to be operated at 34.5 kV utilizes single radial configuration.

Equipment support steel structures will be designed using hot-rolled structural steel shapes such as wide flange, tubing, channels and angles or as folded plate tapered tubular structures. Dead-end structures will be made of tapered tubular steel. All yard structures will be ASTM A36, ASTM A500, or ASTM A572 steel hot-dip galvanized for corrosion protection.

(d) **Transformers:** One 138/69/34.5 kV, 90MVA three-phase, oil filled auto transformer will be installed. Transformer oil containment provisions will be designed and constructed to meet the requirements of the Environmental Protection Agency.

(e) **Control Buildings:** The station will have a 16-foot by 36-foot control building in the 138 kV yard. The control building will consist of a pre-engineered or factory fabricated metal building to contain all substation control and relay panels and miscellaneous equipment. This would include RTU, AC, and DC distribution panels, batteries, battery chargers, and other miscellaneous equipment. The control buildings will include HVAC and internal lighting. This substation facility will not be manned. Plumbing facilities are not required.

(f) **Other Major Equipment:** Other equipment can include surge arresters, Capacitance Coupled Voltage Transformers (CCVT's), station service transformers, and grounding transformer.

TABLE 04-1
Transmission Station
Proposed Major Equipment

Equipment	Specifications	
Power Transformers	Type: Auto Transformer, 138/69/34.5kV Number: 1 Rating: 90MVA, three-phase Cooling: ONAN/ONAF/ONAF	
Circuit Breakers	Voltage: 138kV Number: 9 Type: SF6 Gas, Dead Tank Design Thermal: 3000A Interrupting: 63kA	
Group-Operated Disconnect Switches	Voltage: 138kV Number: 18 Type: "V" Center Break, Horizontal Upright Mounted Thermal: 3000A	Voltage: 69 kV operated at 34.5 kV Number: 3 Type: "V" Center Break, Vertical Mounted. Thermal: 2000A

(3) Gas Transmission Line Data

This section is not applicable.

(4) Gas Transmission Facilities

This section is not applicable as the proposed Project does not install gas transmission facilities.

(D) ENVIRONMENTAL AND AVIATION COMPLIANCE INFORMATION**(1) List and Discussion of Permits Required**

The Applicant anticipates submitting Notice of Intent (NOI) for coverage under Ohio EPA General National Pollutant Discharge Elimination System (NPDES) Permit for construction activities.

(2) Description, Quantification, Characterization, Removal and Disposal of Construction Debris

As construction work proceeds, the site will be kept clean of rubbish and debris resulting from the work. Debris associated with construction of the proposed substation is expected to consist of conductor scrap, construction material packaging including cartons, insulator crates, conductor reels and wrapping, and used stormwater erosion control materials. Clearance poles, conductor reels and other materials with salvage value will be removed from the construction area for reuse or salvage. It is estimated that approximately 50 cubic yards of construction debris could be generated from the project. Construction debris will be disposed of in accordance with state and federal requirements in an Ohio Environmental Protection Agency approved landfill or other appropriately licensed and operated facility.

Where vegetation must be cleared, the resulting brush will be removed. Generally, stumps will not be removed.

(3) Storm Water and Erosion Controls during Construction and Restoration of Soils, Wetlands, and Streams Disturbed as a Result of Construction of the Facility

A Stormwater Pollution Prevention Plan (SWPPP) will be prepared and incorporated into the Construction Plans and Specifications, and will be made available on site during construction of the Project. The SWPPP will include the following General Conditions, at a minimum.

(a) Erosion and Sediment Controls: Implementation of erosion and sediment control practices will conform to the Ohio Department of Natural Resources Rainwater and Land Development Manual (2006), the Ohio EPA NPDES Permit Program for the discharge of storm

water from construction sites, and any erosion and sediment control practices and standards required by the County.

No impacts to wetlands, streams and other environmentally sensitive areas are anticipated.

Grubbing activities are not anticipated. Sediment basins, traps and/or perimeter sediment controls will be implemented within seven days of any grubbing activities and will continue to function until disturbed areas are permanently stabilized.

Silt Fencing: Silt fencing and/or other appropriate best management practices for erosion control will be constructed before upslope land disturbance begins.

Silt fences will be placed to parallel the slope contour where appropriate so that water will not concentrate at low points in the fence and so that small swales or depressions which may carry concentrated flows to the silt fence are dissipated along its length.

Silt fence will be placed so that eight inches of cloth are below the ground surface. Excess material will lie at the bottom of the six-inch deep trench and the trench will be backfilled and compacted.

Silt fence will allow runoff to pass only as diffuse flow through the geotextile fabric. If runoff overtops the silt fence, flows under or around the ends, one of the following will be performed, as appropriate: 1) the layout of the silt fence will be changed, 2) accumulated sediment will be removed, or 3) other practices will be installed.

Silt fence posts will be a minimum of 32 inches in length made of 2"x2" hardwood of sound quality.

Silt fence fabric will be ODOT Type C geotextile fabric or equivalent.

Farming Reclamation of Disturbed Areas: Disturbed areas outside of the substation site and permanent access roads will return to a farming state.

Maintenance / Inspection: All erosion and sediment control practices will be inspected at least once every seven days and within 24 hours after any storm event greater than 0.5" of rain per 24-hour period.

Erosion controls will be maintained in good working order. If a repair is necessary, it will be initiated within 24 hours of being reported. Silt fencing will be inspected for depth of sediment, for tears, to confirm the fabric is securely attached to the fence posts, and to check that the fence posts are firmly in the ground. Seeded areas will be inspected for evidence of bare spots or washouts. Permanent records of the maintenance and inspection must be maintained throughout the construction period. Records will include, at a minimum, the name of the Inspector, major observations, date of inspection, certification of compliance, and corrective measures taken.

(b) Materials Management: All materials stored on-site will be kept in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.

Products will be kept in their original containers with the original manufacturer's label.

Manufacturer's recommendations for proper use and disposal will be followed.

Material Safety Data Sheets (MSDS) will be retained and available on-site at all times.

(4) Plans for Disposition of Contaminated Soil and Hazardous Materials Generated or Encountered During Construction:

The following General Conditions will also be included in the SWPPP to address disposition of contaminated soil and hazardous materials generated or encountered during construction:

Spill Prevention: All on-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled.

Secondary containment will be provided for all on-site fuel storage tanks.

All sanitary waste will be collected in portable units and emptied regularly by a licensed sanitary waste management contractor, as required by local regulations.

All spills will be cleaned up immediately after discovery. Manufacturer's recommended methods for spill cleanup will be followed. Materials and equipment necessary for spill cleanup will be kept in a designated storage area on-site.

Spills will be reported to the appropriate government agency, as required.

Any suspected hazardous materials encountered during construction will be reported to the AEP Regional Environmental Coordinator by the AEP Transmission Construction Representative. In addition, the AEP Project Manager will be notified, as well as the required levels of AEP Management.

AEP requires a Spill Prevention Plan to be created and available for review on-site for construction projects of this scope by its contractors. This Spill Prevention Plan will cover proper handling techniques for all electrical equipment, materials and construction equipment that require a MSDS. AEP also requires its employees and contractors to follow all Federal and State mandated material handling requirements.

AEP Transmission follows an internal Spill Prevention Notification Plan that is closely aligned to the AEP Spill Response and Cleanup – Field Guide. This Spill Response and Cleanup – Field Guide covers the following procedures:

- I. Oil/PCB Spill Response and Cleanup Procedure
- II. When to Report an Oil/PCB Spill to the Region Environmental Coordinator
- III. Hazardous Substance Spill Response Procedure
- IV. Region Environmental Coordinator Contact List

This Field Guide outlines spill response and cleanup procedures as well as the reporting that is required. This Spill Response and Cleanup – Field Guide will be available upon request.

(5) Height of Tallest Anticipated Above Ground Structures and Construction Equipment within the Vicinity of Airports and Landing Strips.

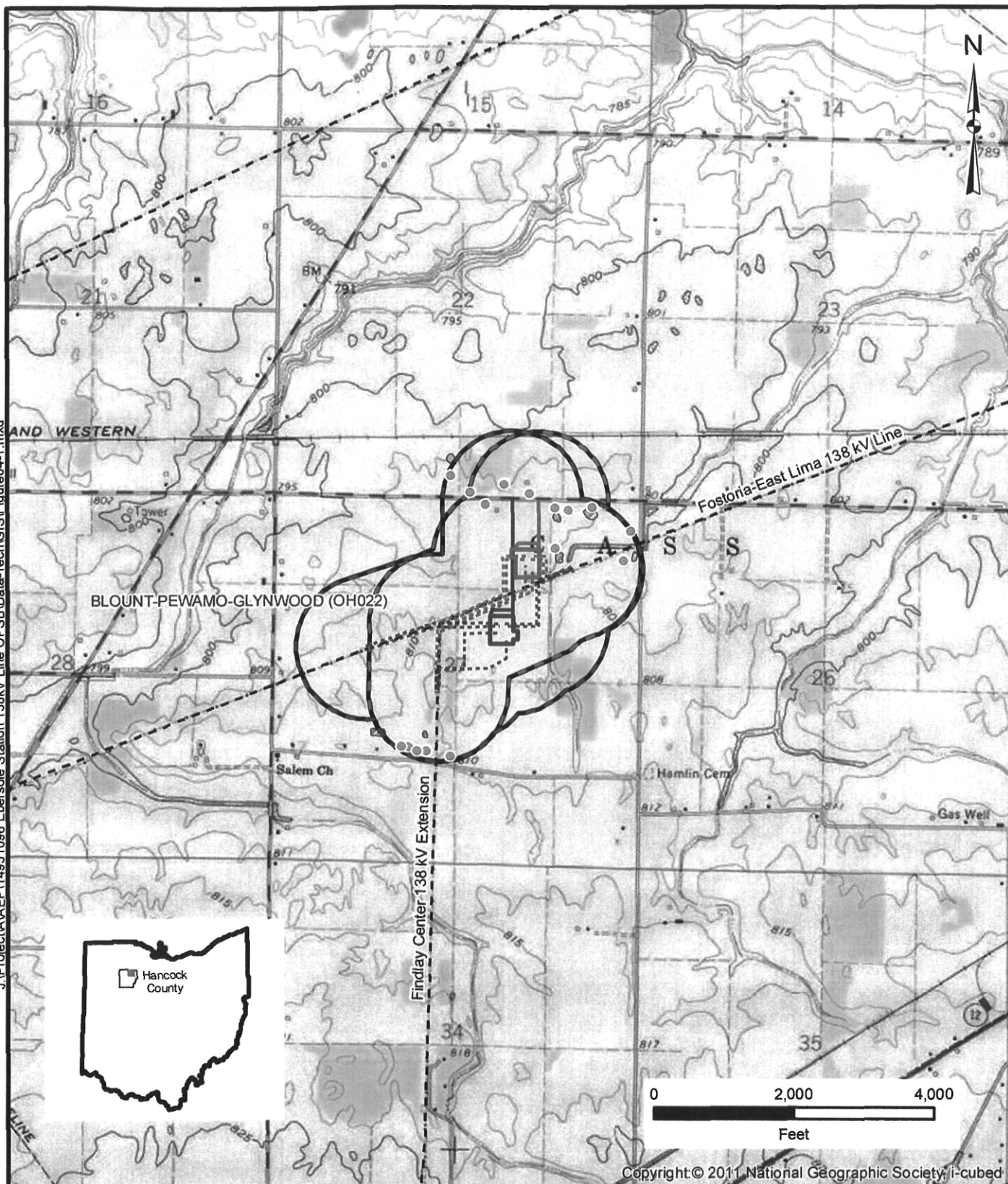
The height of the tallest anticipated above ground structure is designed to be approximately 120 feet. This is the maximum height of the interconnection structures. The tallest portion of the substation equipment is approximately 55 feet. According to the FAA Office of Aeronautical Information Services, 14 airports, landing strips, or heliports are located in Hancock County. The closest of these facilities is a private airport located approximately four miles to the east-southeast of the Preferred and Alternate Sites. Coordinates for the tallest structures were submitted to the FAA via the Notice Criteria Tool. Based on the coordinates, elevations, and heights of these locations, no notice criteria were exceeded. Therefore, construction and operation along the Preferred or Alternate Routes is not anticipated to impact any airports, landing strips, or heliports.

(6) Construction During Excessively Dusty or Excessively Muddy Soil Conditions

(a) Dust Control: The Site and surrounding areas will be kept free from dust nuisance resulting from Site activities. During excessively dry periods of active construction, dust suppression will be implemented where necessary through irrigation, mulching, or application of tackifier resins.

(b) Excessive Muddy Soil Conditions: Construction entrances will be established and maintained to a condition which will prevent tracking or flowing of sediment onto public rights of way. All sediment spilled, dropped, washed, or tracked onto public right of ways will be removed immediately.

J:\Project\AEP\14951096 Ebersole Station 138kV Line OPSB\Data-Tech\GIS\Figure04-1.mxd



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LEGEND:

- | | |
|--|-----------------------------------|
| — Preferred Site | - - - Existing Transmission Line |
| ----- Preferred Site 138 kV Interconnect | • Residence |
| ▭ Preferred Site 1,000-foot Buffer | ▭ Soil Association |
| — Alternate Site | ▨ National Wetland Inventory Area |
| ----- Alternate Site 138 kV Interconnect | |
| ▭ Alternate Site 1,000-foot Buffer | |

BASE MAP SOURCE:
ArcGIS Online
USA_Topo_Maps

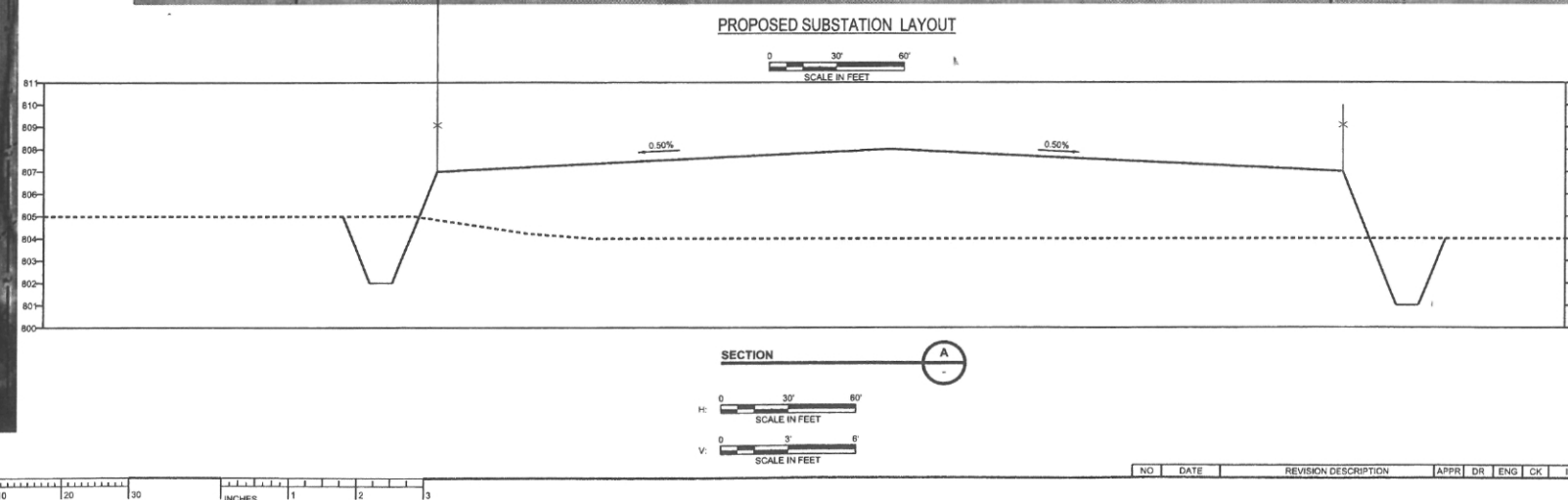
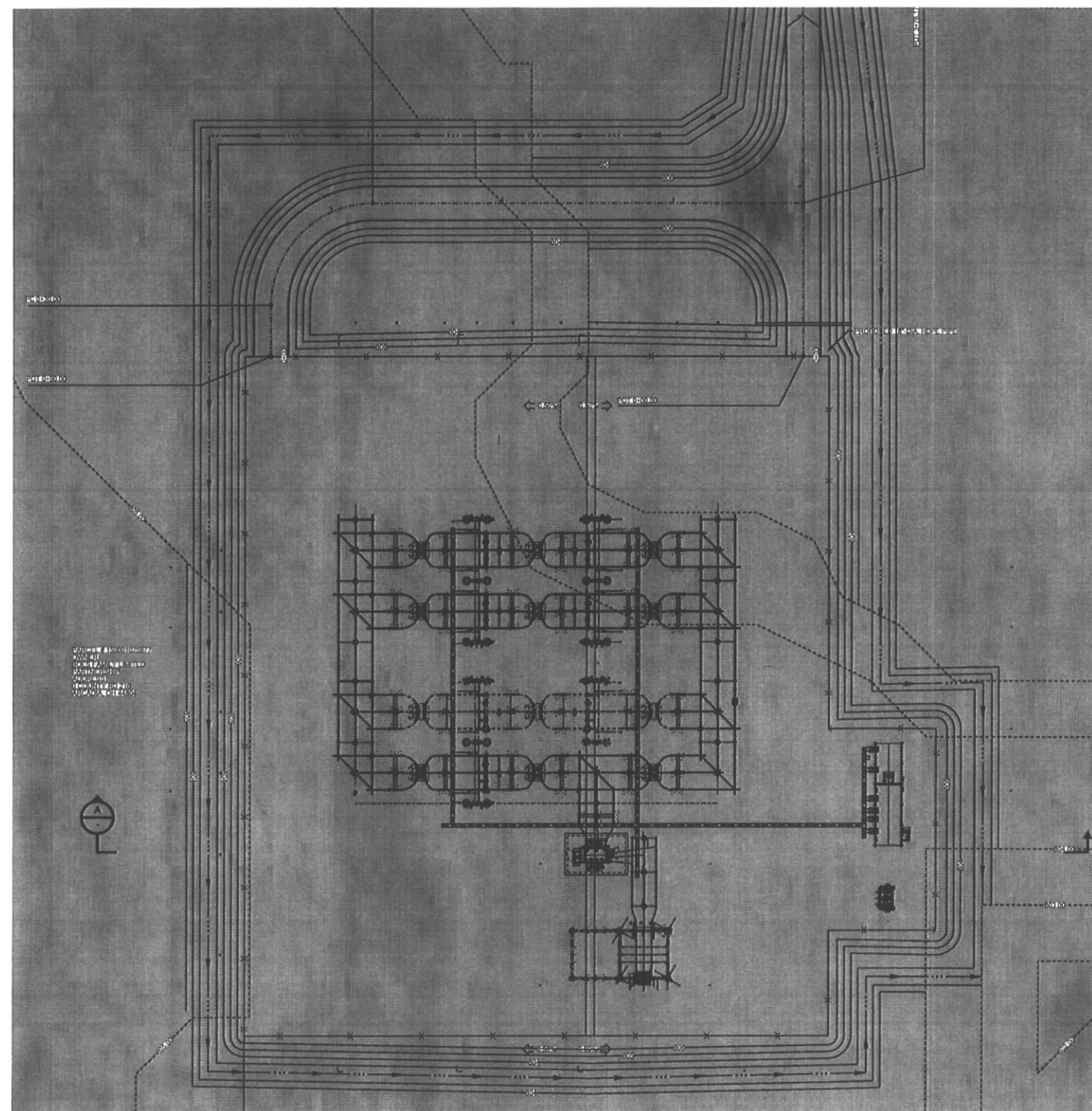
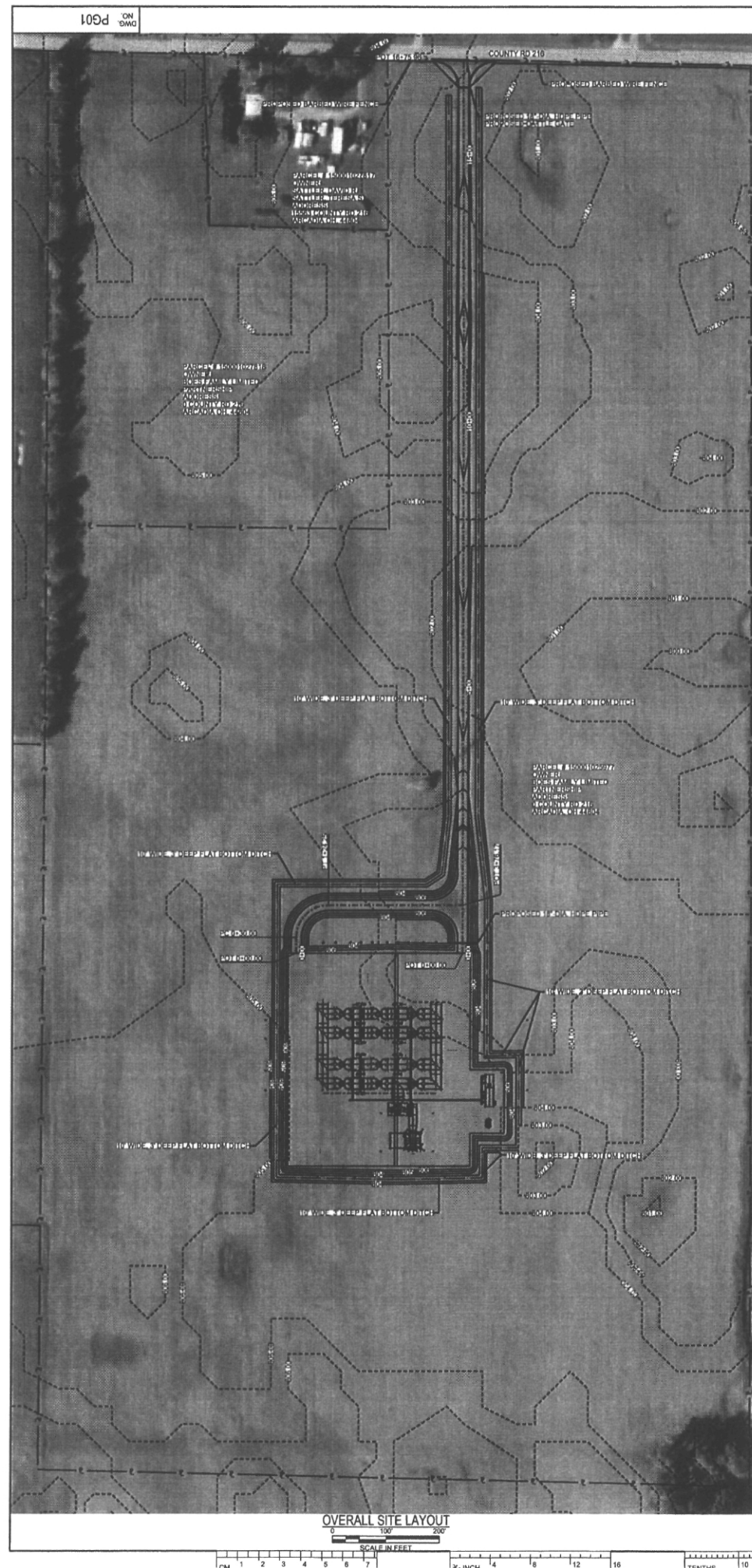


Findlay Area Improvements
Ebersole Station

FIGURE 04-1
CONSTRAINTS MAP

JOB NO. 14951096





GENERAL NOTES

1. PROPERTY LINE LOCATIONS AND EXISTING CONTOURS ARE APPROXIMATE AND ARE SHOWN FOR INFORMATION ONLY.
2. PARCEL INFORMATION WERE GATHERED FROM HTTP://REGIS.CO.HANDCOOK.OH.US.

ENGINEERING
LICENSE #1557

Burns &
McDonnell
1 JUL 1990

FOR REVIEW

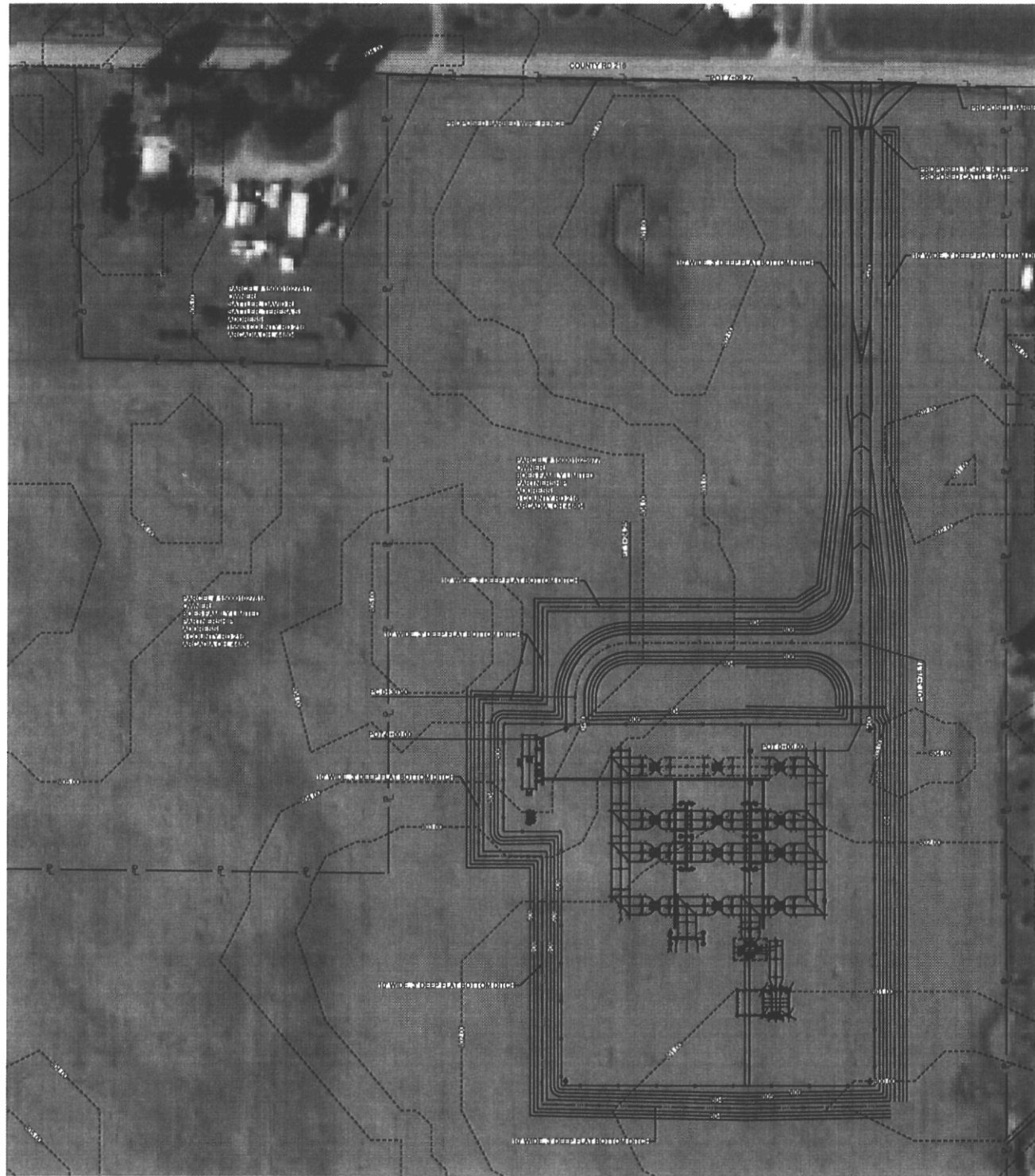
FIGURE 04-2

STATION LAYOUT AND PRELIMINARY GRADING
PREFERRED SITE

SCALE: NONE	DR: M. ALBA	ENG: M. ALBA	CH: S. EL-HALLAL
APP: 41841533-01	APP: 41841533-01	APP: 41841533-01	APP: 41841533-01
1 RIVERSIDE PLAZA COLUMBUS, OH 43215	DWG NO: PG01	DATE: 06/08/2013	DATE: 06/08/2013

HTT://NAEP/ENR/CIVIL/Grading/PG01.dgn

STATION ENGINEERING
6/10/2013 4:08:58 PM
PLOTTED BY: SUSERS ON
AEP G (30 X 40)

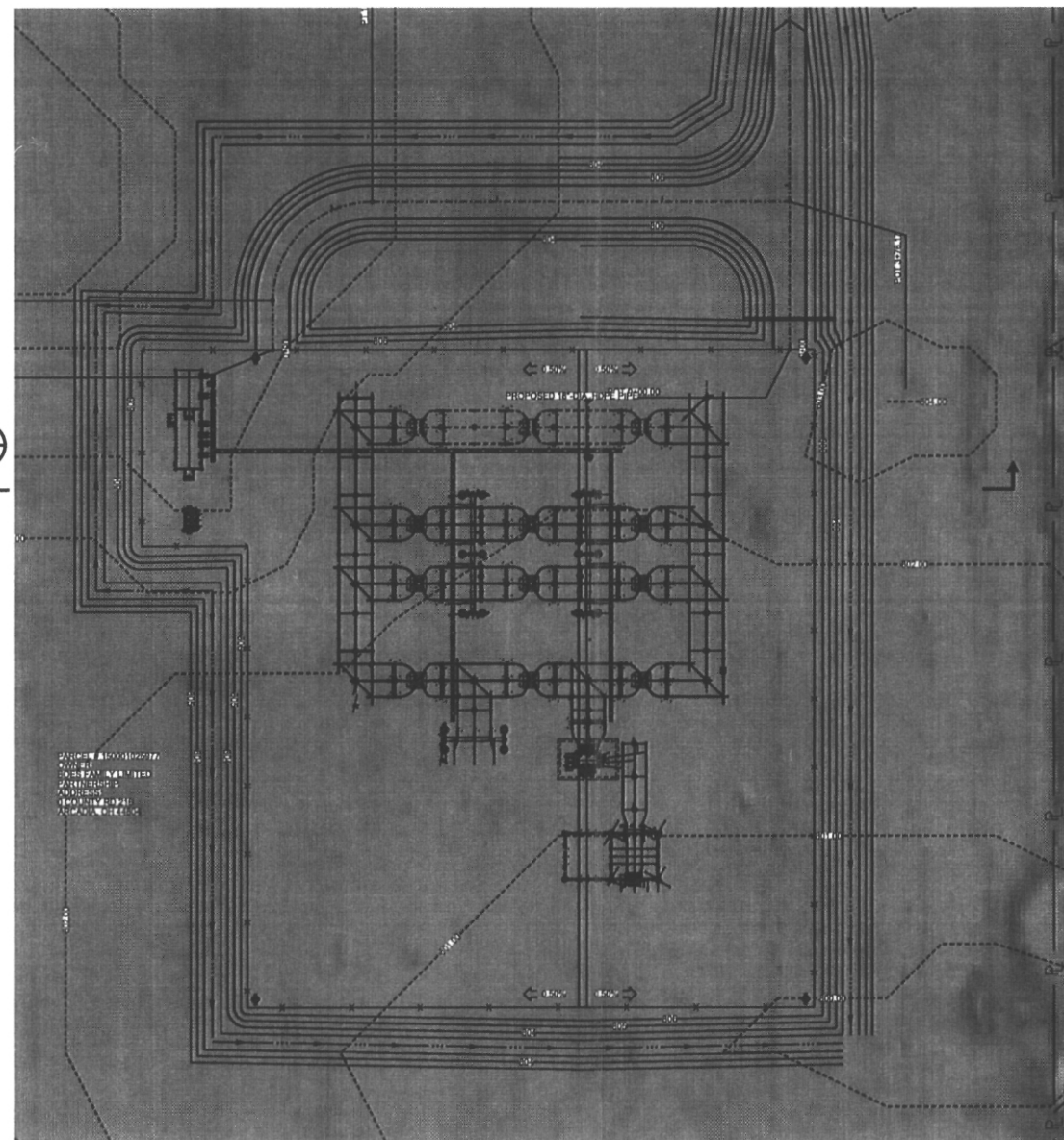


OVERALL SITE LAYOUT

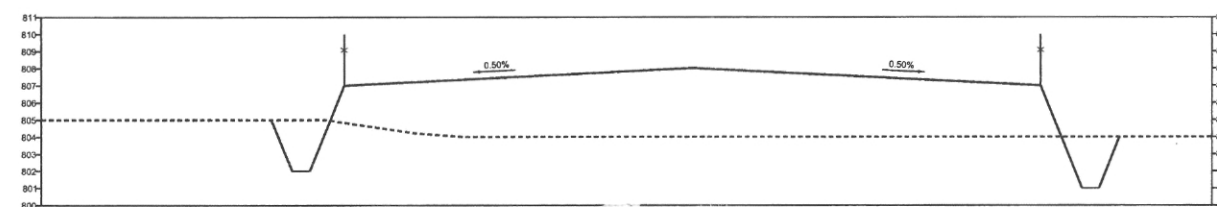


GENERAL NOTES

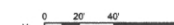
1. PROPERTY LINE LOCATIONS AND EXISTING CONTOURS ARE APPROXIMATE AND ARE SHOWN FOR INFORMATION ONLY.
2. PARCEL INFORMATION WERE GATHERED FROM HTTP://REGIS.CO.HANCOCK.OH.US



PROPOSED SUBSTATION LAYOUT



SECTION



FOR REVIEW

OLD DWG #:

STD DWG #:

FIGURE 04-3

STATION LAYOUT AND PRELIMINARY GRADING

ALTERNATE SITE

SCALE: NONE

DR: M. ALBA

ENG: M. ALBA

CH: S. EL-HALLAL

WOB: 41941535-C1

APPD: DATE: 06/08/2013

1 RIVERSIDE PLAZA

COLUMBUS, OH 43215

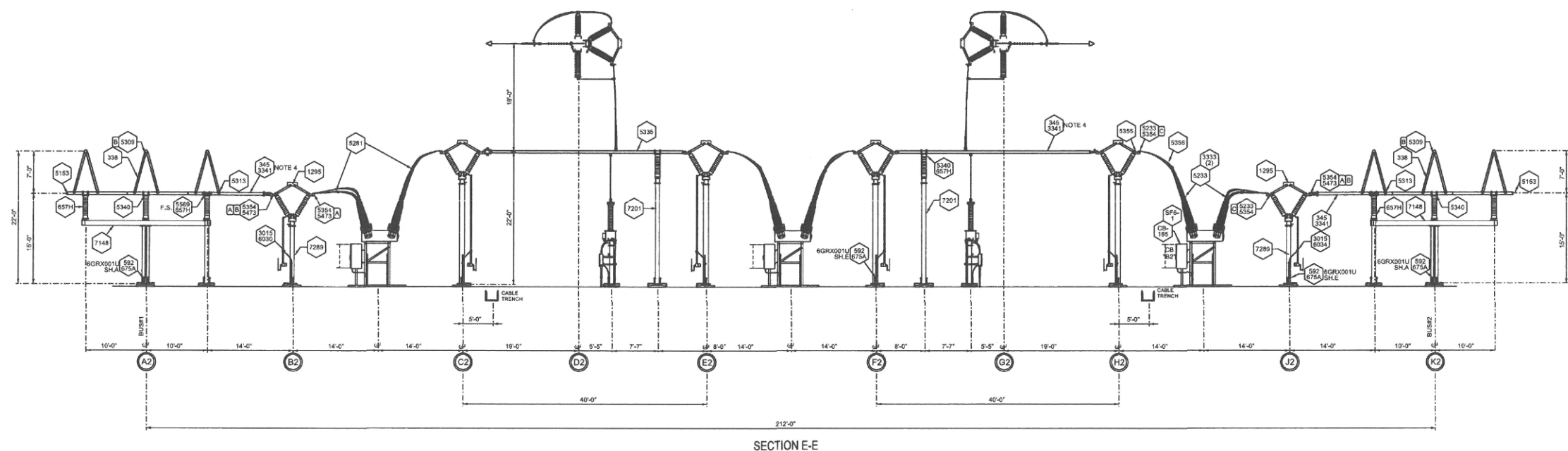
DWG NO: PG02

REV A

NO DATE REVISION DESCRIPTION APPR DR ENG CK ISSUE#

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SHLB
B

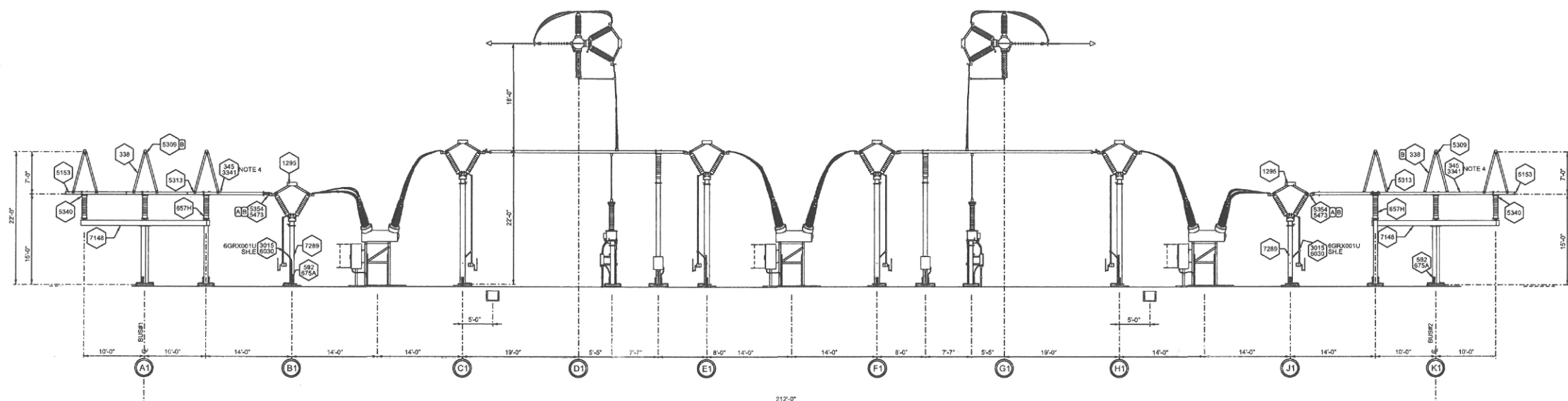


SECTION E-E

SHA
A
$$\frac{SH.E}{G}$$
$$\frac{H}{\lambda}$$
$$\frac{SH.F}{T}$$
SH.A
A

SH.B
B

SH.B
B

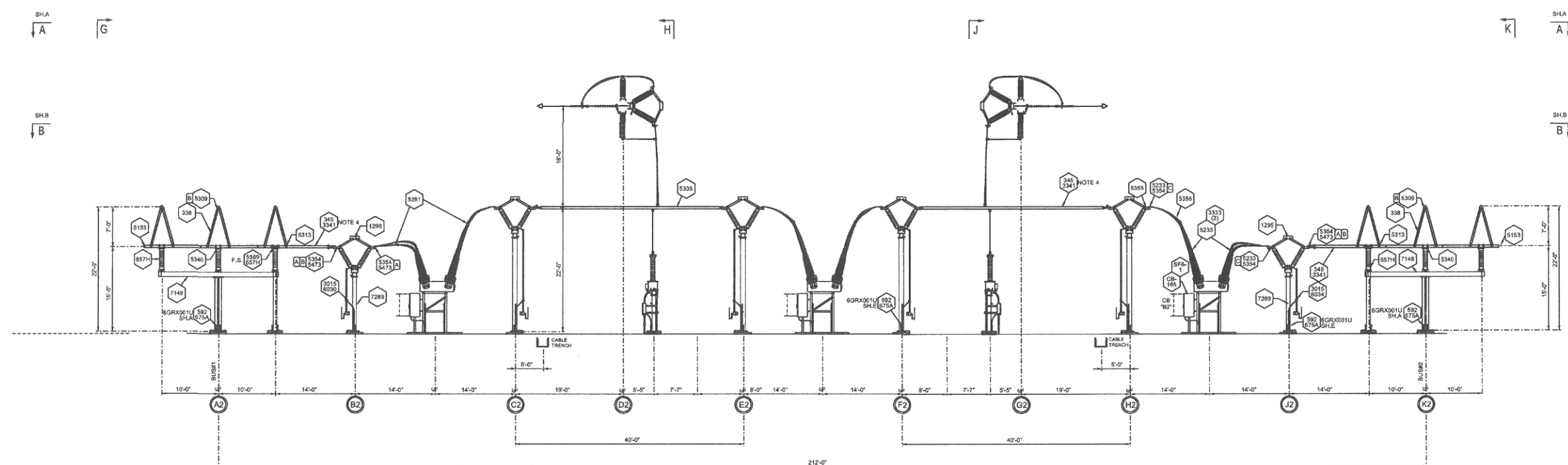


SECTION F-F

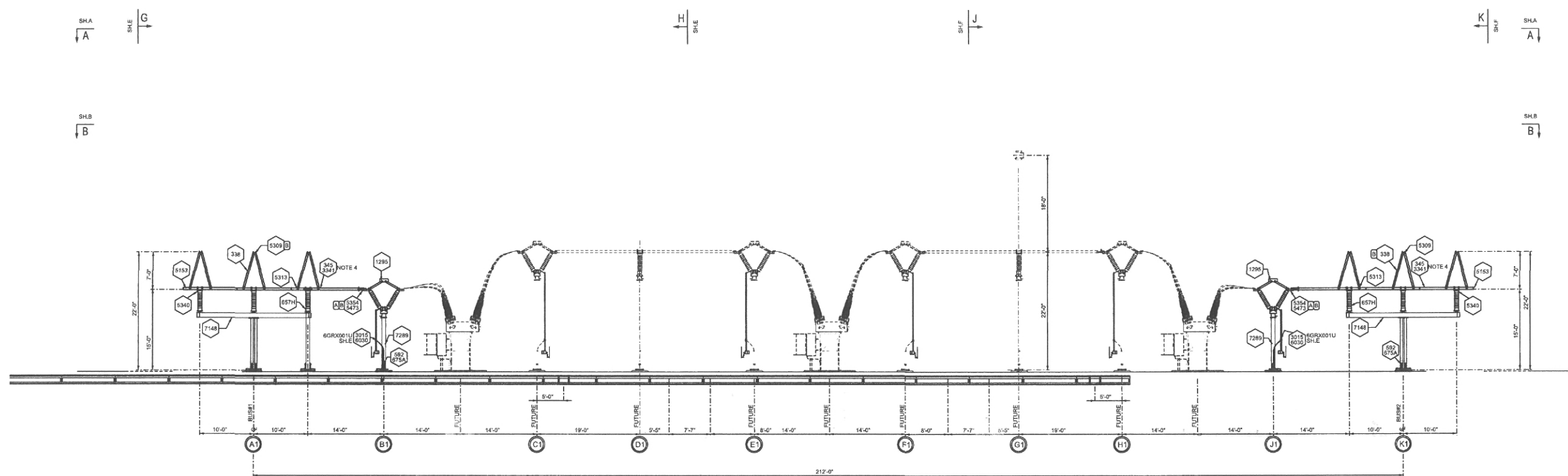
PREFERRED

NO	DATE	REVISION DESCRIPTION	APPR	DR	ENG	CK	ISSUED
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SECTION E-E



SECTION F-F

ALTERNATE

NO	DATE	REVISION DESCRIPTION	APPR	DR	ENG	CK	ISSUE
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RELEASED FOR REVIEW ONLY BY
JEREMY LUMKIN, P.E. #27412
ON ~~DATE~~
AND SHALL NOT BE USED FOR
PERMIT OR CONSTRUCTION
PURPOSES

ENGINEERING
LICENSE #1557


**Burns &
McDonnell**
SINCE 1899

FOR REVIEW

OLD DWG #: STD DWG #: 2EAU002U SH.D REV. 4

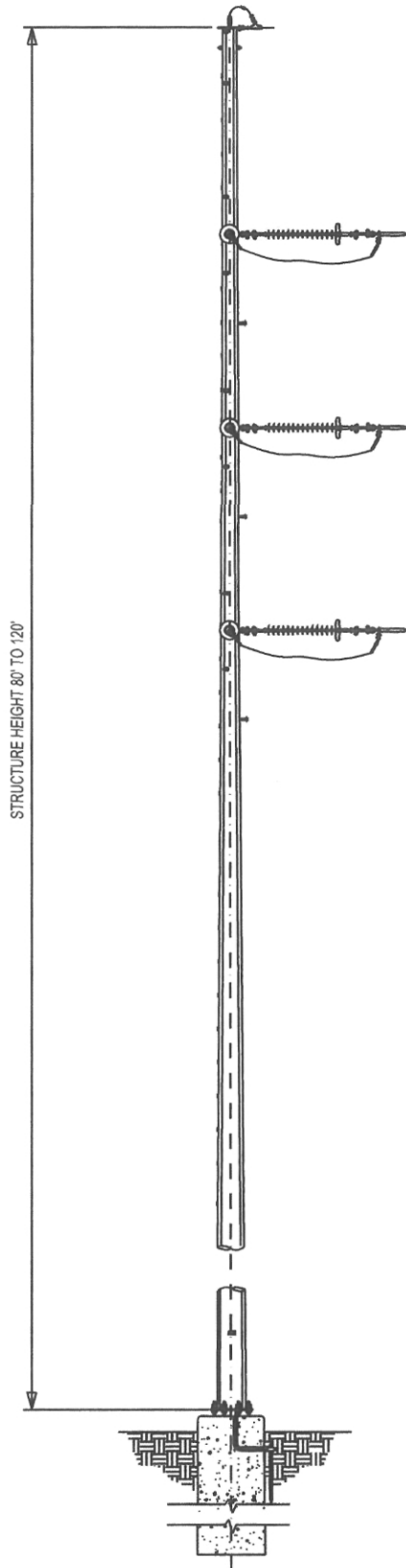
OHIO TRANSMISSION COMPANY
EBERSOLE STATION

138KV/40KA, 550KV BIL, 90-135MPH WIND 3000A
ELECTRICAL ASSEMBLY
SECTION VIEWS E-E AND F-F BREAKER AND ONE HALF

SCALE: 1/8" = 1'-0"	DR: A. KRUEG	ENG: S. EL-HALLAL	CH: J. POOLE
 AMERICAN ELECTRIC	WO#: 419XXX-C1	APPD: J. LUMPKIN	DATE: 07/17/13
1 RIVERSIDE PLAZA		FIGURE 04-5	

POWER	COLUMBUS, OH 43215	MOORE 310	V V
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...VCADDISUBOPTION2/E1204.d



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ENGR: XXX XX/XX/XXXX

CHECKED: XXX

CHECKED: MWE 05/31/2013

DATE: XX/XX/XXXX



**EBERSOLE STATION
138kV TRANSMISSION
DEADEND STRUCTURE**

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR INFORMATION	CDW	05/31/13

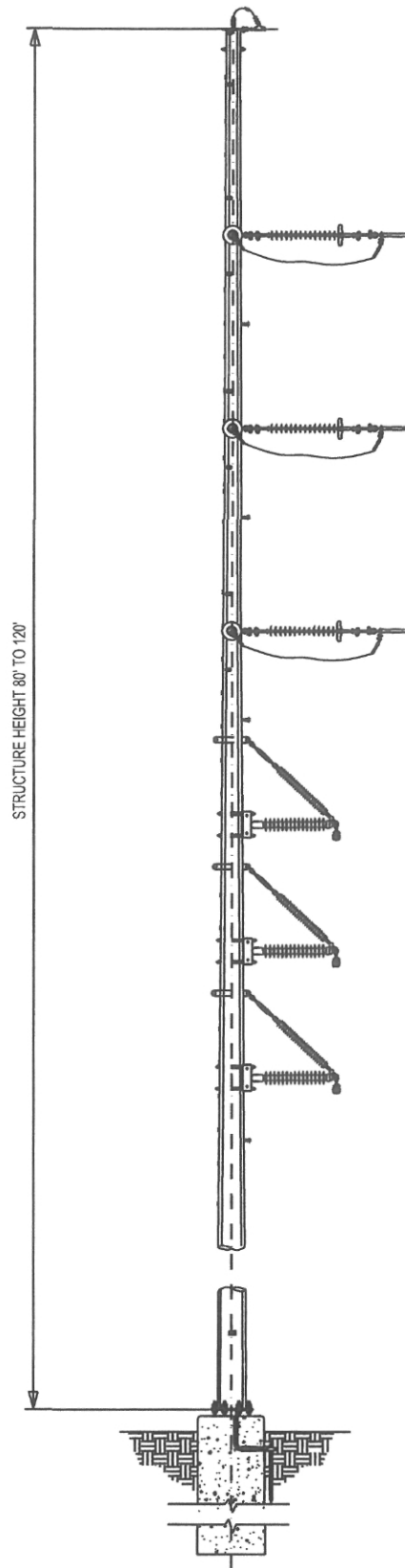
APPROVED: XXX DATE: XX/XX/XXXX

FIGURE 04-6

REV. No. **A**

CAD FILE PATH

PLOTTED DD-MMM-YYYY AT HH:MM



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ENGR: XXX XX/XX/XXXX

CHECKED: XXX

CHECKED: MWE 07/03/2013

DATE: XX/XX/XXXX



**EBERSOLE STATION
138kV TRANSMISSION
DEADEND STRUCTURE**

FIGURE 04-7

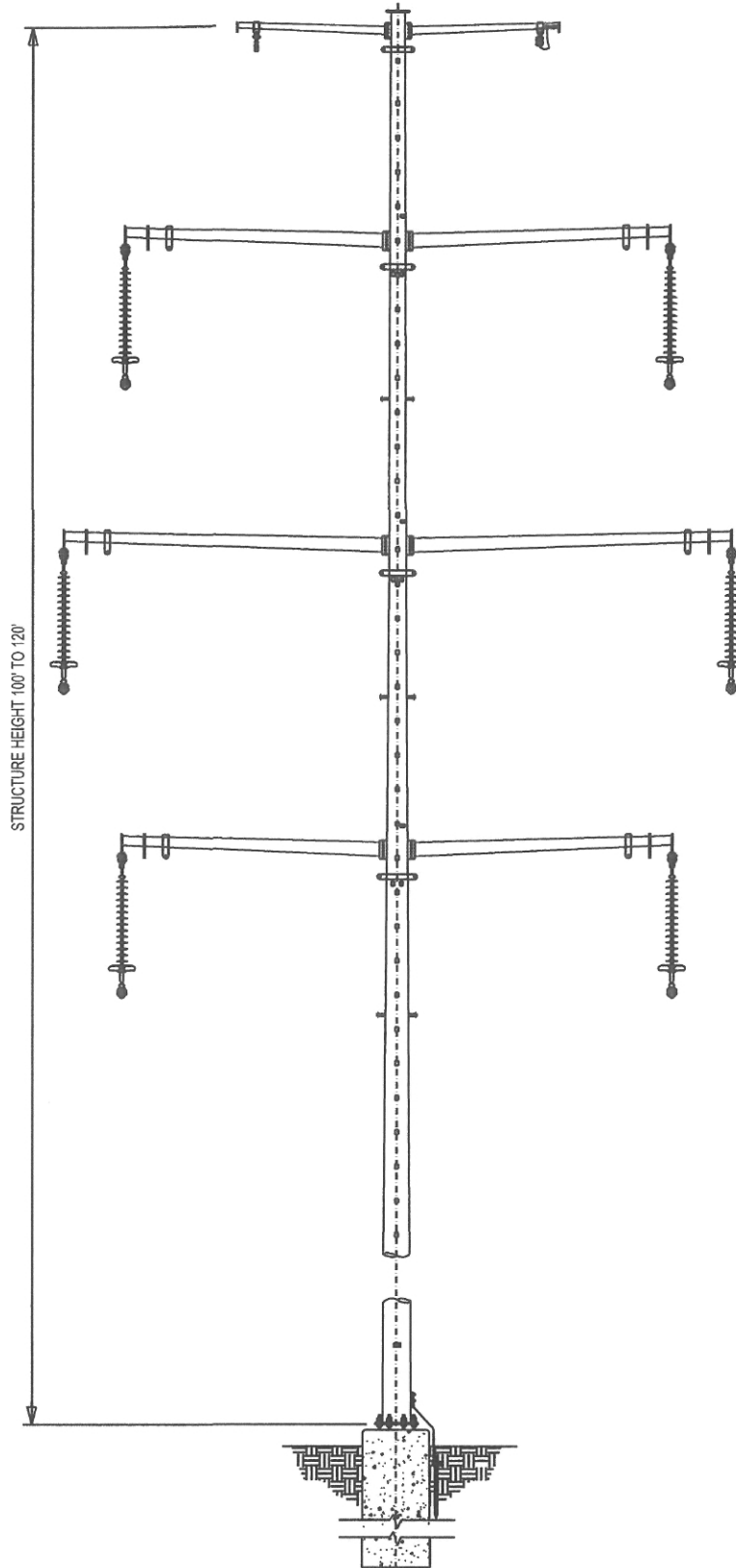
REV. No. A

APPROVED: XXX DATE: XX/XX/XXXX

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR INFORMATION	CDW	07/03/13

CAD FILE PATH

PLOTTED DO-MMM-YYYY AT HH:MM



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ENGR: XXX XX/XX/XXXX

CHECKED: XXX

CHECKED: MWE 07/03/2013

DATE: XX/XX/XXXX



**EBERSOLE STATION
138kV TRANSMISSION
TANGENT STRUCTURE**

FIGURE 04-8

REV.
No. **A**

APPROVED: XXX DATE: XX/XX/XXXX

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR INFORMATION	CDW	07/03/13

CAD FILE PATH

PLOTTED DD-MMM-YYYY AT HH:MM



BATTERY: BAE 150AH 125VDC
CHARGER: 25A BAE/HINDLE POWER, QTY: 2



4906-15-05
Financial Data

4906-15-05 FINANCIAL DATA**SECTION SUMMARY**

This section of the application provides information on the current and proposed ownership status of the proposed transmission line, and estimated costs for the proposed Project.

(A) OWNERSHIP

AEP will construct, own, operate, and maintain the proposed Ebersole Station. AEP will also own the transmission line facilities associated with the substation. These transmission lines include interconnections from the existing Fostoria-East Lima 138 kV line and Findlay Center 138 kV Extension to Ebersole Station.

(B) ELECTRIC CAPITAL COST

Estimates of applicable intangible and capital costs for both the Preferred and Alternate Sites of the Ebersole Station are identified in Table 05-1.

**TABLE 05-1
ESTIMATES OF APPLICABLE INTANGIBLE AND CAPITAL COSTS
FOR BOTH THE PREFERRED AND ALTERNATE SITES**

FERC Account Number	Description	Preferred Site	Alternate Site
350	Land and Land Rights	\$2,000,000	\$2,100,000
352	Structures & Improvement	\$2,600,000	\$2,700,000
353	Substation Equipment	\$5,150,000	\$5,250,000
354	Towers & Fixtures	Non Applicable	Non Applicable
355	Poles & Fixtures	\$2,327,000	\$1,396,000
356	Overhead Conductors & Devices	\$181,000	\$109,000
357	Underground Conductors & Devices	Not Applicable	Not Applicable
358	Underground-to-overhead Conversion Equipment	Not Applicable	Not Applicable
359	Right-of-way Clearing, Roads, Trails or Other Access	100,000	\$100,000
	TOTAL	\$12,358,000	\$11,655,000

(C) GAS CAPITAL COST

The Applicants do not propose to construct, own or operate any natural gas transmission lines or facilities as part of or in conjunction with the proposed Project. This section is not applicable.

4906-15-06
Socioeconomic & Land Use Analysis

4906-15-06 SOCIOECONOMIC AND LAND USE IMPACT ANALYSIS

This section of the Application provides data on land use within 1,000 feet of the proposed Preferred and Alternate Sites for the Project, including data collected from literature searches and on-site investigations. This section also provides descriptions of the anticipated impacts of constructing the Project, the public interaction program for the Project, information on health, safety and aesthetic aspects of the Project, and data on noise emissions associated with constructing and operating the Project.

(A) SOCIOECONOMIC CHARACTERISTICS

A study of the general socioeconomic characteristics of the Project area was conducted as part of this Application. The study is summarized below and was based on review of available U. S. Census Bureau data and materials available from state and local governmental agencies.

The Preferred and Alternate Sites, as well as areas within 1,000 feet, are located within an unincorporated portion of Cass Township in Hancock County. The socioeconomic characteristics are summarized in the following discussion.

The U.S. Census Bureau estimated that the population of Hancock County in 2010 was 74,782, a 4.9 percent increase since the 2000 Census and a 14.1 percent increase since the 1990 Census. Cass Township saw a 9.6 percent decrease from 2000 to 2010 and a 2.9 percent decrease from 1990 to 2010. The 2010 Census estimated the average household in Hancock County consisted of 2.40 persons, and the 2010 Census estimated median household income was \$49,888.

Based on review of aerial photography, Hancock County Auditor data, and field reconnaissance, no residences were identified within 100 feet of either site. Table 01-1 provides the number of residences identified and section 4906-15-06(B)(3)(a) below provides further details regarding residences within 1,000 feet of the Preferred and Alternate Sites. Construction at the Preferred Site or Alternate Site will not require the removal of any residential structures, and no individuals are expected to be required to relocate. It is not expected that construction, operation, or maintenance of the proposed substation at either candidate site will broadly affect the general socioeconomic characteristics of the Project area.

Table 06-1 contains summary information regarding population estimates for the Project area.

**TABLE 06-1
STUDY AREA DEMOGRAPHICS
OF THE PREFERRED AND ALTERNATE SITES**

Government Unit	1990 Census	2000 Census	2010 Census
Hancock County, Ohio	65,536	71,295	74,782
Cass Township	1,023	1,098	993

Sources U.S. Bureau of the Census, 1990 Census of Population and Housing
 U.S. Census Bureau, Census 2000 and 2010 Summary File 1

(B) SITE ALIGNMENTS AND LAND USE

(1) Route Alignments

Ebersole Station will be energized by looping the existing and adjacent Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension through the station, as shown on Figures 01-1 (Preferred Site), 01-2 (Alternate Site), and 04-1. These lines intersect approximately 250 feet west of the AEP-optional property. The associated interconnection to the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension would extend predominantly across the overall property. The new lines will require new right-of-way for approximately 250 feet across adjacent properties to the west. The new interconnections to the station are considered associated facilities within this Application.

(2) Substations

A map at 1:24,000-scale, including the surrounding 1,000 feet from the Preferred and Alternate Sites, is presented as Figure 04-1.

(a) Preferred Site: The Preferred Site of Ebersole Station is located on the southern portion of an approximately 67-acre property situated to the south of County Road 216. AEP holds an option to purchase this predominantly agricultural property. Proposed access to the substation will be from County Road 216 to the north via a permanent access drive.

(b) Alternate Site: The Alternate Site is located on the northern portion of the same approximately 67-acre property optioned by AEP. A similar but slightly shorter access road from County Road 216 is proposed.

(3) General Land Use

(a) **Residential:** The immediate vicinity surrounding the Preferred and Alternate Sites is a rural area. Residential lots are scattered along local roads amongst predominantly agricultural land. No residences were identified within 100 feet of either site. Table 01-1 provides the number of residences identified within 1,000 feet of the Preferred and Alternate Sites.

Preferred Site: No residences were identified within 1,000 feet of the Preferred Site fence line. The closest residence to the fence line is approximately 1,100 feet to the northeast. Eleven residences were identified within 1,000 feet of the associated 138 kV interconnections of the Preferred Site, all of which are also within 1,000 feet of existing transmission lines. None of the eleven residences identified within 1,000 feet of the Preferred Site transmission interconnections will be closer to electric transmission lines than they are currently. Eight residences were identified within 1,000 feet of the proposed access road, three of which are also within 1,000 feet of the transmission line interconnections. The closest residence to the Preferred Site footprint is approximately 150 feet northwest of the end of the access road.

Alternate Site: Seven residences were identified within 1,000 feet of the fenced substation area of the Alternate Site, the closest of which is approximately 220 feet to the northeast. Thirteen residences were identified within 1,000 feet of the associated interconnections, the closest of which is approximately 160 feet away and the same as the closest one to the fence line. This residence would be approximately 200 feet closer to one of the proposed interconnections than it is to the existing transmission lines. Eight residences are within 1,000 feet of the proposed access road, seven of which are also within 1,000 feet of the station fence line.

(b) **Commercial:** No commercial facilities were identified within 1,000 feet of the Preferred or Alternate Sites.

(c) **Industrial:** No industrial facilities were identified within 1,000 feet of the Preferred or Alternate Sites.

(d) **Cultural:** Data for known cultural resource landmarks were obtained from the Ohio Historic Preservation Office's (OHPO) Online Mapping System. No previously recorded archaeological sites, National Register of Historic Places (NRHP) structures or districts, or Ohio Historic Inventory (OHI) structures were identified within 1,000 feet of the Preferred or Alternate Sites or interconnections.

(e) **Agricultural:**

The proposed fenced area of the Ebersole Station and interconnections at the Preferred and Alternate Sites and the overall properties are agricultural land used most recently for row crops. The majority of properties within 1,000 feet of the sites are also agricultural.

(f) **Recreational:** No recreational areas such as parks, preserves, and athletic fields, were identified within 1,000 feet of the Preferred or Alternate Sites or interconnections

(g) **Institutional:** No schools, churches, hospitals, or other institutional land uses were identified within 1,000 feet of the Preferred or Alternate Sites or interconnections.

(4) **Transportation Corridors**

No interstate, U.S., or state highways, or railroads are located within 1,000 feet of the Preferred and Alternate Sites or associated 138 kV interconnections. State Route 12 is located approximately 1.5 miles to the southeast and Interstate 75 is located approximately four miles to the west. County Road 216 is adjacent to the north of the AEP-optional property that includes the Preferred and Alternate Sites.

(5) **Existing Utility Corridors**

AEP's Fostoria-East Lima 138 kV line and Findlay Center 138 kV Extension are located adjacent or nearly adjacent to the Preferred and Alternate Sites, as shown on Figure 04-1. A North Coast Gas Transmission natural gas pipeline parallels the Fostoria-East Lima 138 kV line nearly adjacent to the Preferred and Alternate Sites. No other major utility corridors were identified within one mile of the sites.

(6) **Noise Sensitive Areas**

Noise sensitive areas in the rural Project vicinity are limited to scattered residences. An assessment of noise impact during construction and operation of the station is provided in Section 4906-15-06 (G).

Noise sensitive areas identified within 1,000 feet of the Preferred Site include the residences described in section 4906-15-06(B)(3)(a). No noise sensitive areas were identified within 1,000 feet of the Preferred Site substation fence line.

(7) **Agricultural Land (Agricultural District Land)**

URS contacted the Hancock County Auditor to obtain information on agricultural district land. Two agricultural district land parcels were identified within 1,000 feet of the Preferred and Alternate Sites, including the overall AEP-optional property. The data was obtained from the Hancock County Auditor's website on June 17, 2013, which fulfills the requirement of OAC 4906-15-06 (B)(7) requiring this data to be collected not more than 60 days prior to submittal.

(C) LAND USE IMPACTS OF THE PROPOSED PROJECT**(1) Number of Residential Structures**

No residences were identified within 100 feet of either site. Table 01-1 provides the number of residences identified within 1,000 feet of the Preferred and Alternate Sites.

Preferred Site: No residences were identified within 1,000 feet of the Preferred Site fence line. The closest residence to the fence line is approximately 1,100 feet to the northeast. Eleven residences were identified within 1,000 feet of the associated 138 kV interconnections of the Preferred Site, all of which are also within 1,000 feet of existing transmission lines. None of the eleven residences identified within 1,000 feet of the Preferred Site transmission interconnections will be closer to electric transmission lines than they are currently. Eight residences were identified within 1,000 feet of the proposed access road, three of which are also within 1,000 feet of the transmission line interconnections. The closest residence to the Preferred Site footprint is approximately 150 feet northwest of the end of the access road.

Alternate Site: Seven residences were identified within 1,000 feet of the fenced substation area of the Alternate Site, the closest of which is approximately 220 feet to the northeast. Thirteen residences were identified within 1,000 feet of the associated interconnections, the closest of which is approximately 160 feet away and the same as the closest one to the fence line. This residence would be approximately 200 feet closer to one of the proposed interconnections than it is to the existing transmission lines. Eight residences are within 1,000 feet of the proposed access road, seven of which are also within 1,000 feet of the station fence line.

(2) Impact of Construction**(a) Residential:**

No residences are located on the Preferred or Alternate Sites. No residences will be removed in order to construct the proposed Project on either site. It is expected that some minimal incremental increase in noise will be audible during some portions of construction of the substation. However, the current ambient noise levels associated with local roads and the distance to the residences are likely to mitigate overall noise impacts during construction.

(b) Commercial: No adverse impacts to commercial land uses are anticipated as a result of the Project.

(c) Industrial: No adverse impacts to industrial land uses are anticipated as a result of the Project.

(d) Cultural: A Phase I cultural resources survey was conducted by Weller & Associates on behalf of AEP, and submitted to OPSB Staff under separate cover. No significant cultural resources were identified by Weller & Associates and no further investigation was

recommended. Impacts to cultural land use areas associated with construction of the proposed Project are not anticipated at this time.

(e) **Agricultural:** The overall property of the Preferred and Alternate Sites is predominately an agricultural field. Approximately four acres of currently agricultural land would be affected on the Preferred or Alternate Site.

(f) **Recreational:** No adverse impacts to recreational land uses are anticipated as a result of the Project.

(g) **Institutional:** No adverse impacts to institutional land uses are anticipated as a result of the Project.

(3) Impact of Operation and Maintenance

(a) **Residential:** Operation and maintenance of the substation will have little impact on surrounding residences. Only a very slight increase in background noise from the substation equipment, if any, is likely during operation. However, the current ambient noise levels associated adjacent roads and distances to residences are expected to mitigate overall noise impacts during construction.

(b) **Commercial:** No impacts to commercial land uses are expected due to operation and maintenance of the substation.

(c) **Industrial:** Impacts to industrial land uses associated with operation and management of the proposed Project are not anticipated.

(d) **Cultural:** Impacts to cultural land use areas associated with operation and maintenance of the proposed Project are not anticipated.

(e) **Agricultural:** Impacts to agricultural tracts from operation and maintenance of the facility are not anticipated.

(f) **Recreational:** No impacts to recreational land uses are expected due to operation and maintenance of the substation.

(g) **Institutional:** Impacts to institutional land uses from operation and maintenance of the facility are not anticipated.

(4) Mitigation Procedures

The potential for project related erosion and sedimentation will be mitigated with the development of a Storm Water Pollution Protection Plan for the Project, which will specify the use of silt fences or other appropriate best management erosion and sedimentation control

techniques, as required. After construction and final grading are complete, disturbed surface areas will be re-vegetated, as appropriate.

The substation site will be fenced and secure to prevent public entry. Appropriate warning signs, as required, will be posted.

(a) **Residential:** Noise impacts associated with construction, operation, and maintenance of the substation are expected to be minimal. Noise will be mitigated by constructing predominantly during daytime hours.

(b) **Commercial:** No commercial facilities are expected to be impacted by the Project. Therefore, no mitigation is proposed for commercial properties.

(c) **Industrial:** No industrial sites are expected to be impacted by the Project. Therefore, no mitigation is proposed for industrial properties.

(d) **Cultural:** Based on OHPO Online Mapping System, no previously recorded archaeological sites, NRHP structures or districts, or OHI structures were identified within 1,000 feet of the Preferred or Alternate Sites. A Phase I cultural resources survey was conducted by Weller & Associates on behalf of AEP, and submitted to OPSB Staff under separate cover. No significant cultural resources were identified by Weller & Associates and no further investigation was recommended. No mitigation of cultural resources is proposed at this time.

(e) **Agricultural:** After the initial conversion of agricultural land during construction, no additional agricultural land will be affected by the proposed Project. Therefore, no mitigation is proposed for agricultural land uses.

(f) **Recreational:** No recreational areas are expected to be impacted by the Project. Therefore, no mitigation is proposed for recreational areas.

(g) **Institutional:** No institutions are expected to be impacted by the Project. Therefore, no mitigation is proposed for institutional properties.

(D) PUBLIC INTERACTION INFORMATION

(1) Counties, Townships, Cities and Villages within 1,000 feet of the Site Alternatives

Jurisdictional areas within 1,000 feet of the Preferred and Alternate Sites and interconnections include Hancock County and Cass Township.

(2) Public Officials Contacted

AEP's project team has contacted several local officials to announce the Project and provide an opportunity to comment. Appendix 06-1 provides a list of the federal, state, and local public officials contacted, including their office addresses and office telephone numbers.

(3) Public Information Programs

To keep the public informed of the Ebersole Station Project, AEP created a public information program which included the following main elements:

1. On June 29, 2013, AEP issued a public notice regarding the Project. The public notice was published in the Findlay Courier. A copy of the public notice can be found in Appendix 06-3. Letters were also sent to adjacent property owners to announce the Project.
2. On July 11, 2013, a public information meeting was held at the Owens Community College in Findlay, Ohio. Two sites (blue and red) and corresponding transmission interconnections were presented, along with other Project details. Based on the sign-in sheet, 17 members of the public attended this meeting. Attendees received a project information folder, reviewed displays, and discussed the Project with AEP, OPSB Staff and URS representatives. The information folder contained a Project map, "Questions and Answers about Electric and Magnetic Fields" brochure, answers to frequently asked questions, a brief statement on Project need, and the siting process. Five completed comment cards were received at the Public Meeting. Copies of the handouts provided to the attendees and the sign-in sheet are included in Appendix 06-2.
3. AEP has information about this project on the website (www.aepohio.com/info/projects/MajorPowerLines/Ebersole.aspx). AEP also has provided a Project telephone number (1-877-215-9261) at which callers can record questions concerning the project. AEP will later respond to all recorded questions. Two public notices will be placed in the local newspapers after the application has been filed in accordance with OAC 4906-5-08.

(4) Liability Compensation

AEP's insurance program for construction and operation of the proposed facility is outlined below:

For bodily Injury and Property Damage, the Federal Insurance Company insures AEP for the first \$1,000,000 for each person or occurrence.

For Bodily Injury and Property Damage, AEP presently carries additional public liability insurance of \$649,000,000 as the result of any one occurrence or account of personal injury, property damage or advertising offense or combination thereof.

AEP is a self-insuring employer under the State of Ohio Worker's Compensation law. This insurance is renewed each year as required by the Industrial Commission of Ohio.

(5) Serving the Public Interest

The project will serve the public interest by helping to ensure that increased demands for electricity are met in the future and that existing and future electrical service reliability is enhanced throughout the project area and expanded region. A more detailed discussion of the need for this Project and how it will serve the public interest is included in Section 4906-02 of this Application.

(6) Tax Revenues

The Preferred and Alternate Sites are located within Hancock County and Cass Township. The local school district, park district, and public library will also receive tax revenue from the Project. AEP will pay property taxes on utility facilities in each jurisdiction. The approximate annual property taxes associated with both the Preferred and Alternate Sites over the first year after the Project is completed are \$436,000.

Based on the 2013 tax rates, the following is an estimated distribution of taxes by township and county:

<u>Hancock County</u>	<u>\$64,000</u>
Mental Health & Board of Development Disabilities	\$20,000
Mental Health & Retardation	\$16,000
General Fund	\$12,000
2007 Mental Health	\$11,000
2012 Senior Citizens	\$5,000
<u>Cass Township</u>	<u>\$26,000</u>
General Fund	\$13,000
Roads & Bridges	\$13,000
Van Buren Local School District	\$335,000
Hancock County Park District	\$7,000
Findlay-Hancock County Public Library	\$4,000
TOTAL	\$436,000

(7) Impact on Regional Development

This project will likely have a positive impact on regional development in the northwest Ohio area through increased reliability and availability of electric power to residential, commercial, institutional and industrial users throughout the region. This project should also have a positive impact on the neighboring electric utility systems. No negative impacts on regional development are foreseen for this project. A more detailed discussion of the need for this Project and how it will impact regional development is included in Section 4906-02 of this Application.

A review of the Hancock County Regional Planning Commission's website (www.hancockrpc.org) was conducted to investigate compatibility with comprehensive plans in the area of the Project. No proposed conflicting projects were identified in the immediate vicinity of the Preferred and Alternate Sites. Based on the Cass Township Zoning Resolution and corresponding zoning map,

dated 1987, the Preferred and Alternate Sites are within an area designated as A-1 Agricultural District.

(E) HEALTH AND SAFETY

(1) Compliance with Safety Regulations

The construction and operation of the Project will comply with the requirements specified in the North American Electric Reliability Corporation (NERC) mandatory Reliability Standards, the National Electrical Safety Code, the Public Utilities Commission of Ohio, and will meet all applicable safety standards established by the Occupational Safety and Health Administration (OSHA).

Safety is the highest priority for AEP. This priority of AEP towards employee and public safety is exemplified by Company policy as stated in the Company Safety Manual:

"The American Electric Power system holds in high regard the safety and health preservation of its employees. Accidents injure people, damage equipment, destroy materials, and cause needless personal suffering, inconvenience and expense. We believe, 'No operating condition or urgency of service can ever justify endangering the life of anyone.' " To this end, AEP will constantly work toward:

- The maintenance of safe and healthful working conditions.
- Consistent adherence to proper operating practices and procedures designed to prevent injuries and illnesses.
- Conscientious observance of governmental and company safety regulations.

AEP also administers a contractor safety program. Contractors working for AEP are required to maintain internal safety programs and to provide safety training.

(2) Electric and Magnetic Fields

The following calculations provide an approximation of the electric and magnetic fields (EMF) associated with the transmission line interconnections required to integrate the proposed Ebersole Station with AEP's existing electric transmission system.

(a) Calculated Electric and Magnetic Field Levels: Calculations are provided for the 138 kV and 34.5 kV extensions at selected locations representative of the single-circuit designs to be arranged into double and quadruple sets of adjacent lines, planned in the project. These locations are shown on Figure 06-1.

Line designs/arrangements planned in the project are shown in Figures 06-2 through 06-6. These drawings identify vertical and horizontal coordinates of all conductors, including shield

wires, pertinent to the loading conditions described below (note that only vertical coordinates corresponding to the winter normal conductor rating are shown in the last three drawings).

EMF levels are computed across the right-of-way of each set of line extensions at the point of minimum ground clearance, where EMF is the highest. Lower EMF levels are expected beyond the right-of-way edge. Since the double-line sets associated with the Preferred and Alternate plans are identical, EMF levels produced by these lines in the two plans would be the same. A separate EMF calculation is provided for the quadruple set of lines proposed in the Alternate Plan only.

Factors that affect EMF include the right-of-way width, operating voltage, current loading and direction, phase configuration, conductor height above ground, electrical unbalance, and other nearby objects. Line designs/arrangements used in this analysis are based on preliminary engineering layouts. They include a typical phase configuration (A-B-C, top-to-bottom), consistent with that of the existing facilities integrating the new Ebersole Station.

Nominal voltages and balanced conditions are assumed, with currents flowing in the direction expected during normal system operation. No trees, shrubs, buildings or other objects that can block EMF are assumed in proximity to the proposed lines. All calculations are made at the height of 3.28 feet (one meter) above ground using the Electric Power Research Institute (EPRI) EMF Workstation "Enviro" computer program.

Three loading levels corresponding to the following conditions are modeled: (i) normal maximum loading, (ii) emergency line loading, and (iii) winter normal conductor rating. Normal maximum loading represents the peak load expected to be carried when all system facilities are in service; daily/hourly load levels fluctuate below this loading. Emergency loading is the maximum current flow during unusual (contingency) conditions, which exist only for short periods of time.

Winter normal conductor rating represents the maximum current flow that a line, including its terminal equipment, can withstand during winter conditions. It is not anticipated that any facility studied would operate at its winter normal rating in the foreseeable future.

Loading levels used for the EMF calculations are presented in Table 06-2. These levels are based on the 2015 projected system conditions.

**TABLE 06-2
PROJECTED LOADING LEVELS**

Line Extension/Bus Tie	Normal Maximum Load (A)	Emergency Load* (A)		Winter Normal Rating (A)
		1	2	
Preferred and Alternate Plans (Sets of 2 Adjacent Lines**)				
1. Ebersole-North Findlay 138 kV	197	288	182	879
2. Ebersole-New Liberty 138 kV	-61	37	-72	-791
3. Ebersole-Plaza Street 34.5 kV	304	419	307	1054
4. Ebersole-Findlay Center 138 kV	195	0	195	791
5. Ebersole-Fostoria 138 kV #1	198	367	0	879
6. Ebersole-Fostoria 138 kV #2	198	0	367	879
Supplement to Alternate Plan (Sets of 4 Adjacent Lines**)				
1. Ebersole-North Findlay 138 kV	197	182		879
2. Ebersole-New Liberty 138 kV	-61	-72		-791
3. Ebersole-Plaza Street 34.5 kV	304	307		1054
4. Ebersole-Findlay Center 138 kV	195	195		791

* Emergency load levels shown are based on two case-specific critical contingencies to maximize the flow on each mutually-coupled line. For the Alternate Plan supplement, only the most critical contingency overall is used.

** Multiple lines sharing a common right-of-way.

A tabulation of conductor minimum ground clearances and horizontal distances from the centerline of each outermost structure to right-of-way edge for the 138 kV and 34.5 kV sets of line extensions are shown in Table 06-3. All adjacently placed line extensions are separated from each other by a distance of 30 feet.

**TABLE 06-3
GROUND CLEARANCES AND RIGHT-OF-WAY EDGE DISTANCES**

Line	Phase Conductor (kCM ACSR)	Ground Clearance*		Right-of-way**
		A (Feet)	B (Feet)	Center-to-edge (Feet)
138 kV Line (Preferred & Alternate Plans)	1-795	30	23	60
34.5 kV Line (Preferred Plan)	1-795	28	21	60
34.5 kV Line (Alternate Plan)	1-795	30	23	60

* Minimum ground clearance: A – normal maximum and emergency load; B – winter normal rating.

** Distance from the centerline of outermost structure to right-of-way edge.

The calculated electric and magnetic fields are summarized in Table 06-4. Typical cross section profiles of the calculated EMF levels at normal maximum loading conditions are illustrated in Figures 06-7 through 06-10.

TABLE 06-4 EMF CALCULATIONS					
Line Extension	Electric Field (kV/m)*	Magnetic Field (mG)*			
		Normal Maximum Load	Emergency Load**		Winter Normal Rating
			1	2	
Preferred and Alternate Plans					
1. Ebersole-North Findlay 138 kV	0.1/1.7/	4/18/	7/28/	3/17/	13/157/
2. Ebersole-New Liberty 138 kV	/1.7/0.1	/18/1	/28/4	/17/1	/157/10
3. Ebersole-Plaza Street 34.5 kV	0.1/1.3/	7/28/	7/32/	7/28/	28/151/
4. Ebersole-Findlay Center 138 kV	/1.3/0.0	/28/7	/32/3	/28/7	/151/29
5. Ebersole-Fostoria 138 kV #1	0.1/1.7/	7/23/	9/34/	5/34/	34/144/
6. Ebersole-Fostoria 138 kV #2	/1.7/0.1	/23/7	/34/5	/34/9	/144/34
Supplement to Alternate Plan					
1. Ebersole-North Findlay 138 kV	0.1/1.8/	7/30/	7/30/		24/178/
2. Ebersole-New Liberty 138 kV	/1.8/	/30/	/30/		/178/
3. Ebersole-Plaza Street 34.5 kV	/1.8/	/30/	/30/		/178/
4. Ebersole-Findlay Center 138 kV	/1.8/0.1	/30/9	/30/9		/178/32

* EMF levels (left ROW edge/maximum/right ROW edge) calculated one meter above ground assuming balanced currents at nominal voltages. Electric fields reflect normal and emergency operations; lower electric fields are expected during emergency conditions when one mutually-coupled line is out of service (refer to Table 06-2).

** Corresponds to contingency flows producing highest ground-level magnetic fields.

(b) Current State of EMF Knowledge: Electric and magnetic fields occur naturally in the environment. An electric field is present between the earth and its atmosphere, and can discharge as lightning during thunderstorms. The earth also has a magnetic field, which provides an operating basis for the magnetic compass. EMF exists wherever there is a flow of electricity, including electrical appliances and power equipment.

Electric fields are produced by voltage or electric charge. A lamp cord that is plugged in produces an electric field even if the lamp is turned off. These fields commonly are measured in kilovolts per meter (kV/m). Higher voltages result in greater electric fields. Magnetic fields are created by the flow of current in a wire. As current increases, the magnetic field strength also increases. These fields are measured in units known as gauss, or milligauss (mG).

Electric fields are blocked by trees, shrubs, buildings and other objects. Magnetic fields are not easily blocked and can pass through most objects. The strength of these fields decreases rapidly with distance from the source.

EMF associated with power lines and household appliances oscillate at the power frequency – 60 Hz in the U.S. When people are exposed to these fields, small electric currents are produced in their bodies. These currents are weaker than natural electric currents in the heart and nervous system.

Possible health effects from exposure to EMF have been studied for several decades. Initial research, focused on electric fields, found no evidence of biologic changes that could lead to adverse health effects. Subsequently, a large number of epidemiologic studies examined the possible role of magnetic fields in the development of cancer and other diseases in adults and children. While some studies have suggested an association between magnetic fields and certain types of cancer, researchers have been unable to consistently replicate those results in other studies. Similarly, inconclusive or inconsistent results have been reported in laboratory studies of animals exposed to magnetic fields that are representative of common human exposures. A summary of such exposures, found in residential settings, is provided in Table 06-5.

As part of the National Energy Policy Act of 1992, the U.S. Congress enacted the Electric and Magnetic Fields Research and Public Information Dissemination (EMF RAPID) program. The National Institute of Environmental Health Sciences (NIEHS) was charged with overseeing the health research and conducting an EMF risk evaluation. In its final report to Congress, issued in 1999, NIEHS concluded that power-frequency “EMF exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard.” Nonetheless, the report stated that “this finding is insufficient to warrant aggressive regulatory concern.” [2]

In 2001, the Standing Committee on Epidemiology of International Commission on Non-Ionizing Radiation Protection (ICNIRP) wrote in its review of the epidemiologic literature on EMF and health that “given the methodological uncertainties and in many cases inconsistencies of the existing epidemiologic literature, there is no chronic disease outcome for which an etiological [causal] relation to EMF exposure can be regarded as established.” [3]

TABLE 06-5
MAGNETIC FIELDS FROM HOUSEHOLD ELECTRICAL APPLIANCES AND DEVICES

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2" (0.1 feet)	12" (1.0 feet)	User Distance
AC Adapters	3	1.4 - 863	0 - 7.5	0 - 0.8
Blood Pressure Monitors	4	4.2 - 39.6	0 - 0.3	0 - 0.2
Bluetooth Headsets	3	0	0	0
Coffee Grinders	3	60.9 - 779	0.3 - 6.5	0.8 - 40.9
Compact Fluorescent Bulbs	15	0 - 32.8	0 - 0.1	0 - 0.6
Compact Fluorescent Bulb Ballast	1	8.5 - 23.5'	0 - 0.1'	0 - 0.1'
Computers, Desktop	3	3.8 - 68.9	0 - 1.1	0.1 - 0.5
Computers, Laptop	4	0 - 5.1	0	0 - 0.1
Digital Cameras	3	0	0	0
Digital Photo Frames	5	0	0	0
Digital Video Recorders	4	0 - 29.6	0 - 0.2	0
Dimmer Switches	4	11.5 - 32.1	0 - 0.8	0 - 0.8
DVD Players	5	0 - 28.9	0 - 0.5	0
Electric Lawn Mower	1	1939	156	14.1
Electric Leaf Blowers	4	272 - 4642	17.1 - 155	28.3 - 61.5
Electric Toothbrushes	5	3.6 - 742	0 - 4.8	3.6 - 742
Electric Toothbrush Chargers	5	0 - 4.2	0	0
External Hard Drives	4	0.6 - 1.7	0	0
Gaming Consoles	10	0 - 215	0 - 0.5	0 - 0.6
GPS, Handheld	5	0 - 0.1	0	0
Hobby Tools	2	126 - 438	1.4 - 2.4	1.4 - 438
Hot Glue Guns	3	0 - 0.9	0	0
LCD Computer Monitors	4	0 - 4.5	0	0
LCD Televisions	4	1.1 - 3.9	0 - 2.5	0 - 0.6
Massagers/Massage Chairs	3	81.9 - 500	0.6 - 2.3	21.4 - 500
MP3 Players	5	0	0	0
Noise Cancellation Headphones	1	0	0	0
Paper Shredders	4	11.0 - 4841	0.5 - 102	0.5 - 33.4
Plasma Televisions	2	45.1 - 73.6	1.4 - 2.2	0 - 0.1
Power Tools - Corded	3	784 - 982	8.8 - 31.3	46.8 - 123
Power Tools - Cordless	6	9.0 - 227	0 - 2.2	0 - 13.7
Printers	5	0.1 - 6.2	0 - 0.3	0 - 0.3
Scanners	3	0.6 - 6.7	0 - 0.3	0
Security System Panels	3	0 - 0.3	0	0
Tankless Hot Water Heater	1	10.1 - 21.9'	1.2	0.2
Track Lighting	5	0.2 - 4.0	0 - 0.3	0
Vacuum Cleaners, Personal/Car	3	75.5 - 2226	0.6 - 23.3	0.1 - 23.1
Wireless Game Controllers	11	0	0	0
Wireless Routers	4	0 - 0.5	0	0-0.3

Source: Electric Power Research Institute [1]

Also, in 2001, International Agency for Research on Cancer (IARC) published the results of an EMF health risk evaluation conducted by an expert scientific working group, which concluded that power-frequency "magnetic fields are 'possibly carcinogenic to humans,' based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood leukemia"[4]. IARC assigns its 'possibly carcinogenic to humans' classification (Group 2B) if there is "limited evidence" of carcinogenicity in both humans and experimental animals, or if there is "sufficient evidence" in animals, but "inadequate evidence" in humans. Group 2B includes some 266 "agents" such as coffee, pickled vegetables, carpentry, textile manufacturing and gasoline, among others.

A comprehensive assessment of the EMF health risks was published by World Health Organization (WHO) in 2007. In its assessment, WHO wrote: "Scientific evidence suggesting that everyday, chronic, low-intensity (above 0.3-0.4 μ T) [3-4 mG] power-frequency magnetic field exposure poses a possible health risk is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia"[5]. It added, however, that "virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF [extremely low frequency] magnetic fields and changes in biological function or disease status. Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern."

Regarding acute effects, WHO noted, "Acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz that may have adverse consequences on health. Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. Compliance with these guidelines provides adequate protection for acute effects" [5].

In summary, some studies have reported an association between long-term magnetic field exposure and particular types of health effects, while other studies have not. The nature of the reported association remains uncertain as no known mechanism or laboratory animal data exist to support the cause-and-effect relationship.

In view of the scientific evidence, IEEE and other organizations have established guidelines limiting EMF exposure for workers in a controlled environment and for the general public. These guidelines focus on prevention of acute neural stimulation. No limits have been established to address potential long-term EMF effects, as the guideline organizations consider the scientific evidence insufficient to form the basis for such action. For power-frequency EMF, IEEE Standard C95.6TM-2002 [6] recommends the following limits:

	General Public	Controlled Environment
Electric Field Limit (kV/m)	5.0	20.0*
Magnetic Field Limit (mG)	9040	27,100

*10.0 kV/m within power line right-of-way.

To address public concerns about EMF, the Government of Canada recently updated its website with the latest knowledge on the subject. It contains the following statements on the EMF health-related risks: "Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at ELF. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors."[7]

AEP has been following the EMF scientific developments worldwide, participating in and sponsoring EMF studies, and communicating with customers and employees on the subject.

Also, AEP is a member of Electric Power Research Institute, an independent, non-profit organization sponsoring and coordinating EMF epidemiological, laboratory and exposure studies.

(c) Line Design Considerations: Transmission line extensions associated with the Ebersole Station project are proposed in locations that would not place them in close proximity to existing residential areas and, therefore, will not significantly increase EMF exposure of the public. Also, all line extensions planned in the project are single-pole, vertical, deadend designs spaced apart by only 30 feet to minimize the right-of-way requirements. Each new set of line extensions proposed in this project will be compliant with the EMF limits specified in IEEE Standard C95.6TM-2002.

(d) AEP EMF Public Policy: Information on electric and magnetic fields is available on AEP Ohio's website (<https://www.aepohio.com/info/projects/emf/>). It describes the basics of electromagnetic field theory, scientific research activities and EMF exposures encountered in everyday life. Similar material will be made available for those affected by the construction activities on this project.

AEP occasionally receives requests from customers for EMF measurements on their properties. These measurements are provided free of charge to the customers.

References:

- [1] "Magnetic Fields from Electrical Appliances and Devices," Electric Power Research Institute, Product ID 1021221, September 28, 2010.
- [2] "NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields," National Institute of Environmental Health Sciences, National Institutes of Health, NIH Publication No. 99-4493, May 4, 1999 (<http://www.niehs.nih.gov/about/materials/niehs-report.pdf>).
- [3] "Review of the Epidemiologic Literature on EMF and Health," International Commission for Non-Ionizing Radiation Protection (ICNIRP) Standing Committee on Epidemiology, Environmental Health Perspectives, Volume 109, Supplement 6, December 2001 (<http://www.icnirp.de/documents/epireview1.pdf>).
- [4] "IARC Finds Limited Evidence that Residential Magnetic Fields Increase Risk of Childhood Leukemia," International Agency for Research on Cancer, Press Release No 136, June 27, 2001 (<http://www.iarc.fr/en/media-centre/pr/2001/pr136.html>).
- [5] "Extremely Low Frequency Field (Environmental Health Criteria 238)," World Health Organization, June 1, 2007 (<http://www.who.int/peh-emf/publications/Comple DEC 2007.pdf>).
- [6] "C95.6TM IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0-3 kHz," IEEE Standards Coordinating Committee 28, October 23, 2002.
- [7] "Electric and Magnetic Fields from Power Lines and Electrical Appliances," Healthy Canadians, November 7, 2012 (<http://www.healthycanadians.gc.ca/environment-environnement/home-maison/emf-cem-eng.php>).

(3) Aesthetic Impact

The aesthetic compatibility of a new substation will vary with the viewer and the setting. New electric transmission facilities are more likely to 'blend-in' with surroundings where existing transmission facilities exist. Where these features are not present, natural visual screens, such as significant tree cover or topographic barriers, are an effective way to minimize aesthetic impacts. Selecting rural sites with a low number of existing long-term vantage points also limits widespread aesthetic impacts.

(a) Views of the Proposed Facility: Public views of the Preferred Site or Alternate Site from residences and other potentially sensitive vantage points will be incrementally altered by

construction of the substation. However, these visual alterations to the landscape will be reduced at the nearest residences due to distance and existing transmission line infrastructure already in close proximity within the vicinity of the facility. Figures 06-11 and 06-12 provide three-dimensional renderings of the proposed facility at the Preferred and Alternate Sites.

(b) Structure Design Features: Substation features are primarily dictated by the necessary equipment and engineering limitations. Typical cross sections of the substation equipment proposed for the Project are shown in the figures of Section 1606-15-04 of the Application.

(c) Facility Effect on Site and Surrounding Area: Altering the views from areas at and surrounding the proposed substation is unavoidable due to the size of the facility and the rural nature of the area. The need for the facility and the lack of a candidate site that could further minimize visual impacts outweighs the incremental aesthetic impacts associated with the Project. While aesthetic impacts are subjective and vary based on the viewer, the rural nature of the site vicinity, existing wooded areas that provide screening, and the presence of existing overhead transmission lines in the immediate vicinity should limit the overall change.

(d) Visual Impact Minimization: Due to the rural nature of the site vicinity and the size of the facility, the ability to minimize visual impact through engineering design or set-back construction is limited. Visual impact minimization at the Preferred Site was achieved through the selection of the site, as other candidate sites appeared to have greater visual impacts. Visual impacts will be minimized through AEP's design of the facility. Tubular steel will be used to construct the station. Tubular steel is considered less visually intrusive than traditional lattice steel. Figure 06-13 provides photographs showing a comparison of typical tubular versus lattice construction. These photographs represent the types of tubular steel materials to be used for the proposed station and are not intended to be exact views of the facility.

(4) Estimate of Radio and Television Interference

Radio interference can be experienced in the AM broadcast band (535-1605 kHz), caused by transmission line "corona," i.e., dielectric discharge due to air ionization (100 kHz-10MHz), or a gap-type discharge (1-1000 MHz). The majority of popular radio broadcasting today occurs in the FM band (88-108 MHz), which is beyond the corona frequency range but can be affected by gap discharges. Gap-type discharge, such as that emitted by loose or defective transmission hardware, typically is localized and can be readily detected and corrected, or additional mitigation measures can be applied to eliminate the interference source.

The radio interference level of the line during heavy rain is greater than in fair weather. However, the quality of radio reception under typical heavy rain conditions is affected more by atmospheric conditions than by operation of transmission equipment.

Today's digital television signals react differently to interference than the pre-2009 analog signals. Common problems with analog television included ghosting of images, noise from weak signals, and other problems which degraded the quality of the image and sound, although the

programming was still watchable. With digital TV, reception of the signal must be very nearly complete. Otherwise, audio and video are not usable. Television signals, which are transmitted at frequencies above 50 MHz, can be affected by gap discharges if received from air broadcasts (via "rabbit ears"). These problems have largely been addressed with the use of cable television.

(F) CULTURAL IMPACTS OF THE PROPOSED PROJECT

(1) Archaeological Resources and Correspondence with Agency

Data for known cultural resource were obtained from the OHPO Online Mapping System. No previously recorded archaeological sites, NRHP structures or districts, or OHI structures were identified within 1,000 feet of the Preferred or Alternate Sites. A Phase I cultural resources survey was conducted by Weller & Associates on behalf of AEP, and submitted to OPSB Staff under separate cover.

(2) Construction Impacts on Cultural Resources

Based on OHPO Online Mapping System data, no previously recorded archaeological sites, NRHP structures or districts, or OHI structures were identified within 1,000 feet of the Preferred or Alternate Sites. A Phase I cultural resources survey was conducted by Weller & Associates on behalf of AEP, and submitted to OPSB Staff under separate cover. No significant cultural resources were identified by Weller & Associates and no further investigation was recommended. No construction impacts to cultural resources are anticipated.

(3) Operation and Maintenance Impacts on Cultural Resources

Substation and transmission line interconnection maintenance operations will be generally limited to infrequent inspections. Therefore, no impacts on cultural resources are anticipated during operation and maintenance.

(4) Mitigation Procedures

Based on no significant cultural resources identified on the Preferred Site or Alternate Site, no migration is proposed at this time.

(G) NOISE

(1) Construction

(a) *Dynamiting or blasting activities:* None anticipated.

(b) *Operation of earth moving or excavating equipment:* During the construction phase of the substation installation, a temporary increase in noise will result from the equipment used to excavate, install equipment and, where necessary, clear the area of woody brush. Standard

construction techniques will be used. Typical noise levels of construction equipment are provided in Table 06-6. As a result, the noise impact on nearby sensitive areas is anticipated to be minimal. The total duration of construction of the proposed Ebersole Station Project is estimated at approximately 20 months.

TABLE 06-6 TYPICAL NOISE LEVELS OF CONSTRUCTION EQUIPMENT				
Equipment	Typical Noise Level (dBA) 50 ft., U. S. Dept. of Trans. study 1979	Average Noise Level (dBA) 50 ft., CA/T Project study 1994	Typical Noise Level (dBA) 50 ft., U. S. Dept. of Trans. study 1995	Lmax Noise (dBA) 50 ft., CA/T Project Spec. 721.560
Air Compressor		85	81	80
Backhoe	84	83	80	80
Chain Saw				85
Compactor	82		82	80
Compressor	90	85		80
Concrete Truck		81		85
Concrete Mixer			85	85
Concrete Pump			82	82
Concrete Vibrator			76	80
Crane, Derrick	86	87	88	85
Crane, Mobile		87	83	85
Dozer	88	84	85	85
Drill Rig		88		85
Dump Truck		84		84
Excavator				85
Generator	84	78	81	82
Gradall		86		85
Grader	83		85	85
Impact Wrench			85	85
Loader	87	86	85	80
Pump	80		85	77
Roller			74	80
Scraper	89		89	85
Truck	89	85	88	84
Vacuum Excavator				85

Source: Schexnayder, Cliff. 2008. Effective Noise Control during Nighttime Construction
http://www.ops.fhwa.dot.gov/wz/workshops/accessible/Schexnayder_paper.htm

- (c) **Driving of piles:** None anticipated.
- (d) **Erection of structures:** Structures will be erected by cranes.
- (e) **Truck traffic:** Beyond construction equipment access, concrete trucks, and pole and equipment delivery, no other additional truck traffic is anticipated for the Project.
- (f) **Installation of equipment:** The equipment will be installed using standard practices and equipment.

(2) Operation and Maintenance

Operation of the new substation equipment, predominantly the one proposed transformer, will produce audible noise in the immediate vicinity of the facility. Given the ambient noise associated with local roads and distance to property boundaries, especially for the Preferred Site, it is not expected to be significantly audible from the limited surrounding residences and other surrounding areas. It is not anticipated that noise-sensitive areas will be significantly affected by the maintenance or operation of the substation for either the Preferred or Alternate Site.

(3) Mitigation Procedures

Construction noise mitigation procedures will include using properly maintained construction equipment with mufflers, construction during daylight hours, and implementing noise related procedures according to OSHA requirements.

Only one power transformer is proposed for Ebersole Station. Power transformers of current modern design exhibit noise levels significantly lower than transformers engineered and installed 20 to 30 years ago. The 138/69/34.5 kV, 90 MVA transformer proposed for Ebersole Station has a manufacturer's open air rating of 76 to 82 decibels at 0.3 meters and a forced air rating of 76 to 82 decibels at one meter. Based on these ratings, the estimated noise level at the station fence line is approximately 50 decibels, which is slightly less than normal human conversation. No further noise mitigation is proposed during operation of the facility.

(H) OTHER SIGNIFICANT ISSUES

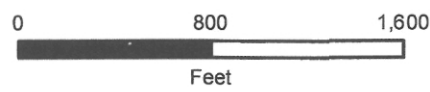
There are no other significant socioeconomic or land use impact issues anticipated beyond those addressed elsewhere in this application.

J:\Project\AEP\14951096 Ebersole Station 138kV Line OPS\BData-Tech\GIS\Figure06-1.mxd



LEGEND:

■ Locations of EMF Calculations



Findlay Area Improvements
Ebersole Station

FIGURE 06-1
LOCATIONS OF EMF CALCULATIONS

JOB NO. 14951096

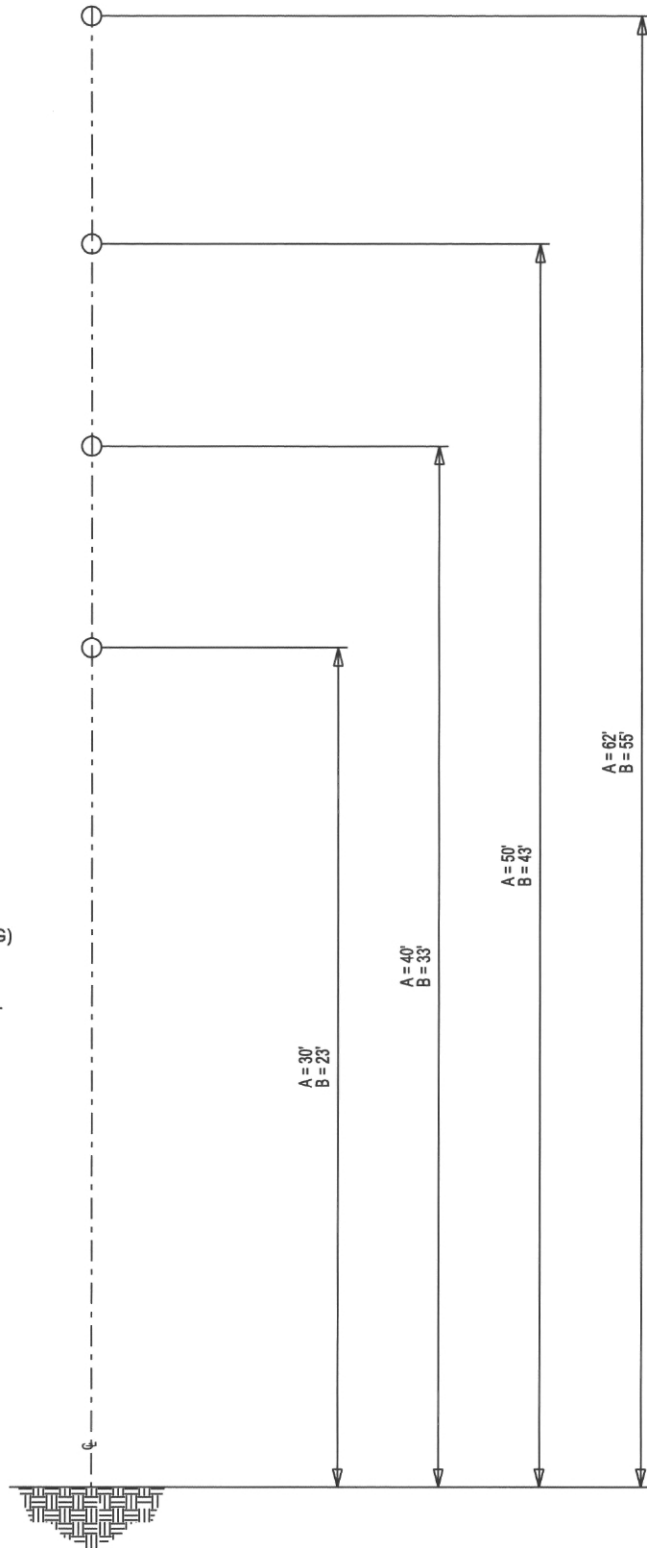


SHIELDWIRE:
(1) 7 #8 ALUMOWELD

CONDUCTORS:
(3) 795,000 CM ACSR
(26/7) (DRAKE)

NOTES:

1. DIMENSION "A": SINGLE CIRCUIT - VERTICAL CONFIGURATION.
(UNDER EMERGENCY AND NORMAL MAX. LINE
LOADING)
2. DIMENSION "B": SINGLE CIRCUIT - VERTICAL CONFIGURATION.
(UNDER WINTER NORMAL CONDUCTOR RATING)
3. FIGURE APPLIES TO NEW PORTIONS OF THE FINDLAY CENTER -
FOSTORIA CENTRAL - NEW LIBERTY 138kV CIRCUIT
AND THE FOSTORIA CENTRAL - NORTH FINDLAY
138kV CIRCUIT FOR TIE-IN OF NEW EBERSOLE SUBSTATION.



PRELIMINARY

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ENGR: XXX XX/XX/XXXX

CHECKED: XXX

CHECKED: MWE 06/24/2013

DATE: XX/XX/XXXX



**FIGURE 06-2
138kV TYPICAL PHASE
ARRANGEMENT STEEL POLE**

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR INFORMATION	CDW	06/24/13

APPROVED: XXX DATE: XX/XX/XXXX

DRAWING No. **TPA-138-1**

SHEET
No. **1**

REV.
No. **A**

CAD FILE PATH

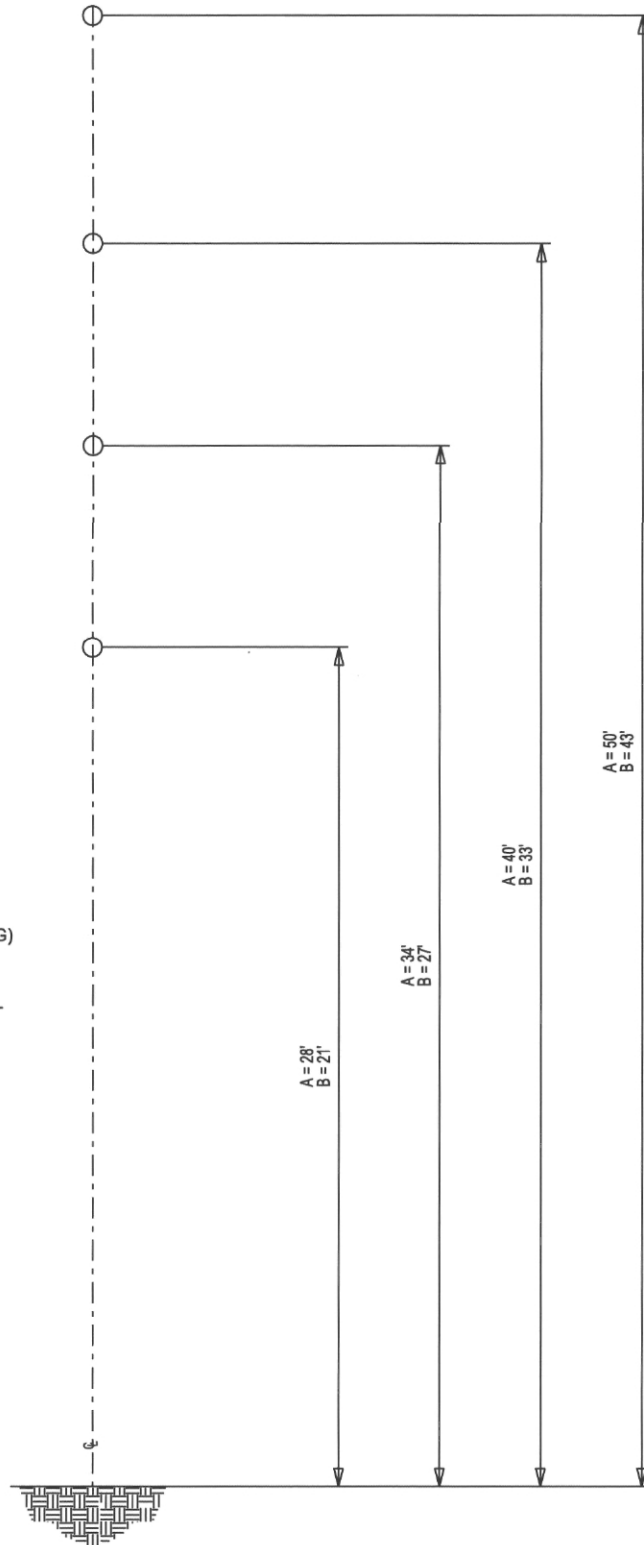
PLOTTED DD-MMM-YYYY AT HH:MM

SHIELDWIRE:
(1) 7 #8 ALUMOWELD

CONDUCTORS:
(3) 795,000 CM ACSR
(26/7) (DRAKE)

NOTES:

1. DIMENSION "A": SINGLE CIRCUIT - VERTICAL CONFIGURATION.
(UNDER EMERGENCY AND NORMAL MAX. LINE
LOADING)
2. DIMENSION "B": SINGLE CIRCUIT - VERTICAL CONFIGURATION.
(UNDER WINTER NORMAL CONDUCTOR RATING)
3. FIGURE APPLIES TO NEW PORTIONS OF THE FINDLAY CENTER -
FOSTORIA CENTRAL - NEW LIBERTY 138kV CIRCUIT
AND THE FOSTORIA CENTRAL - NORTH FINDLAY
138kV CIRCUIT FOR TIE-IN OF NEW EBERSOLE SUBSTATION.



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ENGR: XXX XX/XX/XXXX

CHECKED: XXX

CHECKED: MWE 06/24/2013

DATE: XX/XX/XXXX



**FIGURE 06-3
34.5kV TYPICAL PHASE
ARRANGEMENT STEEL POLE**

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR INFORMATION	CDW	06/24/13

APPROVED: XXX DATE: XX/XX/XXXX

DRAWING No. **TPA-345-1**

SHEET
No. **1**

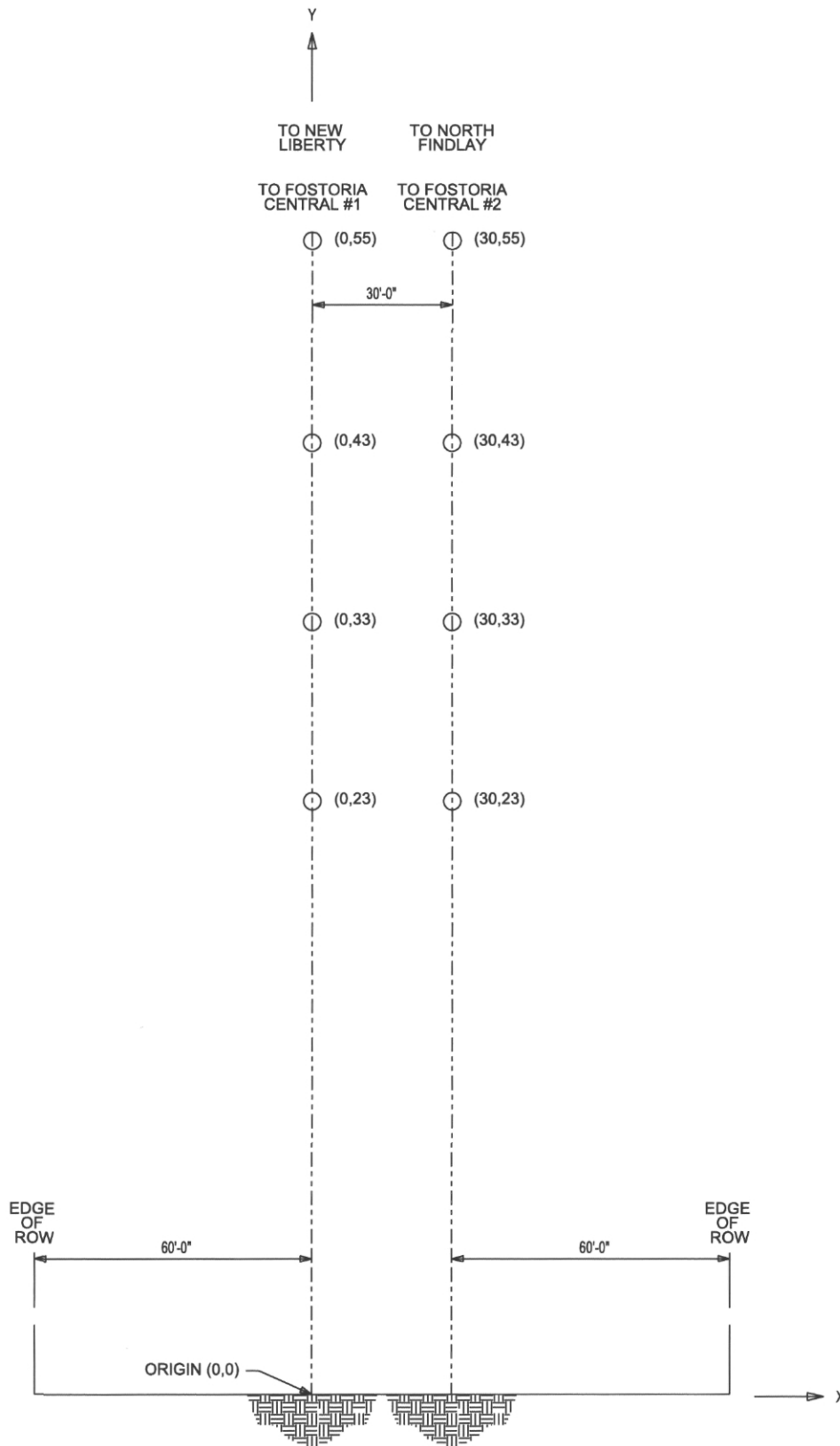
REV.
No. **A**

CAD FILE PATH

PLOTTED DD-MMM-YYYY AT HH:MM

SHIELDWIRE:
(1) 7 #8 ALUMOWELD

CONDUCTORS:
(3) 795,000 CM ACSR
(26/7) (DRAKE)



NOTES:

- STRUCTURES INDICATED ARE DEADEND STRUCTURES AS LINES
APPROACH NEW EBERSOLE SUBSTATION (BLUE OPTION) FROM THE WEST & EAST.

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ENGR: XXX XX/XX/XXXX

CHECKED: XXX

CHECKED: MWE 07/18/2013

DATE: XX/XX/XXXX



**FIGURE 06-4
PREFERRED SUBSTATION
LOCATION CIRCUIT SPACING**

DRAWING No.

PFD-SPC-1

SHEET
No.

1

REV.
No.

A

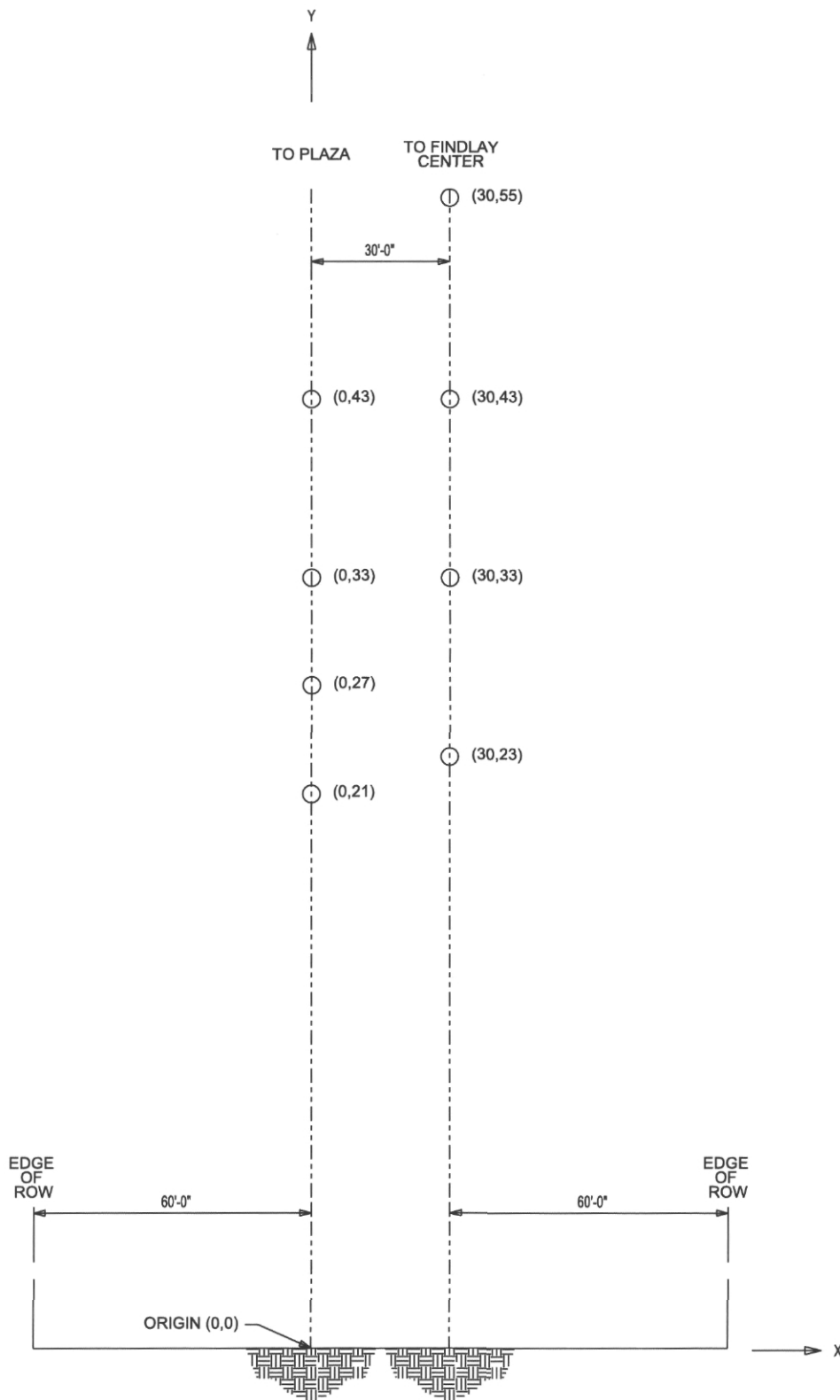
APPROVED: XXX DATE: XX/XX/XXXX

CADFILEPATH

PLOTTED 00-MMM-YYYY AT HH:MM

SHIELDWIRE:
(1) 7 #8 ALUMOWELD

CONDUCTORS:
(3) 795,000 CM ACSR
(26/7) (DRAKE)



NOTES:
1. STRUCTURES INDICATED ARE DEADEND STRUCTURES AS LINES
APPROACH NEW EBERSOLE SUBSTATION (BLUE OPTION) FROM THE SOUTH.

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ENGR: XXX XX/XX/XXXX

CHECKED: XXX

CHECKED: MWE 07/18/2013

DATE: XX/XX/XXXX



**FIGURE 06-5
PREFERRED SUBSTATION
LOCATION CIRCUIT SPACING**

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR INFORMATION	CDW	07/18/13

APPROVED: XXX DATE: XX/XX/XXXX

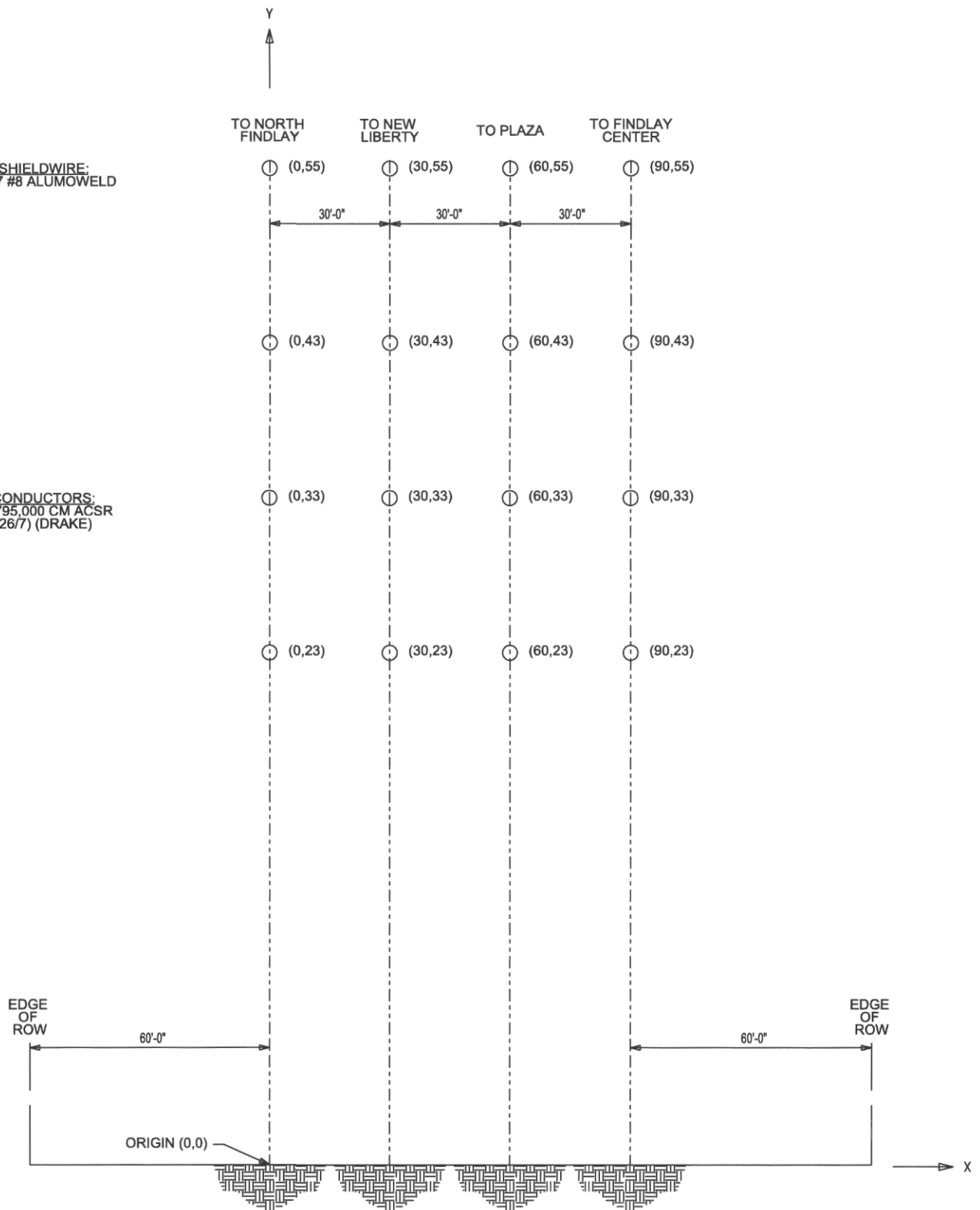
DRAWING No. **PFD-SPC-2** SHEET No. **1** REV. No. **A**

CAD FILEPATH

PLOTTED DD-MMM-YYYY AT HH:MM

SHIELDWIRE:
(1) 7 #8 ALUMOWELD

CONDUCTORS:
(3) 795,000 CM ACSR
(26/7) (DRAKE)



NOTES:
1. STRUCTURES INDICATED ARE DEADEND STRUCTURES AS LINES
APPROACH NEW EBERSOLE SUBSTATION (RED OPTION) FROM THE WEST.

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ENGR: XXX XX/XX/XXXX

CHECKED: XXX

CHECKED: MWE 07/15/2013

DATE: XX/XX/XXXX



**FIGURE 06-6
ALTERNATE SUBSTATION
LOCATION CIRCUIT SPACING**

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR INFORMATION	CDW	07/15/13

APPROVED: XXX

DATE: XX/XX/XXXX

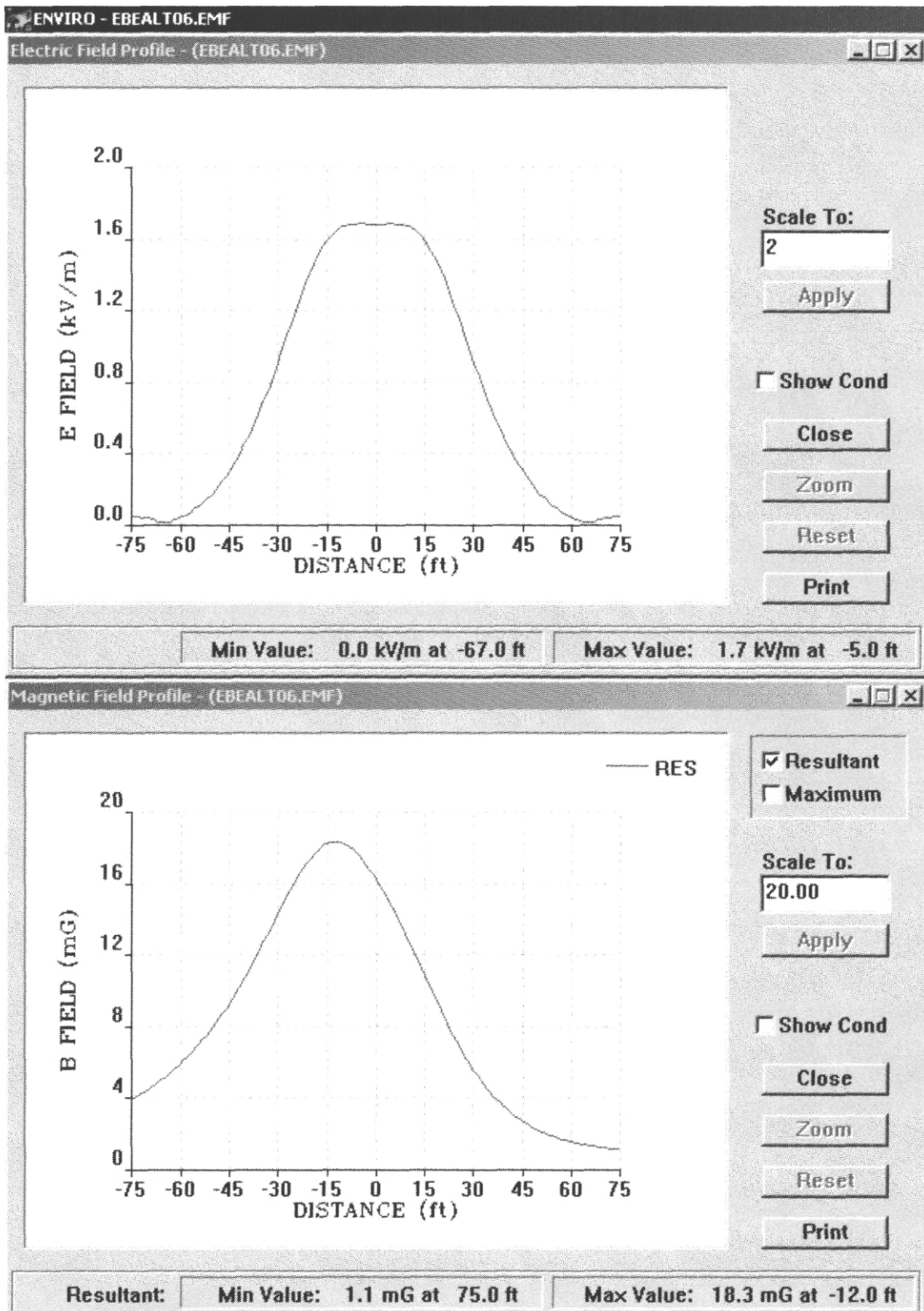
DRAWING No. **ALT-SPC-1**

SHEET No. **1**

REV. No. **A**

CAD FILEPATH

PLOTTED DD-MMM-YYYY AT HH:MM

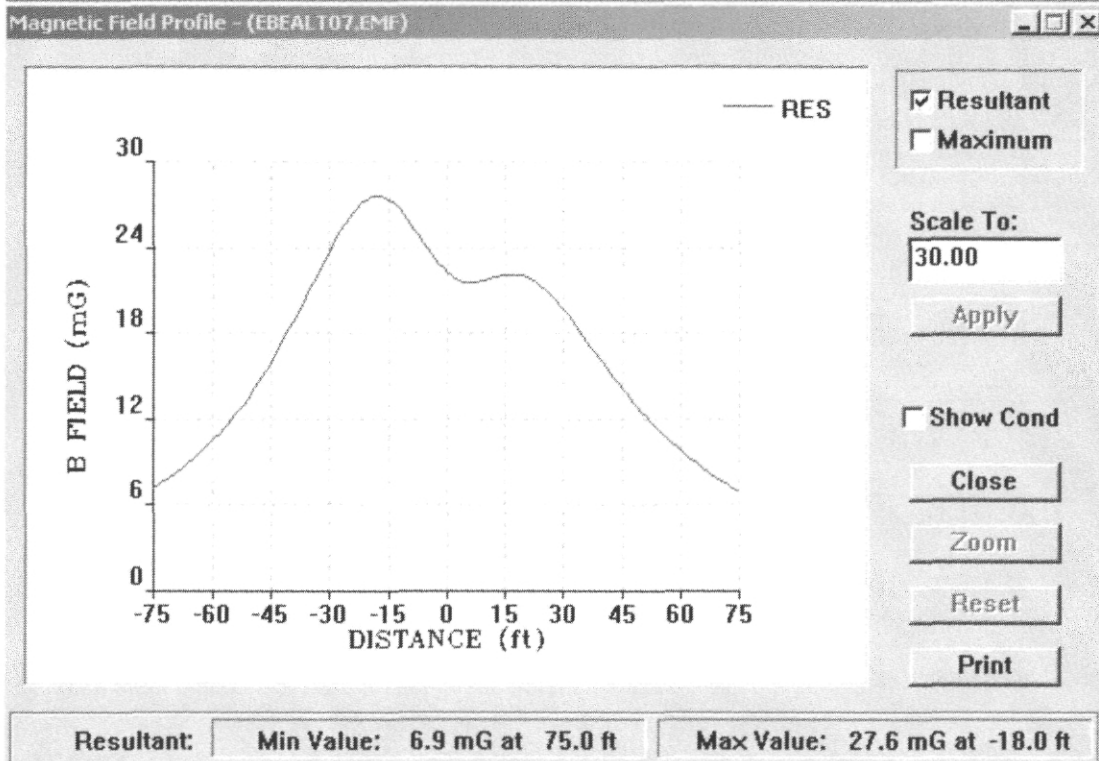
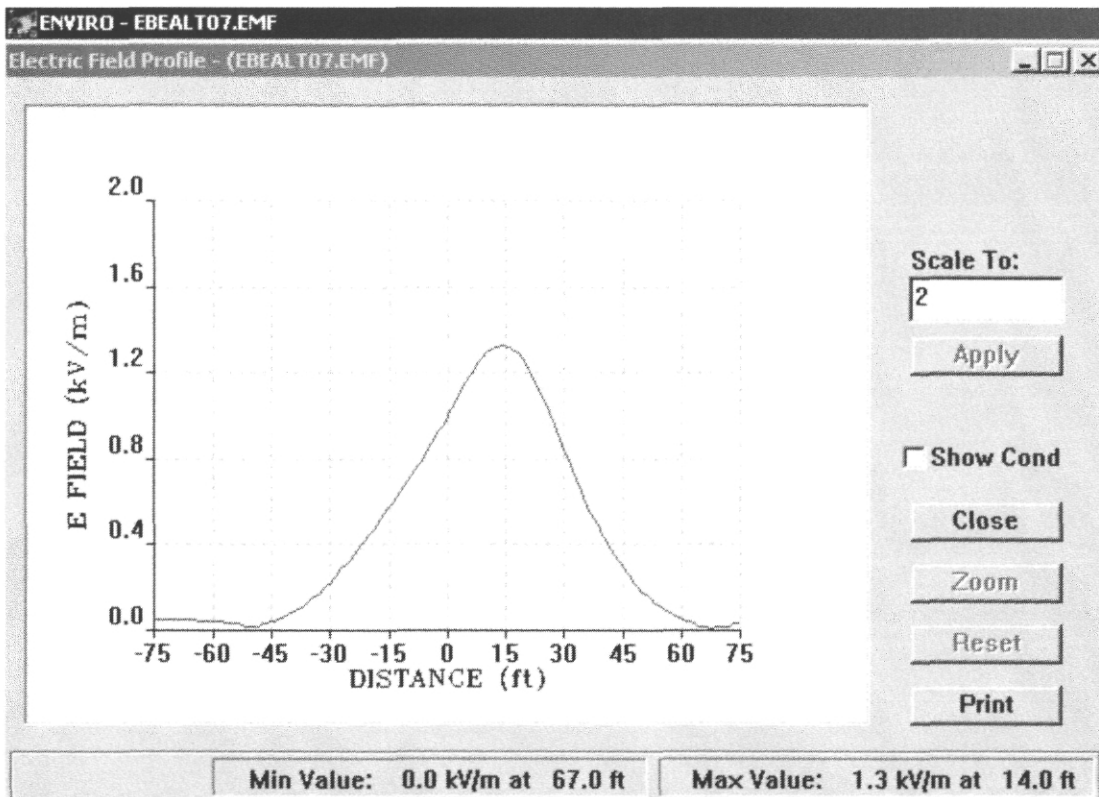


Findlay Area Improvements
Ebersole Station

FIGURE 06-7
EBERSOLE-NORTH FINDLAY 138 kV AND
EBERSOLE-NEW LIBERTY 138 kV EXTENSIONS
COMBINED EMF PROFILE
NORMAL MAXIMUM LOADING

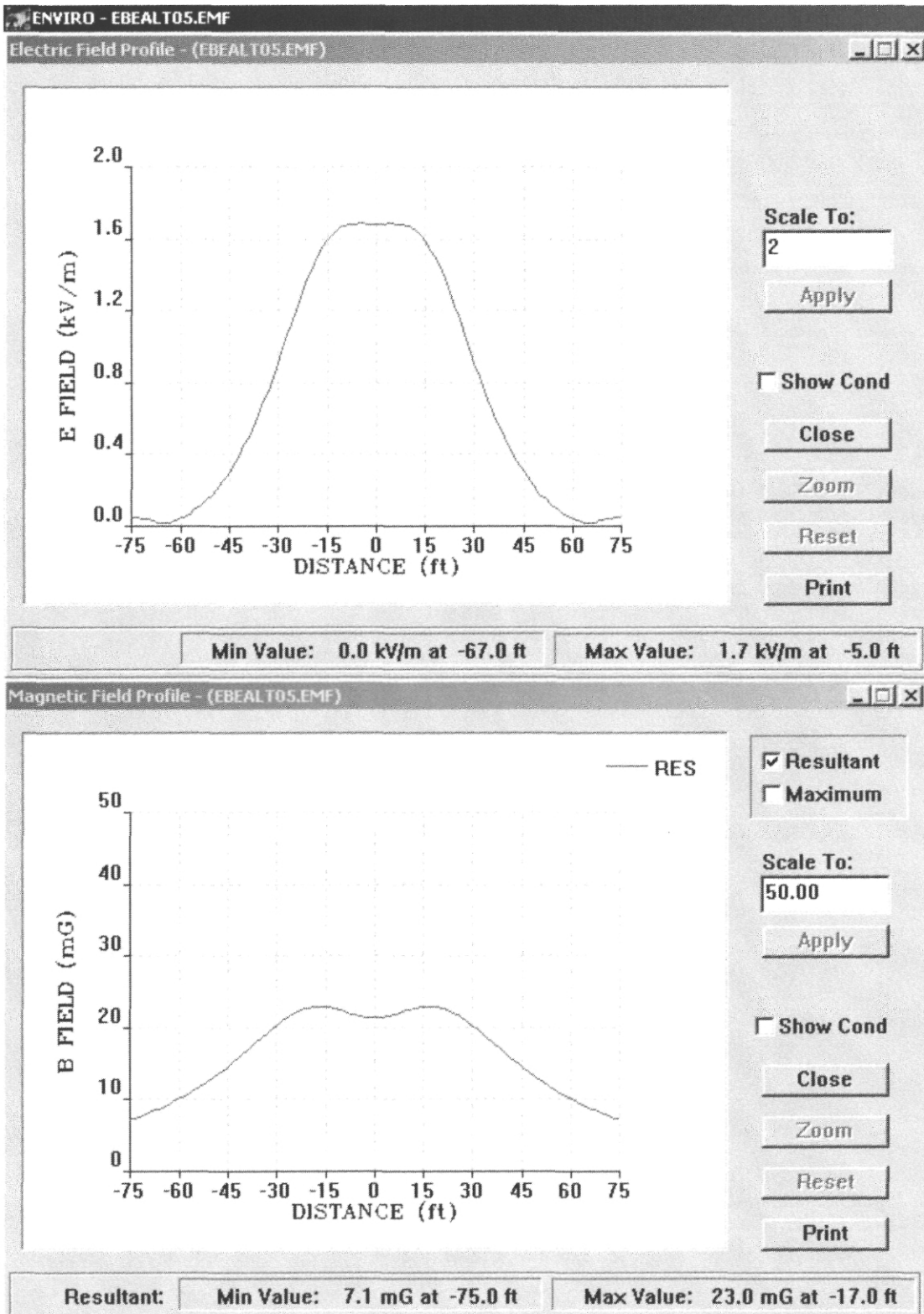
JOB NO. 14951096

URS



Findlay Area Improvements
Ebersole Station

FIGURE 06-8
EBERSOLE-PLAZA STREET 34.5 kV AND
EBERSOLE-FINDLAY CENTER 138 kV
EXTENSIONS - COMBINED EMF PROFILE
NORMAL MAXIMUM LOADING

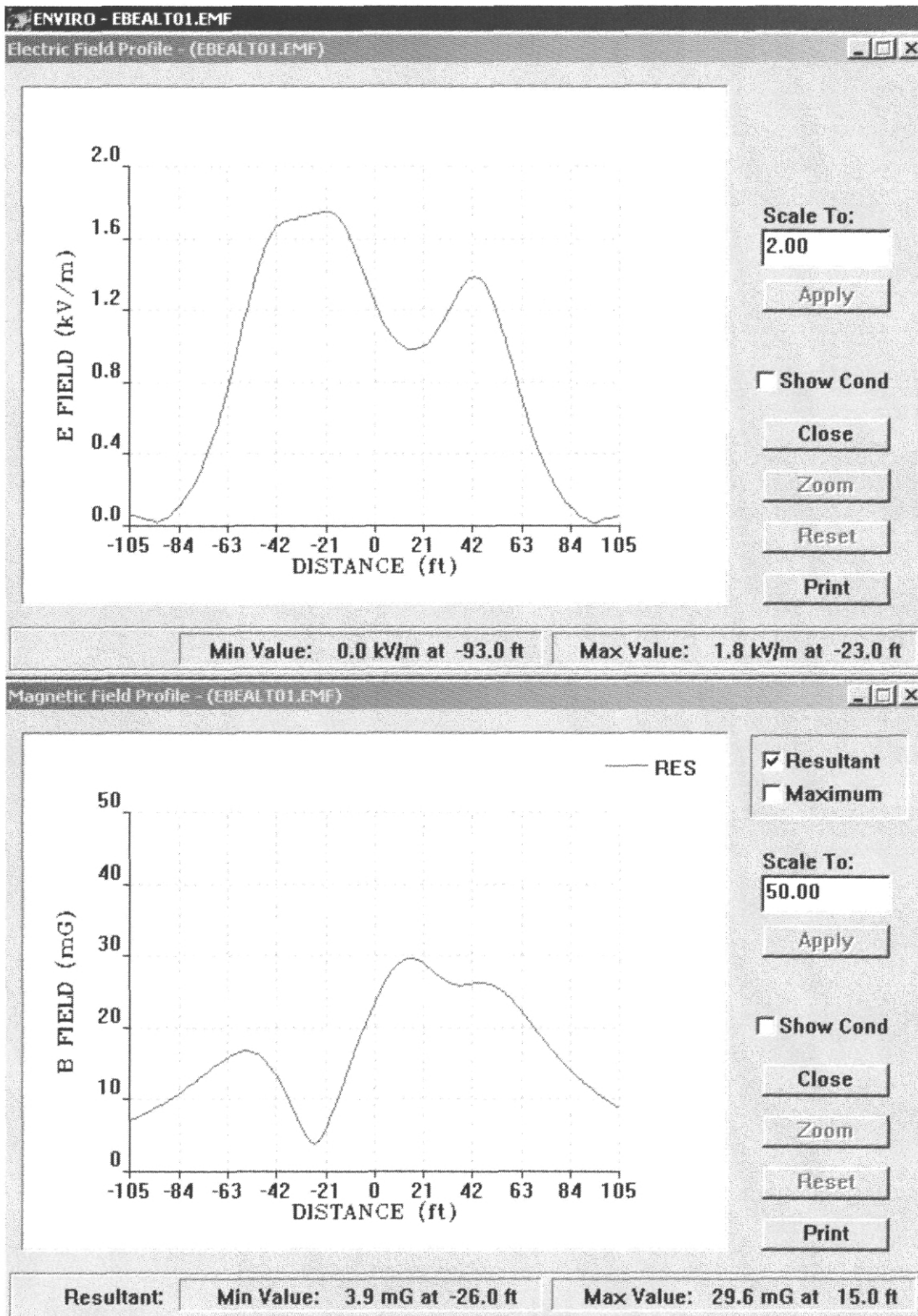


Findlay Area Improvements
Ebersole Station

FIGURE 06-9
EBERSOLE-FOSTORIA 138 kV #1 AND
EBERSOLE-FOSTORIA 138 kV #2 EXTENSIONS
COMBINED EMF PROFILE
NORMAL MAXIMUM LOADING

JOB NO. 14951096

URS

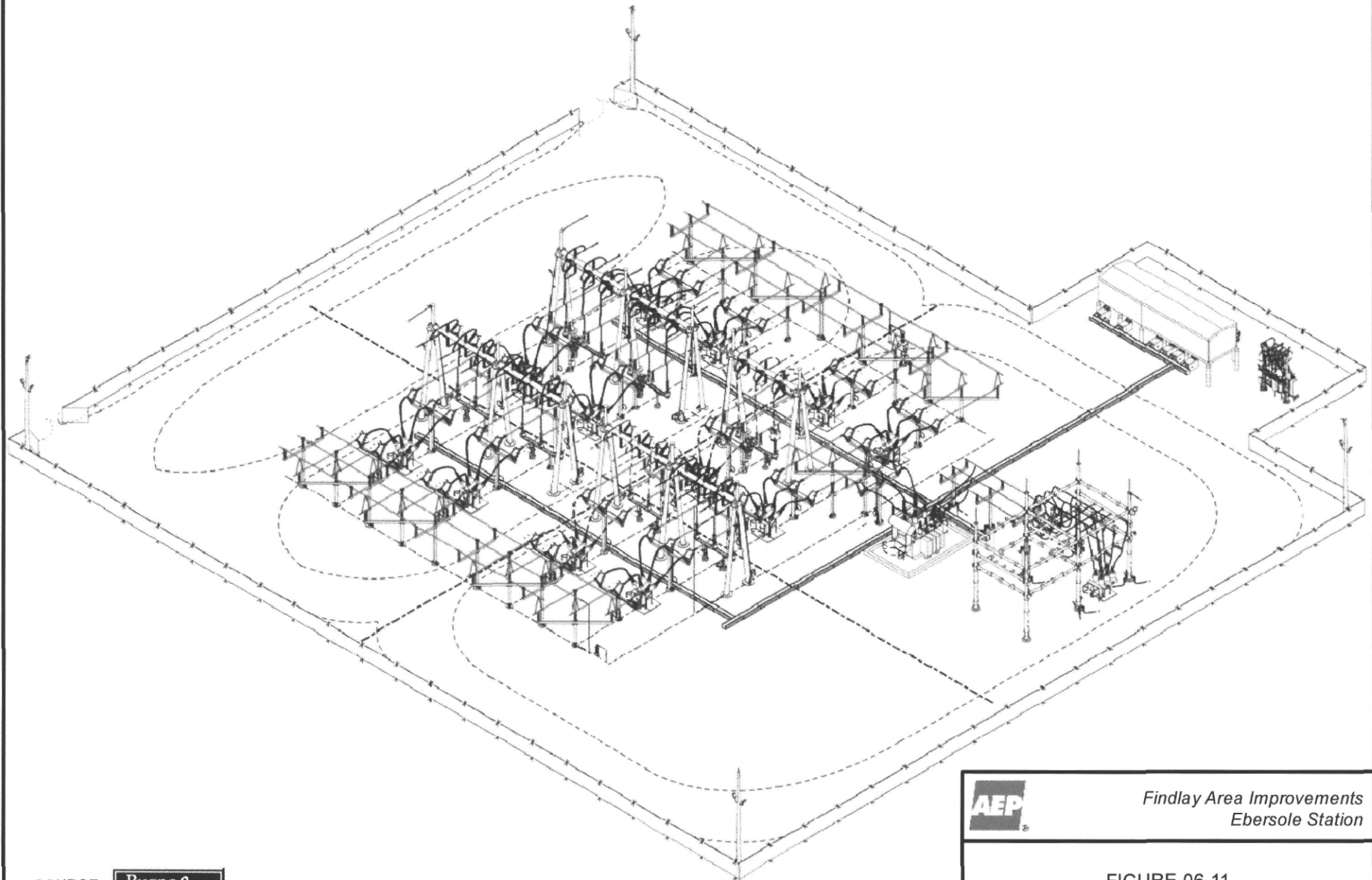


Findlay Area Improvements
Ebersole Station

FIGURE 06-10
EBERSOLE- NORTH FINDLAY, NEW LIBERTY,
AND FINDLAY CENTER 138 kV, AND
EBERSOLE-PLAZA STREET 34.5 kV EXTENSIONS
COMBINED EMF PROFILE
NORMAL MAXIMUM LOADING

JOB NO. 14951096

URS



SOURCE:



*Findlay Area Improvements
Ebersole Station*

FIGURE 06-11
THREE-DIMENSIONAL RENDERING
PREFERRED SITE

JOB NO. 14951096

URS



SOURCE:



*Findlay Area Improvements
Ebersole Station*

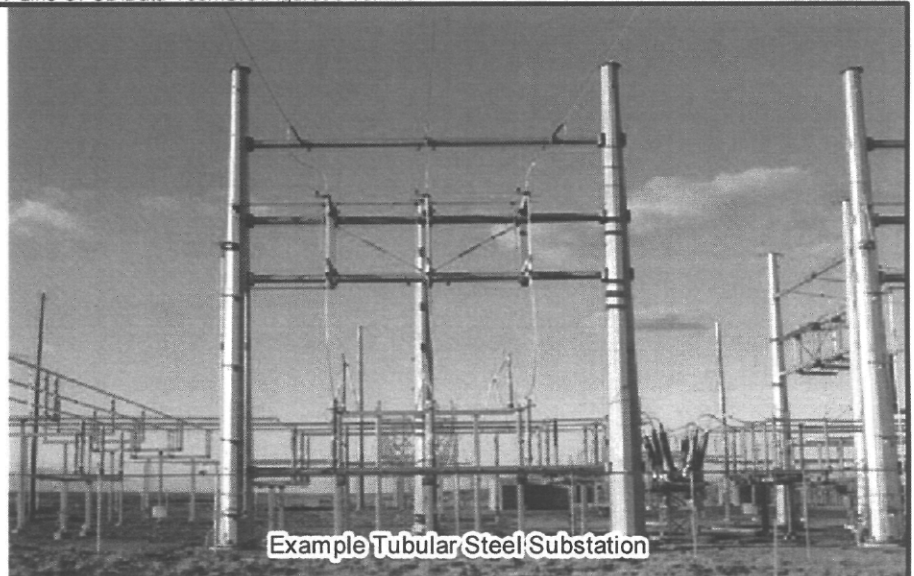
FIGURE 06-12
THREE-DIMENSIONAL RENDERING
ALTERNATE SITE

JOB NO. 14951096

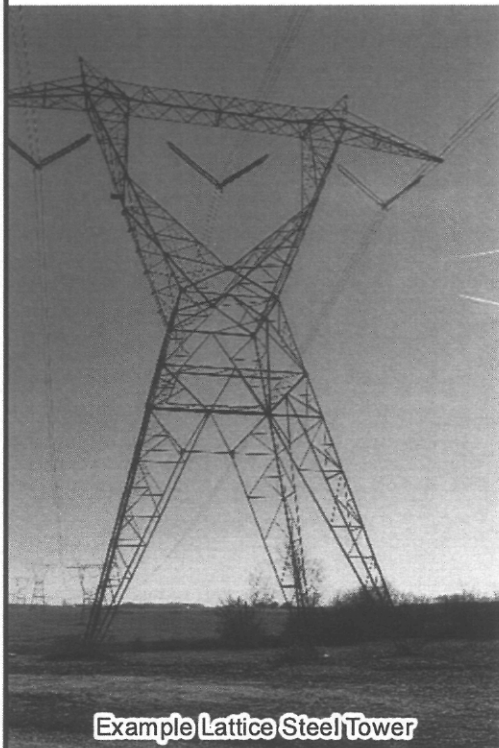
URS



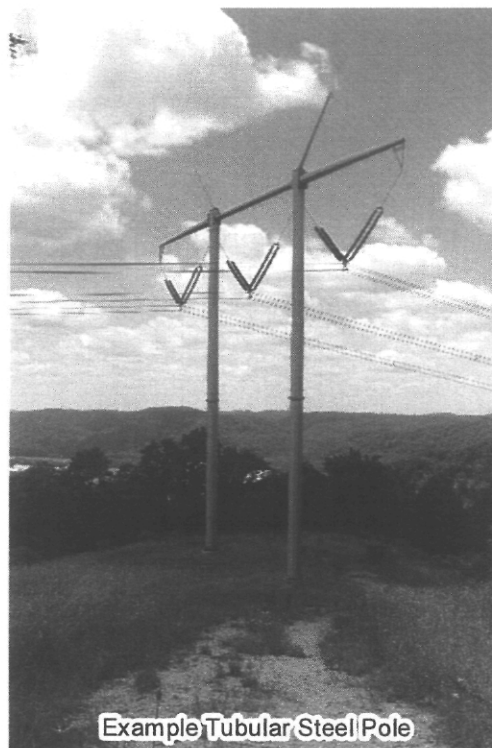
Example Lattice Steel Substation



Example Tubular Steel Substation



Example Lattice Steel Tower



Example Tubular Steel Pole

Note: Tubular steel photos represent typical construction materials and are not intended to portray the exact views of the proposed facility.



Findlay Area Improvements
Ebersole Station

FIGURE 06-13
TUBULAR VERSUS
LATTICE CONSTRUCTION

JOB NO. 14951096

URS

APPENDIX 06-1

PUBLIC OFFICIALS CONTACTED

APPENDIX 06-1

Public officials contacted by URS and AEP:

Dr. Mary Knapp
US Fish and Wildlife Service
Division of Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993

Hancock Regional Planning
Commission
City of Findlay Municipal Building
318 Dorney Plaza Room 304
Findlay, Ohio 45840
(419)-424-7094

Mr. John Kessler, P.E.
Ohio Department of Natural Resources
Office of Real Estate
2045 Morse Rd.
Columbus, Ohio 43229-6605
(614) 265-6621

Mr. Robert Cramer
Cass Township Zoning Inspector
7606 Westwood Road
Findlay, Ohio 45840
(419)-424-0884

Mr. Anthony Iriti
Director, Findlay-Hancock Economic
Development
123 East Main Cross Street
Findlay, Ohio 45840
(419)--422-3313

Mr. Mark Meyer
State Building Permits
Wood County Building Department
County Office Building
Courthouse Square
Bowling Green, Ohio 43402
(419)-354-9190

Mr. Phillip Riegle
Hancock County Commissioners
222 Broadway Avenue
Findlay, Ohio 45840
(419)--424-7044
commissioners@co.hancock.oh.us

Mr. Brian Robertson
Hancock County Commissioners
222 Broadway Avenue
Findlay, Ohio 45840
(419)--424-7044
commissioners@co.hancock.oh.us

Mr. Mark Gazarek
Hancock County Commissioners
222 Broadway Avenue
Findlay, Ohio 45840
(419)--424-7044
commissioners@co.hancock.oh.us

APPENDIX 06-2

PUBLIC INVOLVEMENT INFORMATION

NOTICE OF PUBLIC INFORMATION MEETING FOR PROPOSED MAJOR UTILITY FACILITY

AEP Ohio, a unit of American Electric Power, Schedules Open House to Outline Plans to Reinforce Transmission System in Hancock County

AEP Ohio, a unit of American Electric Power (AEP), and the AEP Ohio Transmission Company invite residents of Hancock County, including the communities of Findlay and Cass Township, to attend an informational open house regarding plans to construct a new 138-kilovolt (kV) transmission substation in Hancock County.

The public open house will take place from 6 to 8 p.m. July 11, 2013, at Owens Community College, Conference Center Room 111, 3200 Bright Road, Findlay, Ohio. The open house format allows the public to visit individual project displays and speak directly to project management and project engineers about the various aspects of the proposed project. No formal presentation will be given.

This project — known as the Findlay Area Improvement Plan — is a major transmission reinforcement effort to help AEP accommodate development and maintain an adequate level of transmission reliability in northwest-ern Ohio and Hancock County.

AEP proposes to build Ebersole Station on approximately 67 acres in Cass Township in Hancock County, approximately 1.7 miles northeast of Findlay. The property is near the intersection of Township Road 238 and County Road 216. The completed station will use approximately 4 acres, with between one half to one acre dedicated to an access drive. AEP will propose Blue and Red station layouts on this property. This property currently is an active agricultural field.

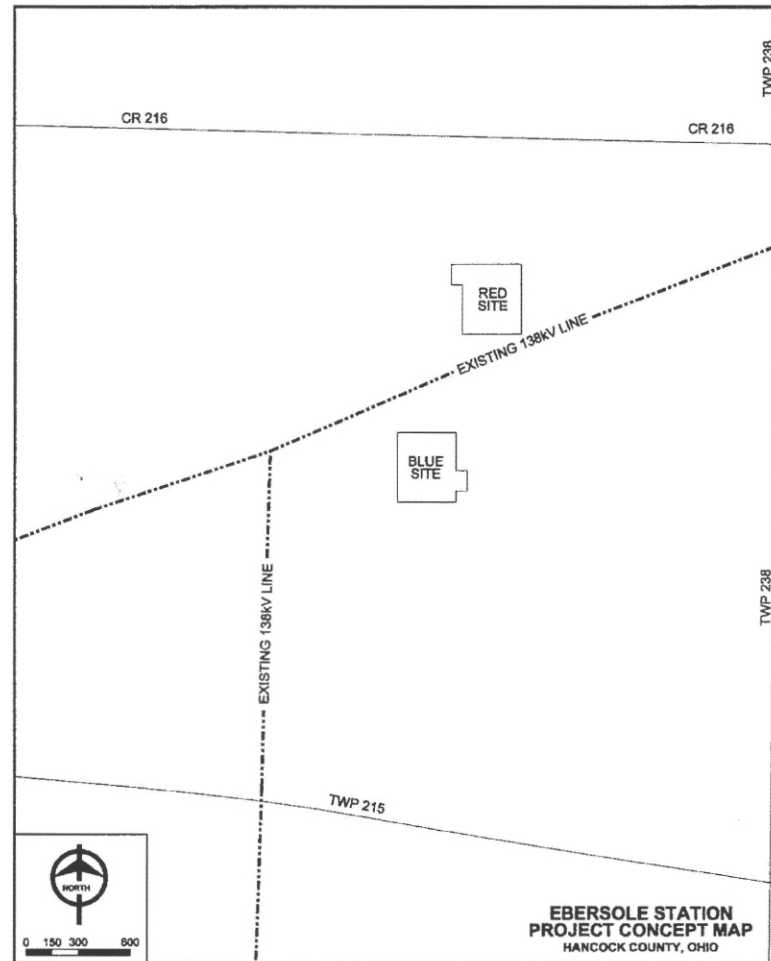
The project also will make improvements at several existing substations, and upgrade and reroute existing 138-kV transmission lines along existing rights of way. This includes replacing and upgrading several existing towers and structures.

The proposed station will allow the company to address reliability concerns about potential low voltages during certain contingency conditions. Without this substation, in a worst case scenario, uncontrolled widespread power outages may affect major portions of Hancock and nearby counties.

The improvement work is needed to resolve low-voltage concerns at the company's New Liberty, North Findlay, Findlay Center and Marion stations. This project also reinforces the company's 69-kV and 34.5-kV sub-transmission systems in the Findlay area. It addresses double contingency conditions required by AEP and PJM (the regional transmission organization) planning criteria for the area's 138-kV systems.

The new station also establishes a new 138-kV source in the Findlay area, reinforcing the existing system.

The proposed Ebersole Station also will enhance service reliability and provide capacity for economic growth in the area. AEP Ohio studies indicate that without this reinforcement plan, the performance of the company's transmission system will be inadequate to provide the level of service that its customers need and expect.



The Ohio Power Siting Board is responsible for reviewing information related to the project — including input from the public — and determining whether the proposed project should be approved. The accompanying map shows the proposed Red and Blue sites AEP Ohio will submit to the OPSB.

The guidelines established by the siting board require AEP to study multiple sites and submit two substation sites for the board's evaluation. Information and comments obtained during the public information open house and other factors help determine the preferred and alternate sites the company will propose in its application.

AEP expects to file its formal application for the station siting with the siting board in August 2013. If the application is approved, construction of the station could begin in mid-2014 and be in service in mid-2015.

More information about the OPSB process and an electronic version of the siting application when filed can be found at www.opsb.ohio.gov.

AEP projects Ebersole Station, an approximate \$11.2 million investment, will provide approximately \$436,310 in property taxes to local schools and communities.

Additional information about this project can be found at AEPOhio.com/Ebersole. Interested parties also may request information, make a comment or express concerns about the project by dialing AEP Ohio's Transmission Project Information Line toll free at 1-877-215-9261.



AEP Ohio Transmission Company
700 Morrison Road
Gahanna, Ohio 43230
Attention: Chuck Hoeft, Project Manager

Please Sign In

AEP Ohio Ebersole Station Project Public Information Open House July 11, 2013

	<u>Name</u>	<u>Address</u>	<u>Phone</u>
1	John Gilgenbach	1900 South Main St, Findlay	419-722-6116
2	Jeffrey	18621 C.R. 216 Arcadia	419-957-4909
3	Jim Sporeat	6781 Co. Rd. 26 Rawson, OH	419-963-4000
4	Terri Sammet	2110 Jennifer Ln. Findlay OH	419-425-3704
5	Yang Blaw	16236 CR 216 Arcadia, OH	419-894-6380
6	Tom Kieckhoff	4580 Twp. 238 Twp Rd 238 Arcadia, Ohio	419-957-3525
7	Jim Wilby	129 Ward Ave Findlay OH	419-420-1875
8	Rick Wagner	Findlay	419-351-7575
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24			
25			

Please Sign In

AEP Ohio Ebersole Station Project Public Information Open House July 11, 2013

	<u>Name</u>	<u>Address</u>	<u>Phone</u>
1	Ken Paul	15680 CR 216	419-306-3467
2	STEVE GILLMAN	15781 CR 216	419-423-1357
3	Teresa Sattler	15563 CR 216	419-721-4474
4	Judge Delbert Dinebolt	Rot. 4580 TR 23	419-422-7363
5	John Waggoner	4285 CR 236	419-425-2714
6	Thom Hensley	7137 N. CREST 45840	419-424-5867
7	Jeff & Audrey Richertink	4437 CR 236	419-422-3664
8	Paul CRAUN	601 LONDON PERRY ST.	419-424-8782
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Comment Card Ebersole Substation Project

Name (please print): STEVE GILLILANO
Address: 15781 CR 216 Arcadia OH 44804
Telephone: (419-423-1357) day, (419-423-1357) evening.

Question or comment about the construction of Ebersole Substation in Hancock County.

PLEASE.... BLUE SITE ONLY!
QUESTION ON MEETING: WHY DO YOU
TALKS NOT PROVIDE ANY CONTACT INFO ON
PERSONEL WE SPOKE WITH? YOU WANT US TO
FEEL LIKE YOUR CONCERNED ABOUT US BUT WE HAVE
NO BUSINESS CARD TO PUT WITH YOUR FACE.

☐ Please have an AEP representative contact me.

Call toll free 1-877-215-9261 if you have a question or a concern about this project to reinforce AEP's transmission system. Additional information can be found online at AEPOhio.com/Ebersole



Comment Card Ebersole Substation Project

Name (please print): John Waymoner
Address: 4285 CR 236 Arcadia OH 44804
Telephone: (419-425-2714) day, (SAME) evening.

Question or comment about the construction of Ebersole Substation in Hancock County.

I talked with Michael Esfeller about placement of
poles on my property + Jeff Andrus Richcreek.
Am tickled pink to lose one tower + have better
access road property to farm. Your engineers were
very helpful in understanding how we are affected.

☐ Please have an AEP representative contact me.

Call toll free 1-877-215-9261 if you have a question or a concern about this project to reinforce AEP's transmission system. Additional information can be found online at AEPOhio.com/Ebersole



Comment Card Ebersole Substation Project

Name (please print): THOM HERSHEY
Address: 3133 NORCREST ST FARMWAY OH 45840
Telephone: (419-424-5467) day, (SAME) evening.

Question or comment about the construction of Ebersole Substation in Hancock County.

VERY INFORMATIVE PRESENTATION
ALL INVOLVED APPEARED TO BE QUITE KNOWLEDGEABLE
AND VERY CAPABLE OF ANSWERING QUESTIONS
HOPEFULLY THIS PROJECT WILL PROCEED TO A
STEADY COMPLETION

☐ Please have an AEP representative contact me.

Call toll free 1-877-215-9261 if you have a question or a concern about this project to reinforce AEP's transmission system. Additional information can be found online at AEPOhio.com/Ebersole



Comment Card Ebersole Substation Project

Name (please print): David Wooley
Address: 129 Woodchuck Findlay
Telephone: () day, () evening.

Question or comment about the construction of Ebersole Substation in Hancock County.

Looks good - interesting to see 11 voltage
lines + talk to staff.

☐ Please have an AEP representative contact me.

Call toll free 1-877-215-9261 if you have a question or a concern about this project to reinforce AEP's transmission system. Additional information can be found online at AEPOhio.com/Ebersole



Comment Card Ebersole Substation Project

Name (please print): Teresa Sattler
Address: 15563 CR 216 Arcadia OH 44804
Telephone: (419-721-4474) day, (SAME) evening.

Question or comment about the construction of Ebersole Substation in Hancock County.

IF we must have this in our back
yard please use the Blue plan.
This is too close to our homes to use the other
one.

☐ Please have an AEP representative contact me.



Findlay Area Improvement Project

Ebersole Station

Need

AEP has a critical need to reinforce its transmission system in parts of AEP Ohio's service territory in northwestern Ohio and Hancock County.

AEP proposes to build Ebersole Station – a 138-kilovolt (kV) transmission substation – on approximately 67 acres in Cass Township in Hancock County. The property is near the intersection of Township Road 238 and County Road 216, approximately 1.7 miles northeast of Findlay. This property currently is an active agricultural field.

This project – known as the Findlay Area Improvement Plan – is a major transmission reinforcement effort to help AEP accommodate development and maintain an adequate level of transmission reliability in the Findlay area. The proposed station will allow the company to address reliability concerns about potential low voltages during certain conditions. Without this substation, in a worst case scenario, uncontrolled widespread power outages may affect major portions of Hancock and nearby counties.

The project also will make improvements at several existing substations and upgrade existing 138-kV transmission lines along existing rights of way. This includes replacing and upgrading several existing towers and structures.

The improvement work is needed to resolve low-voltage concerns at the company's New Liberty, North Findlay, Findlay Center and Marion stations. This project also reinforces the company's 69-kV and 34.5-kV sub-transmission systems in the Findlay area. The project addresses double contingency conditions required by AEP and PJM (the regional transmission organization) planning criteria for the area's 138-kV systems. The new station establishes a new 138-kV source in the Findlay area.

The proposed Ebersole Station also will enhance service reliability and provide capacity for economic growth in the area. AEP Ohio studies indicate that without this reinforcement plan, the performance of the company's transmission system will be inadequate to provide the level of service that its customers need and expect.

AEP will invest an estimated \$11.2 million in the Ebersole Station Project. The station is expected to provide approximately \$436,310 in property taxes to local schools and communities.

Siting Process

Before construction can begin on Ebersole Station, AEP Ohio must obtain a "Certificate of Environmental Compatibility and Public Need" from the Ohio Power Siting Board (OSPB). The siting board is a multi-agency board led by the chairman of the Public Utilities Commission of Ohio.

To obtain this certificate, the company must complete the siting process, which includes a public information meeting for residents in the project area. Information and comments received from this meeting will be included in the company's application to the siting board. The siting board is responsible for reviewing information related to the project — including input from the public — and determining whether the proposed project should be approved.

(continued on next page)

Siting Process

The application to construct the Ebersole Station will address need, technical issues, project finances, land use, cultural, ecological, environmental and socioeconomic issues.

The guidelines established by the siting board require AEP to study multiple sites and submit two station sites for the board's evaluation. Comments from the public and other factors help determine which site – the Red or the Blue -- the company will propose as preferred in its application.

After AEP files its application, the siting board will schedule and conduct public hearings about the project before making its final decision. These public hearings will be preceded by the publication of two notices in area newspapers. These notices will provide the time, date and location of the hearings as well as describe the proposed facility and the siting process.

More information about the OPSB process and, after filing, a copy of AEP's certified application can be found at www.opsb.ohio.gov. Search under current cases for case number 13-0733-EL-BSB.

Timeline

This is an estimated schedule for the project

June-August 2013	Prepare Application
July 2013	Public Information Open House
August 2013	File Application with Ohio Power Siting Board
August-October 2013	Ohio Power Siting Board Review and Action (approximately 60 days)
March 2014	Ohio Power Siting Board Hearing Process (approximately 90 days)
May 2014	Certificate Application Approved
Summer 2014	Construction Begins
Summer 2015	In service

Q & A

What does the complete project include?

The project includes construction of the new 138-kilovolt (kV) Ebersole Station northeast of Findlay in Hancock County, improvements at several existing substations, and upgrades to existing 138-kV transmission lines along existing rights of way. The company also will replace several existing towers and structures.

What does the existing transmission system in the area include?

The existing transmission system in the area includes the Fostoria Central and East Lima 345/138-kV lines. In addition, there are 138-kV interconnections with First Energy at West Fremont Station and Howard Stations, and 69-kV and 34.5 kV sub-transmission loops around the Findlay area that feed AEP Ohio's distribution system.

When will AEP file its application for the station with the siting board?

AEP expects to file an application for a Certificate of Environmental Compatibility and Public Need with the Ohio Power Siting Board in August 2013. The siting board then will schedule and conduct a public hearing and an adjudicatory hearing to receive testimony and comments about the project. Notices announcing the public information meeting and public hearings are placed in local newspapers.

(continued on next page)

Q & A

Who will approve the final route?

The Ohio Power Siting Board is responsible for reviewing all the information related to the project – including input from the public – and determining whether the proposed facility meets the suitability and necessity requirements of the siting process. Ohio's siting process requires that the proposed facilities:

- satisfy the public need criteria for the facility;
- satisfy all engineering requirements of the project;
- address the compatibility of the facility with existing land use in the area; and
- address the socioeconomic, land use, ecological, cultural and environmental effects of the facility on the area.

How will this project affect my electric rates or monthly bill?

The transmission portion of customers' bills is set by a transmission tariff approved by the Federal Energy Regulatory Commission. This tariff provides the mechanism through which utilities recover the cost of their transmission system improvements from customers. The costs for these projects are allocated to all customers who are served by AEP's transmission system. In most cases, the amount from either project is less than \$0.15/month for a typical residential customer.

What economic benefits will the Findlay Area Improvement Project provide for the local area?

The project will produce additional tax revenue for local schools and communities. AEP projects Ebersole Station, an approximate \$11.2 million investment, will provide approximately \$436,310 in property taxes to local schools and communities. The anticipated tax revenue may change, depending on depreciation or improvements.

The direct increase in tax revenue is just one way AEP supports the continued growth and development of the local community. While the improvements will not directly affect customers' electric service to their homes and businesses, the project will improve the transmission system. The project also will help meet the power requirements necessary to ensure continued business development and growth in the area.

Unlike other development projects, AEP's Ebersole Station Project will not place demands on other utilities such as sewer or water; other township services, including law enforcement; or local educational services.

And during construction, the project will create approximately 20 temporary jobs within the community.

What alternatives or other options did you consider before deciding to pursue approval of these projects?

Adding capacity at other substations and building new transmission lines were considered. In the final analysis, the improvements we propose represent the best option (most efficient and least-cost) for reinforcing our existing transmission system – both short and long term – for meeting future growth and development in this area.

What about safety during the construction process?

AEP's safety philosophy states that "No aspect of operations is more important than the health and safety of people. Our customers' needs are met in harmony with environmental protection." AEP takes every precaution to ensure the safety of its employees and the public. During construction of this substation, AEP will communicate with property owners to keep them informed about the construction process and when employees will be in the area.

(continued on next page)

Q & A

Will customers in the area experience power outages as a result of the construction?

No planned customer outages are associated with the construction of this project.

What is PJM?

PJM is the regional transmission organization that coordinates the movement of wholesale electricity in all or parts of 13 states, including Ohio, and the District of Columbia.

Where can I get more information about this project?

Area residents can attend meetings or hearings related to the project.

Meeting and hearing notifications are made through advertising and news releases in local newspapers.

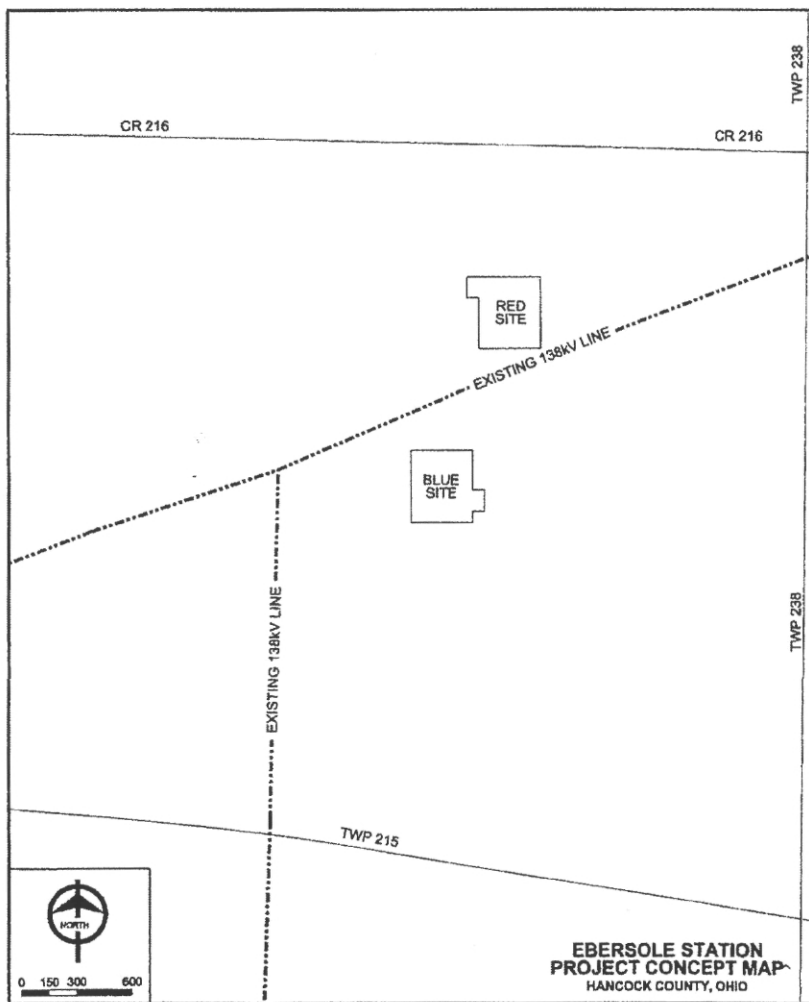
Information about this project is also available at <http://aepohio.com/Ebersole>.

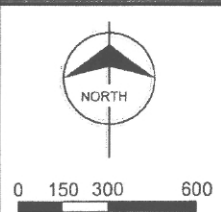
The public can ask questions, make comments or express concerns about the project by leaving a detailed message and their contact information on the toll-free AEP Ohio Transmission Project Information Line (highlighted below). An AEP project representative will return the call.

AEP Ohio Transmission Project Information Line: 1-877-215-9261

Proposed Sites

(NOTE: Concept map only to show proposed sites - Red and Blue - for the proposed station.)







PRELIMINARY

- LEGEND:**
- APPROXIMATE PROPERTY BOUNDARY
 - EXISTING TRANSMISSION CENTERLINE
 - PROPOSED TRANSMISSION LINES
 - △ EXISTING STRUCTURE
 - ◊ PROPOSED STRUCTURE
 - ROW TO BE ACQUIRED

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		ENGR: XXX XX/XX/XXXX CHECKED: MWE 06/17/2013	CHECKED: XXX DATE: XX/XX/XXXX		EBERSOLE STATION 138kV TRANSMISSION BLUE PLAN LAYOUT	
REV A	DESCRIPTION ISSUED FOR INFORMATION	BY CDW	DATE 06/17/13			DRAWING No. EB-LYT-B
APPROVED: XXX DATE: XX/XX/XXXX				CAD FILE PATH		

PLOTTED 00-MMM-YYYY AT HH:MM



PRELIMINARY

LEGEND:

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ENGR: XXX XX/XX/XXXX

CHECKED: XXX

CHECKED: MWE 06/17/2013

DATE: XX/XX/XXXX



EBERSOLE STATION 138kV TRANSMISSION BLUE PLAN LAYOUT

REV	DESCRIPTION	BY	DATE
A	ISSUED FOR INFORMATION	CDW	06/17/13

APPROVED: XXX DATE: XX/XX/XXXX

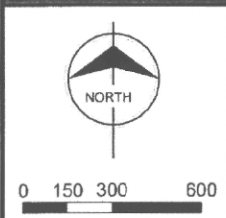
DRAWING No. EB-LYT-B

SHEET No. 1

REV. No. B

CAD FILE PATH

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PRELIMINARY

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING TRANSMISSION CENTERLINE
- PROPOSED TRANSMISSION LINES
- △ EXISTING STRUCTURE
- PROPOSED STRUCTURE
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		ENGR: XXX XX/XX/XXXX	CHECKED: XXX		EBERSOLE STATION 138kV TRANSMISSION RED PLAN LAYOUT	
		CHECKED: MWE 06/10/2013	DATE: XX/XX/XXXX			
REV	DESCRIPTION	BY	DATE	DRAWING No. EB-LYT-R		SHEET No. 1
A	ISSUED FOR INFORMATION	CDW	06/10/13	APPROVED: XXX DATE: XX/XX/XXXX		REV. No. A

CADFILEPATH

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Ebersole Station

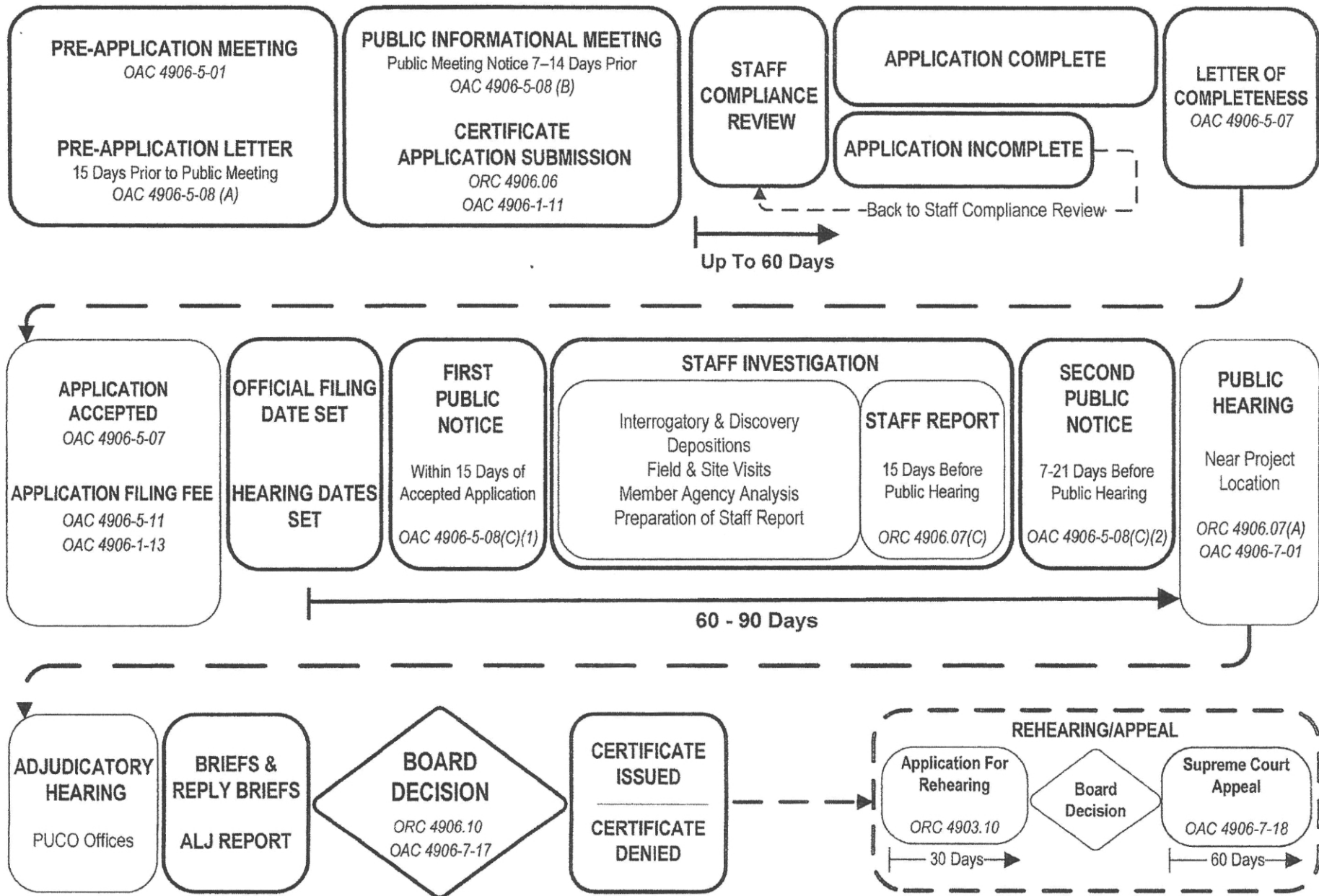
Chronology*

June – August 2013	Preparation of Application
July 2013	Public Information Meeting
August 2013	File Application with Ohio Power Siting Board (OPSB)
August - October 2013	OPSB Review and Action (approximately 60 days)
March 2014	OPSB Hearing Process (approximately 60-90 days)
May 2014	OPSB Decision on Certificate Application
Summer 2014	Construction Begins
Summer 2015	In service

- Timeline is approximate.

OHIO POWER SITING PROCESS FLOWCHART

(Statute/Rule References and Select Blocks are Clickable Internet Links)



About Electric and Magnetic Fields (EMF)

Electric and magnetic fields (EMF) are invisible lines of force that occur in nature and wherever electricity flows, such as through electric lines, electric appliances and motors. Electric fields are produced by the presence of voltage or an electrical charge. They are measured in volts per meter, such that the higher the voltage, the greater the electric field. Magnetic fields result from current or the flow of electricity in a wire. Field strength increases as the current increases. Magnetic fields are measured in units called gauss and are typically reported in thousandths of a gauss, or milligauss (mG).

A lamp that is plugged in produces an electric field even while it is turned off. However, it will produce a magnetic field only when it is turned on.

Electric and magnetic fields are present in and around the earth. The magnetic field on the earth (the force that causes a compass to always point north) averages about 500 mG. Thunderstorms also produce EMF.

Alternating current (AC) magnetic fields are associated with power lines and appliances and may cause electrical charges to move in objects that conduct electricity.

Static or direct current (DC) magnetic fields, such as the magnetic field of the earth, do not cause electrical charges to flow in

stationary objects.

Objects—including trees, shrubs and buildings—can block electric fields. Magnetic fields, however, are not easily blocked and can pass through most objects.

The strength of both fields declines rapidly as the distance from their source increases.

The Health Effects of EMF

Questions about health effects from EMF exposure first arose in the 1960s and 1970s with the use of higher transmission voltages in the U.S.

Scientists have researched whether exposure to low frequency electric and magnetic fields from power lines and electric appliances poses a risk to human health. Initial research focused on electric fields because higher voltages produce higher electric fields. Overall, studies of electric fields found no evidence of biological changes that could lead to health effects.

EMF research began to focus on magnetic fields when an epidemiological study (Wertheimer and Leeper, 1979) suggested that magnetic fields from power lines in Denver might be linked to childhood cancers. A subsequent study (Savitz, 1988) found statistical results generally consistent with the Denver study.

Since then, many epidemiological studies have focused on the possible role of magnetic fields in cancer and other diseases. To date, while some statistical associations have been reported, no actual health effects have

been demonstrated.

The issue is extremely complex; consequently, definitive answers have not been simple or easy to obtain, despite the fact that the topic has been researched for decades.

Types of EMF Research

Laboratory or basic science studies look at effects of EMF on cells and tissues of humans and animals. Epidemiological studies use statistics to determine whether an association exists between a disease and an external factor such as EMF exposure.

Exposure assessment studies look at sources and amounts of EMF exposure.

AEP and EMF

AEP has sponsored and continues to sponsor research through its membership in the Electric Power Research Institute (EPRI), the research organization for the electric utility industry.

AEP itself does not actively conduct research on the health effects of EMF. And, while the company will conduct measurements upon request, interpretation of measured levels is not possible, as no level of exposure has been determined to be unsafe.

AEP takes any health and safety issue very seriously. Therefore, it routinely monitors scientific and technical developments and public policy related to EMF as part of its ongoing effort to provide a safe environment for employees and the public.

For Further Information

To link to third-party web sites where you can read the latest information on studies of the potential health effects of EMF exposure, please visit one of the following AEP-affiliated web sites:

AEPOhio.com/go/EMF

Appalachianpower.com/go/EMF

AEPTexas.com/go/EMF

Kentuckypower.com/go/EMF

Indianamichiganpower.com/go/EMF

PSOklahoma.com/go/EMF

SWEPCO.com/go/EMF

4906-15-07
Ecological Impact Analysis

4906-15-07 ECOLOGICAL IMPACT ANALYSIS

This section of the Application provides a summary of the studies that have been made of the ecological impact of the proposed Ebersole Station Project. Information is provided for the Preferred and Alternate Sites, and is based on published data within 1,000 feet and field evaluation studies conducted within 100 feet of the sites.

(A) SUMMARY OF ECOLOGICAL IMPACT STUDIES

As part of the preparation of this Application, an ecological survey was conducted for the proposed Preferred and Alternate Sites. The field survey was supplemented by published ecological information within 1,000 feet of the substation through the review of aerial photography, United States Geological Survey (USGS) maps, United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, and U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey maps. Additional information regarding endemic vegetation and wildlife was obtained from the Ohio Department of Natural Resources (ODNR), Division of Natural Areas and Preserves (ODNR-DNAP) Biodiversity Database. Information obtained from ODNR-DNAP showed that no known records of species of special concern were found within 1,000 feet of the Preferred and Alternate Sites. Special status species identified in the general project vicinity through correspondence and published information from ODNR and the USFWS are provided in section 4906-15-07(B)(3)(e) below.

A field reconnaissance to document the occurrence of the endemic vegetation and wildlife and to quantify the occurrence and quality of wetlands and streams was conducted by URS ecologists at the request of AEP on May 9, 2013 and June 27, 2013. The field reconnaissance covered an approximately 67-acre property optioned by AEP that included the Preferred and Alternate Sites, as well as the portion of the proposed interconnects on adjacent properties. No wetlands, streams, ponds, or special status species habitats were identified within 100 feet of either substation site. Both the Preferred and Alternate Sites are agricultural fields most recently cultivated with row crops. One stream is crossed by the 138 kV interconnection to the Fostoria-East Lima 138 kV line. This stream is crossed by a portion of the line that will be rebuilt within existing right-of-way. The stream will be spanned similar to the existing crossing by the Fostoria-East Lima 138 kV line. No in-water work is planned.

(B) ECOLOGICAL FEATURES

A map at a scale of 1:24,000 illustrating areas within 1,000 feet of the proposed Preferred and Alternate Sites is presented as Figure 04-1. Features within 1,000 feet of the proposed sites were derived from published data and, where possible, verified and supplemented by the field survey.

(1) Route Alignments

Ebersole Station will be energized by looping the existing and adjacent Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension through the station, as shown on Figures 01-1 (Preferred Site), 01-2 (Alternate Site), and 04-1. These lines intersect approximately 250 feet west of the AEP-optioned property. The associated interconnection to the Fostoria-East Lima 138 kV line and the Findlay Center 138 kV Extension would extend predominantly across the overall property. The new lines will require new right-of-way for approximately 250 feet across adjacent properties to the west. The new interconnections to the station are considered associated facilities within this Application.

(2) Substations

The proposed locations for the Preferred and Alternate Sites can be seen on Figure 04-1.

(a) Preferred Site: The Preferred Site of Ebersole Station is located on the southern portion of an approximately 67-acre property situated to the south of County Road 216. AEP holds an option to purchase this predominantly agricultural property. Proposed access to the substation will be from County Road 216 to the north via a permanent access drive.

(b) Alternate Site: The Alternate Site is located on the northern portion of the same approximately 67-acre property optioned by AEP. A similar but slightly shorter access road from County Road 216 is proposed.

(3) All Areas Currently Not Developed For Agricultural, Residential, Commercial, Industrial, Institutional, or Cultural Purposes, Including:

(a) Streams and Drainage Channels: Streams and drainage channels mapped within 1,000 feet of the Preferred and Alternate Sites and interconnections are shown on Figure 04-1. One unnamed tributary to Rocky Ford is mapped just east of the AEP-option property approximately 450 feet east of the Preferred Site and 160 feet southeast of the Alternate Site fence line. The intermittent stream is crossed by the proposed interconnection to the Fostoria-East Lima 138 kV line from both sites as shown on Figure 04-1 and visible on Figures 01-1 and 01-2. The crossing location is within existing right-of-way of the Fostoria-East Lima 138 kV line where it will be rebuilt to accommodate the new interconnections. No in-water work is planned and no impacts are anticipated. A Primary Headwater Habitat Evaluation (HHEI) form and associated photograph are included in Appendix 07-1.

(b) Lakes, Ponds, and Reservoirs: No lakes, ponds, or reservoirs were mapped within 1,000 feet of the Preferred or Alternate Sites on USGS topographic maps. However, seven ponds on residential properties are visible on aerial photography within 1,000 feet of the Preferred Site and its associated interconnects and access road. Six ponds are visible within 1,000 feet of the Alternate Site and its associated interconnects and access road. The corresponding NWI layer for the ponds is shown on Figure 04-1.

(c) **Marshes, Swamps, and Other Wetlands:** Wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytic) typically adapted for life in saturated (hydric) soil conditions.

To identify whether wetlands exist on the Preferred and Alternate Sites and associated interconnections, a desktop study of available resources was reviewed prior to the field wetland delineation of the Project area. USFWS NWI maps and NRCS soil survey and hydric soil lists for Hancock County, Ohio were reviewed for areas within 1,000 feet of the Preferred and Alternate Sites and associated interconnections. NWI areas are shown on Figure 04-1. No other NWI areas were mapped within 1,000 feet of the Preferred or Alternate Sites and associated interconnections besides the ponds discussed above. A field reconnaissance of the AEP-optioned property and associated transmission interconnections was also conducted to examine the area for wetland criteria, as established by USACE' *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Regional Supplement)*. During the field reconnaissance, no wetlands were identified within 100 feet of the Preferred and Alternate Sites and associated interconnections.

(d) **Woody and Herbaceous Vegetation Land:** The Preferred and Alternate Sites are located in agricultural fields. Vegetation is limited to row crops and herbaceous grasses along roads. Tree clearing would not be required at either site.

(e) **Locations of Threatened and Endangered Species:** Based on a desktop review of USFWS published documentation, records on ODNR's Biodiversity Database, and correspondence from ODNR, a total of three threatened or endangered, species are listed within the project range in Hancock County. These species include Indiana bat (*Myotis sodalis*), clubshell mussel (*Pleurobema clava*) and rayed bean mussel (*Villosa fabalis*), all of which are listed as state and federally endangered species.

The ODNR replied in October 12, 2012 to an e-mailed request for records of protected species within an extended area around the project area. ODNR supplied ODNR Biodiversity Database (OBD) geographical information system (GIS) shapefiles indicating the location of protected species near the project. ODNR OBD shapefiles did not identify any protected species within one mile of the Preferred or Alternate Site.

A second consultation letter was sent to ODNR in June 2013. This letter included more detailed information about the project site than the original Biodiversity Database request. ODNR replied on July 23, 2013 with comments pertaining to the following listed species:

The project is within the range of the Indiana bat (*Myotis sodalis*), a state and federally endangered species. ODNR stated that if no tree removal is proposed, the project is not likely to impact this species.

The project is within the range of two state and federally endangered mussels, the clubshell (*Pleurobema clava*), and rayed bean (*Villosa fabalis*), and one state endangered mussel, the purple Lilliput (*Toxolasma lividus*). ODNR stated that since no in-water work is proposed, the project is not likely to impact these species.

A copy of the ODNR response letter is included in Appendix 07-2.

A similar correspondence letter regarding the project was provided to USFWS in June 2013. USFWS provided comments regarding the project in a letter dated July 2, 2013. USFWS stated that no adverse impacts to federally endangered, threatened, proposed, or candidate species were anticipated. A copy of the correspondence from USFWS is included in Appendix 07-2.

(4) Soil Associations in the Corridor:

The Blount-Pewamo-Glynwood soil association is mapped at the Preferred and Alternate Sites and associated interconnections (U.S. Department of Agriculture [USDA], 1990). Figure 04-1 shows the soil associations in the study area. No soil conditions were identified that would potentially limit construction of the proposed project.

(C) IMPACTS OF ALTERNATIVE SITES ON WATER BODIES

(1) Construction Impact

No streams, ponds, wetlands, or other water crossings are anticipated during construction of Ebersole Station at the Preferred Site or Alternate Site. No impacts from construction of the proposed facility are anticipated.

(2) Operation and Maintenance Impact

No operation or maintenance impacts to water bodies are anticipated.

(3) Mitigation Procedures

A Storm Water Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs) will be implemented during construction to control erosion. Areas where soil has been disturbed will be seeded and mulched to prevent soil erosion and sedimentation.

(D) WETLANDS IMPACT

(1) Construction Impact

No wetlands were identified within the footprint of the proposed substation, or are crossed by any of the proposed access roads or interconnections. No impacts to wetlands are anticipated.

(2) Operation and Maintenance Impact

Wetland areas should not be significantly affected by the operation or maintenance of the substation and associated interconnections at either the Preferred or Alternate Site.

(3) Mitigation Procedures

No wetland impacts are expected. Therefore, no mitigation procedures are proposed.

(E) VEGETATION IMPACT**(1) Construction Impact**

Since both the substation portions of the Preferred and Alternate Sites are currently agricultural fields, no impacts to woody and herbaceous vegetation are anticipated. Herbaceous vegetation clearing is expected to be minimal.

(2) Operation and Maintenance Impact

During operation of the substation at either the Preferred or Alternate Site, the impacts on vegetated land should be minor. The undeveloped land not permanently disturbed by construction is expected to be returned to active agricultural use.

(3) Mitigation Procedures

Experience shows that seeding in non-wetland and non-agricultural areas is effective to control erosion on areas disturbed by construction activities. Seeding is typically included as part of the construction stormwater BMPs in order to rapidly restore site surface soils and prevent erosion and possible sedimentation. These measures should preserve the aesthetic qualities adjacent to the site and help prevent erosion and sedimentation.

(F) COMMERCIAL, RECREATIONAL, AND THREATENED/ENDANGERED SPECIES IMPACTS

The Project is located in a rural setting with occasional residences scattered through an agriculturally dominated landscape. The proposed Preferred and Alternate Sites are currently agricultural fields. The sites do have potential habitat for some wildlife species. Lists of commercial and recreational species were obtained from the ODNR-DOW annual hunting and trapping regulations.¹ Lists of protected species were based on their reported range within Hancock County, the ODNR Biodiversity Database, and correspondence with USFWS and ODNR. Details on the expected impacts of construction, operation and maintenance, and

¹ ODNR-DOW Ohio Hunting and Trapping Regulations 2012

mitigation procedures can be found following the commercial, recreational, and threatened and endangered species descriptions.

(1) Construction

Commercially important species consist of those hunted or trapped for fur or other commercial byproducts. Recreational terrestrial species consist of those hunted as game. Habitat for most commercial and recreational species was identified on the AEP-optional property during the field reconnaissance. Due to the agricultural nature of the Preferred and Alternate Sites, only foraging habitat was observed.

The USFWS and ODNR were contacted regarding the potential for occurrence of threatened and endangered species in the Project vicinity. Three species of concern are listed within Hancock County. The ODNR Biodiversity Database did not identify any species of concern within 1,000 feet of the Preferred or Alternate Sites. None of these species were observed at the time of the field reconnaissance.

Construction of the substation at both the Preferred and Alternate Sites would result in conversion of portions of agricultural fields to the proposed facility. The lack of suitable habitat for animal species at the current sites suggests the impact of construction will be minimal as similar foraging habitat is available on adjacent properties.

(2) Operation and Maintenance Impact

During operation and maintenance of the substation at either the Preferred or Alternate Site, impacts on wildlife are anticipated to be minor.

(3) Mitigation Procedures

The Preferred and Alternate Sites have been examined in the field and reviewed on aerial photographs by experienced biologists. No significant problem areas that would require the use of special mitigation measures for wildlife have been identified. If, however, such conditions are recognized at a later date, the condition will be mitigated appropriately on an individual basis.

(G) SLOPES AND ERODIBLE SOILS

(1) Construction Impact

Based on the Hancock County soil survey and field reconnaissance, no slopes that exceed 12 percent or highly erodible soils were identified at the Preferred or Alternate Site. A SWPPP will be implemented during construction to control erosion. BMPs will be implemented as needed to prevent erosion and to preclude sedimentation as the result of construction.

(2) Operation and Maintenance Impact

Once the substation is in place, no impacts or erosion hazards are expected.

(3) Mitigation Procedures

No special mitigation procedures are anticipated beyond those required as part of Notice of Intent (NOI) for coverage under Ohio EPA General National Pollutant Discharge Elimination System (NPDES) Permit for construction activities and SWPPP. Best management practices consisting mainly of silt fences will be used when construction takes place adjacent to storm water or sewer inlets.

(H) Other Issues

No other issues are anticipated.

APPENDIX 07-1

STREAM INFORMATION

Modified Class 1
OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 30

SITE NAME/LOCATION KEP Electric Substation

SITE NUMBER 216 RIVER BASIN 83.53875 DRAINAGE AREA (mi²) 4.1605
LENGTH OF STREAM REACH (ft) 216 LAT 83.53875 LONG 41.605 RIVER CODE 1 RIVER MILE 1
DATE 6/17/00 DRAINER DAV, M.D. COMMENTS INTERMITTENT

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: STREAM IS AN AGRICULTURAL DITCH THAT EXHIBITS CHANNELIZATION WITH THE RIPARIAN AREA CLEARED

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.		HHEI Metric Points
TYPE	PERCENT	
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="checkbox"/> SILT [3 pts]	30
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]	<input type="checkbox"/> FINE DETRITUS [3 pts]	70
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="checkbox"/> CLAY or HARDPAN [0 pts]	
<input type="checkbox"/> GRAVEL (2-64 mm) [8 pts]	<input type="checkbox"/> MUCK [0 pts]	5
<input type="checkbox"/> SAND (<2 mm) [5 pts]	<input type="checkbox"/> ARTIFICIAL [3 pts]	
Total of Percentages of Oldr Slabs, Boulder, Cobble, Bedrock <u>0</u> (A) <u>3</u> (B) <u>2</u>		A + B
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:		
2. Maximum Pool Depth (Measure the maximum pool depth within the 51 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes). (Check ONLY one box)		Pool Depth Max = 30
<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]	5
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]	
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]	2
COMMENTS: <u>MAXIMUM POOL DEPTH (centimeters):</u>		
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):		Bankfull Width Max = 30
<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' - 4' 8") [15 pts]	20
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> 1.0 m - 3' 3" [5 pts]	
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]		
COMMENTS: <u>AVERAGE BANKFULL WIDTH (meters):</u>		

This information must also be completed

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

RIPARIAN ZONE AND FLOODPLAIN QUALITY		FLOODPLAIN QUALITY	
L	R	L	R
<input type="checkbox"/> Wide >10m	<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/> Conservation Tillage	<input type="checkbox"/> Urban or Industrial
<input type="checkbox"/> Moderate 5-10m	<input checked="" type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Open Pasture, Row Crop	<input type="checkbox"/> Mining or Construction
<input checked="" type="checkbox"/> Narrow <5m	<input type="checkbox"/> Residential, Park, New Field		
<input type="checkbox"/> None	<input type="checkbox"/> Fenced Pasture		
COMMENTS: <u>Intermittent</u>			
FLOW PATTERN (At Time of Evaluation) (Check ONLY one box):			
<input type="checkbox"/> Stream		<input checked="" type="checkbox"/> Most Channel, isolated pools, no flow (intermittent)	
<input type="checkbox"/> Subsurface with isolated pools (intermittent)		<input type="checkbox"/> Dry channel, no water (ephemeral)	
COMMENTS: <u>Intermittent</u>			
SINUOSITY (Number of bends per 51 m (200 ft) of channel) (Check ONLY one box):			
<input type="checkbox"/> None		<input type="checkbox"/> 2.0	
<input type="checkbox"/> 0.5		<input type="checkbox"/> 2.5	
<input type="checkbox"/> 1.0		<input type="checkbox"/> 3.0	
<input type="checkbox"/> 1.5		<input type="checkbox"/> 3.5	
STREAM GRADIENT ESTIMATE			
<input type="checkbox"/> Flat (0.00% - 0.09%) <input checked="" type="checkbox"/> Flat to Moderate <input type="checkbox"/> Moderate to Severe <input type="checkbox"/> Severe (>0.09%)			

Stream!

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 _____
☐ SWH Name _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name _____ NRCSS Soil Map Page _____ NRCSS Soil Map Stream Order _____

County _____ Township/City _____

MISCELLANEOUS

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

Photocopy Information _____

Elevated Turbidity? (Y/N) N Conductivity (cmhos) 95

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

Field Measures Temp (°C) 16 Dissolved Oxygen (mg/L) 1.2 pH (S.U.) 7.5 Conductivity (umhos/cm) 1

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

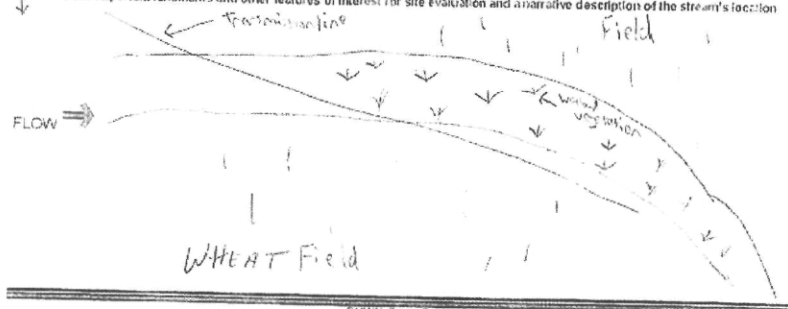
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Toads Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Bioty: heavy presence of detrital invertebrates

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





PHOTOGRAPHIC RECORD
Stream Photograph

Client Name:

AEP

Site Location:

Proposed Ebersole Station Interconnection

Project No.

14951096

Photo No. 1

Date/Location:

June 27, 2013

Description:

Intermittent Stream

Existing transmission
line crossing

Facing northeast



J:\Project\A\AEP\14951096 Ebersole Station 138kV Line OPS\B\GIS\Tech\GIS\Delineated Stream.mxd



216

216

216

Alternate Site

Stream 1

Foster-East Line
138 kV Line

Preferred Site

AEP-Optioned Property

Ridley Center 138 kV Extension

0 500 1,000

Feet

bing™

Image courtesy of USGS © 2013 Microsoft Corporation © 2013
NAVTEQ © AND

Township Road 215

APPENDIX 07-2

ODNR AND USFWS CORRESPONDENCE

Geckle, Aaron

From: Kessler, John <John.Kessler@dnr.state.oh.us>
Sent: Tuesday, July 23, 2013 1:02 PM
To: Geckle, Aaron
Cc: Tebbe, Sarah
Subject: FW: 13-324 comments AEP's Ebersole Station - URS



ODNR COMMENTS TO: URS – Aaron Geckle aaron.geckle@urs.com

Project: AEP's Ebersole Station

Location: Cass Township, Hancock County, Ohio

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.

Fish and Wildlife: The 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 with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. If suitable trees occur within the project area, these trees should be conserved. If suitable habitat occurs on the project area and trees must be cut, cutting must occur between October 1 and March 31. If suitable trees must be cut during the summer months, a net survey must be conducted between June 15 and July 31, 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 clubshell (*Pleurobema clava*), a state and federally endangered mussel, the rayed bean (*Villosa fabalis*), a state endangered and federal endangered mussel species, and the purple lilliput (*Toxolasma lividus*), a state endangered mussel. Since no in-water work is proposed, the project is not likely to impact these species.

The ODNR Natural Heritage Database has no records for rare or endangered species at this project site. We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests,

national wildlife refuges or other protected natural areas within the project area. Our inventory program does not provide a complete survey of Ohio wildlife, 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.

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler, P.E.
Environmental Services Administrator
Office of Real Estate
Ohio Department of Natural Resources
2045 Morse Rd., Columbus, OH 43229-6605
phone: 614-265-6621
email: john.kessler@dnr.state.oh.us

United States Department of the Interior



FISH AND WILDLIFE SERVICE

Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994

July 2, 2013

URS Corporation
Attn: Aaron Geckle
525 Vine Street, Suite 1800
Cincinnati, OH 45202

TAILS# 03E15000-2013-TA-1143

Re: Ebersol State Project, Hancock County Ohio

Dear Mr. Geckle,

We have received your recent correspondence requesting information about the subject proposal. There are no Federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area.

ENDANGERED SPECIES COMMENTS: Due to the project, type, size, and location, we do not anticipate adverse effects to federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

If you have additional questions or require further assistance with your project proposal, please contact me at the following number (614) 416-8993, x12. In addition, you can find more information on natural resources in Ohio, and a county list of federally threatened and endangered species in Ohio, by visiting our homepage at: <http://www.fws.gov/midwest/ohio>.

Sincerely,

Mary Knapp, Ph.D.
Field Supervisor