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Via Hand Delivery

September 23, 2009

Renee Jenkins
The Ohio Power Siting Board
180 E. Broad Street, 13th Floor
Columbus, Ohio 43215

**Re: BP-Husky Refining, LLC Toledo Refinery 138/69-kV Substation Project
Case No. 09-750-EL-BSB**

Dear Ms. Jenkins:

Please find enclosed 30 copies of BP HUSKY REFINING, LLC'S APPLICATION FOR A CERTIFICATION OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED to be filed in the above referenced. I also enclose an original and twelve (12) copies of the BP HUSKY REFINING, LLC's MOTION FOR A WAIVER OF OHIO POWER SITING BOARD RULES to be filed in the above-referenced matter.

Within box 1, there is a copy of the Application with a sticky note labeled for Jim O'Dell. This copy has all the digital information which Mr. O'Dell requested.

Very truly yours,



Kurt J. Boehm, Esq.

BOEHM, KURTZ & LOWRY

KJBkew
Enclosure

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09-750-EL-BSB

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BP-Husky Refinery 138/69-kV Substation Project

Application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need

prepared for



BP - Husky Refining LLC

BP-Husky Refining LLC
4001 Cedar Point Road
Oregon, Ohio 43616

September 2009

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri
Project No. 51202



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1.0 PROJECT SUMMARY

1.1 COPY OF PROJECT SUMMARY AND FACILITY OVERVIEW RULES

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

1.2 PURPOSE OF THE FACILITY

This application (Ohio Power Siting Board Case Number 09-750-EL-BSB) is submitted by BP-Husky Refinery (BP-Husky) for planning and construction of a new 138/69-kV substation to provide additional electrical power and improve the reliability of the power feed to the BP Husky Refinery and the proposed Reformer 3. The additional power will enable the refinery to provide electrical power to Reformer 3 that is scheduled to be commissioned in fall 2011. BP-Husky has received the air permit for the new Reformer 3 which will reduce the refineries air emissions by 5%, reduce energy consumption, and lower the water usage.

1.3 PROPOSED FACILITY DESCRIPTION

The proposed 138/69-kV substation (Project) will consist of a fenced area containing the substation electrical switchyard equipment, and a protective relay control room. The substation will be set back off of the south side of Cedar Point road and will be accessed via a new road between the fenced substation and Cedar Point Road (Figure 1.1).

1.4 SITE SELECTION PROCESS

Potential sites were selected based on their proximity to the refinery property, the 69-kV ring bus, and the FirstEnergy 138-kV transmission lines. Based on field reconnaissance and desktop survey, two potential sites were chosen. The final site was chosen after evaluating many factors, including principal environmental, safety, constructability considerations, proximity to existing infrastructure, and proximity to existing power lines for each site.

1.5 PRINCIPAL ENVIRONMENTAL AND SOCIOECONOMIC CONSIDERATION

The site selection process for the BP Husky substation included an evaluation based on several factors including:

- Land use
- Transportation corridors
- Utility corridors
- Noise sensitive areas
- Agricultural land
- Public interest
- Changes to tax revenues
- Regional development
- Visual impacts
- Cultural resources
- Floodplains
- Wetlands
- Vegetation communities
- Protected species
- Wildlife
- Soils

1.6 PROJECT SCHEDULE

Construction is tentatively scheduled to begin in March 2010. The substation is scheduled to be energized by May 2011. See Appendix A for the project schedule.

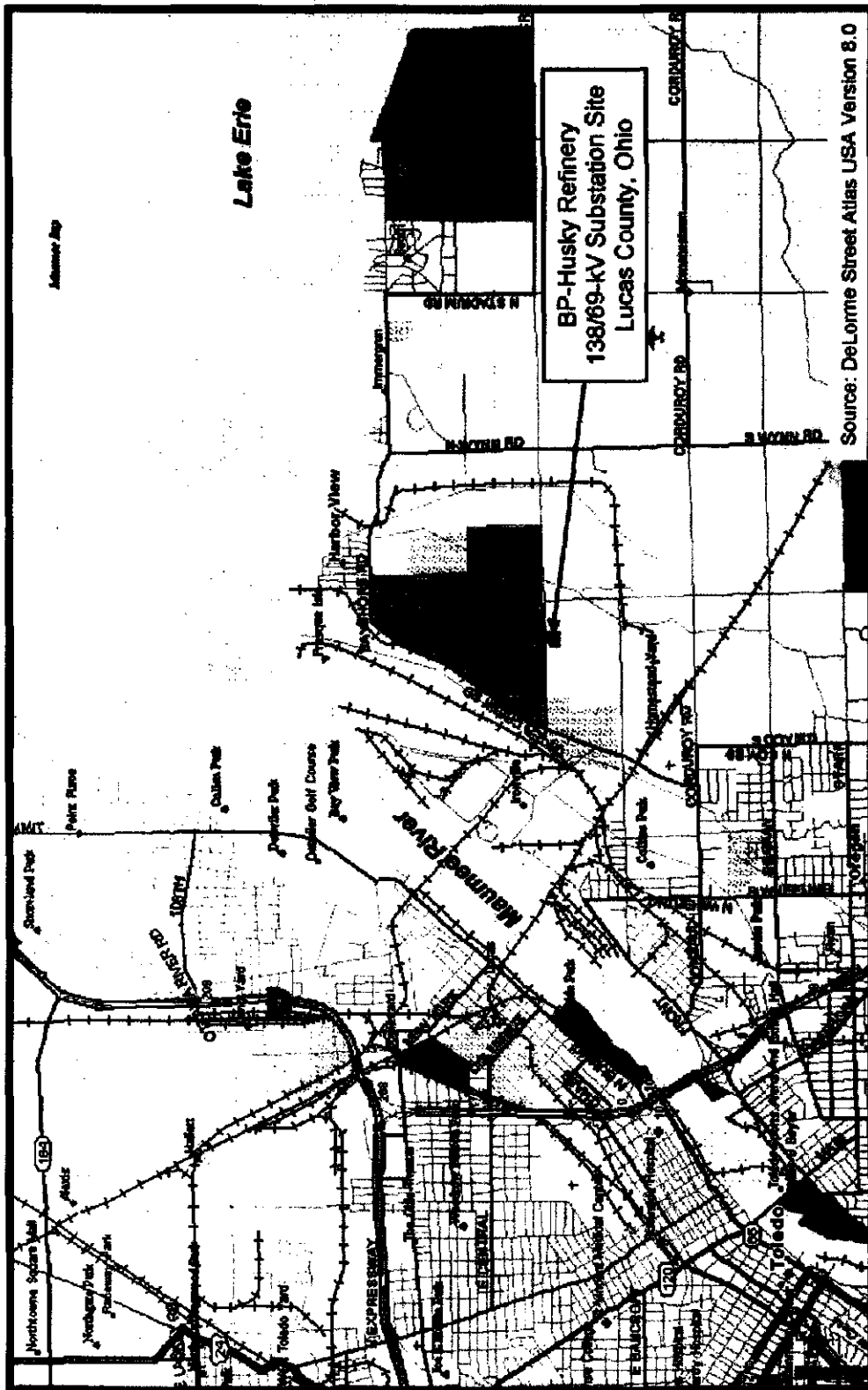




Figure 1.1
Project Location Map
BP-Husky Refinery 138/69-kV
Substation Project
Oregon, Ohio




 1 inch = 1 mile

-  Site of Proposed BP Husky Substation
-  Site of Existing BP Refinery Facility

2.0 JUSTIFICATION FOR PROPOSED PROJECT

2.1 COPY OF REVIEW OF NEED FOR PROPOSED PROJECT RULES

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.

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Replaces: part of 4906-15-04

119.032 review dates: 11/30/13

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2.2 JUSTIFICATION OF NEED

2.2.1 General Purpose of the Facility

The purpose of the Project is to provide a reliable source of power at 138-kV to supply the BP-Husky Refinery and the new Reformer 3.

2.2.2 Need for the Proposed Facility

The BP-Husky Refinery has outgrown the existing 69-kV transmission system that is currently providing electrical power to the refinery. The existing power supply is incapable of providing adequate electrical power for proposed refinery expansion plans. The Project will provide power and reliability for the existing refinery equipment and the proposed Reformer 3 addition. The Reformer 3 addition will consist of installing a new continuous catalytic regeneration reforming unit to replace two existing older, less efficient reformers. The BP Husky substation is needed to maintain the reliability and stability of the power needs of the refinery without negatively impacting the transmission and distribution of power within the area.

2.2.3 Load Flow Studies

FirstEnergy completed a Detailed Load Study (DLS) Report for the proposed project dated February 5, 2008 (Attachment 1). Load studies indicated that the existing 69-kV sub-transmission system is not capable of providing power for the proposed reformer unit, and is only marginal in providing safe reliable power to the existing refinery loads. The DLS indicates that FirstEnergy performed analytical studies to confirm the four proposed 138-kV delivery points connected to the new substation could adequately serve the BP Husky Toledo Refinery load. The DLS also indicated that the loss of up to two of the four 138-kV sources would not cause a violation of voltage or thermal limits used for 138-kV system planning criteria. After the Project is complete, the refinery load will be served solely from the 138-kV transmission system and will be disconnected from the existing 69-kV subtransmission system.

Transcription diagrams depicting system performance with and without the proposed facility are located in Appendix B.

2.2.4 Power Flow Criteria

A reliable electrical supply is critical to the safe operation of the refinery. Unplanned interruption to the supply of power will cause situations where refinery process units are not shut down in an orderly sequence and may cause great risk to refinery operators and equipment.

2.3 EXPANSION PLANS

The proposed Project is included in and meets the future plans of the BP-Husky Reformer 3 Project and is included within FirstEnergy's DLS.

2.3.1 Relationship to Long-Term Forecast

The Project will improve the reliability of electric power supplied to the refinery, thus promoting the economic vitality of the Toledo, Ohio area. The peak electrical load of the refinery is expected to increase from 65 megavolt-ampere (MVA) in 2007 to 82MVA in 2011.

2.4 PROJECT IMPACT ON ELECTRIC SYSTEM ECONOMY AND RELIABILITY

This Project will remove the refinery electrical load from the FirstEnergy 69-kV sub-transmission system. Currently, the existing 69-kV system in the refinery locale serves other significant residential and commercial loads including much of downtown Toledo. Once the refinery is moved from the 69-kV system there will be additional capacity available in the 69-kV systems to support additional load growth in the area, and power supplied to downtown Toledo will not flow through the refinery.

2.5 PROPOSED FACILITY SELECTION RATIONAL

The proposed site, which is located on land owned by BP-Husky, was selected based on its proximity to the refinery, proximity to FirstEnergy's 138-kV existing transmission lines, and because of its relatively small impact to the local environment and surrounding areas. Refer to Section 3.2 for site selection details.

2.6 ADVANTAGES AND DISADVANTAGES OF OTHER FEASIBLE FACILITIES

From a practical perspective no other facilities were deemed feasible in comparison with the proposed substation. On-site generation would be an alternative, but the installed and on-going maintenance of new generation required to achieve the same level of reliability that four 138-kV delivery points provide would certainly be cost prohibitive. This is especially true since minimal transmission line modifications are necessary being that the existing 138-kV transmission corridor is adjacent to refinery property.

2.7 FACILITY SCHEDULE

Energization of the substation is a critical component of the overall plan to build and commission the Reformer 3 addition at the refinery. Without the new substation the electrical power supply to the refinery is not sufficient to provide reliable power to existing refinery equipment and the Reformer 3

addition. If the substation is not energized by spring 2011 there could be summer outage restrictions on the existing 138-kV lines preventing connection of the lines to the new substation until fall 2011. If the substation is not energized until fall 2011 startup of the Reformer 3 addition will be delayed causing an increase in cost to complete the Reformer 3 Project.

The Project schedule can be found in Appendix A.

3.0 ROUTE ANALYSIS

3.1 COPY OF SITE AND ROUTE ALTERNATIVES ANALYSIS RULES

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.

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119.032 review dates: 11/30/13

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3.2 SITE SELECTION

3.2.1 Alternative Analysis

Alternative sites for the new substation Project were identified in and around the refinery, which is located in the City of Oregon in Lucas County (Figure 3.1). Potential sites were selected based on their proximity to the refinery property, the 69-kV ring bus, and the FirstEnergy 138-kV transmission lines. Of the two sites that were reviewed for the Project, one was selected as the Preferred Site and one was chosen as the Alternative Site. These two sites were chosen based on a site selection process which is described below.

3.2.2 Environmental Constraints/Siting Criteria

Environmental constraints and siting criteria that were considered as part of the site selection process included:

- Residents and neighborhoods
- Parks and public recreation areas
- Institutions
- Noise sensitive areas
- Archeological/historical sites
- Threatened and endangered species
- Zoning
- Wetlands
- Proximity to the refinery
- Impact to the environment
- Ease for interconnection

Since environmental impacts are low for both sites the major deciding factor for the Preferred Site is the distance from residents and the proximity to 69-kV ring bus and 138-kV transmission lines.

3.2.2.1 Study Area – Alternative Site

The Alternative Site is located outside the refinery and south of Cedar Point Road (Figure 3.2). The location of this alternative was chosen for its proximity in relation to the refinery and FirstEnergy transmission lines.

3.2.2.2 Description – Alternative Site

The Alternative Site currently consists of mainly agricultural lands.

Based on BP's preference to locate the substation south of Cedar Point Road, FirstEnergy proposed the following:

- a. Looping two 138-kV lines into the substation instead of looping one 138-kV line (Bayshore-Jackman) and constructing a new single circuit 138-kV line from Bayshore.
- b. The advantage, for FirstEnergy, of not constructing the line from Bayshore includes not expanding the Bayshore switchyard into the parking area.
- c. Looping two 138-kV lines in the substation minimizes the line work by FirstEnergy (approximately 200 to 400 feet) and increases BP-Husky system reliability. The 138-kV lines identified for looping are the Bayshore-Jackman and Bayshore-Lemoyne-Maclean.

3.2.2.3 Siting Criteria – Alternative Site

As stated earlier in Section 3.2.2.3, the Alternative Site was chosen because it is adjacent to the refinery, zoned Industrial, and for the potential ease of interconnection.

3.2.2.4 Constraints – Alternative Site

The Alternative Site was not selected as the Preferred site as it interferes with refinery plans for the development of an office campus of buildings planned for this location. Additionally, the Alternative site is closer to the nearest resident and businesses.

This site is also already zoned as Commercial Industrial (C-I) by the City of Oregon (Figure 3.3), is owned by BP-Husky, is mostly open cropland, and is not located in close proximity to parks, public recreation areas, institutions, or noise sensitive areas (Figure 3.4).

3.2.2.5 Study Area – New Substation/Preferred Site

The Preferred site is located outside of the refinery and south of Cedar Point Road (Figure 3.5). The location of this alternative was chosen for its proximity in relation to the refinery and the close proximity to the 138-kV transmission lines and the existing 69-kV sub-transmission lines simplifies all of the tie-ins, and reduces 138-kV & 69-kV line tap distances.

3.2.2.6 Description – Preferred Site

This site currently consists of mainly agricultural lands. It was selected to construct a new 138/69-kV substation that will consist of a fenced area containing the substation electrical equipment, an access road between the fenced substation and Cedar Point Road, and a storm water detention pond.

3.2.2.7 Siting Criteria – Preferred Site

As stated earlier in Section 3.2.2.5, the Preferred Site was chosen because it is adjacent to the refinery, is zoned Industrial, and will provide easy access for interconnection. Additionally, this site is further from the nearest resident and businesses than the Alternate Site.

3.2.2.8 Constraints – Preferred Site

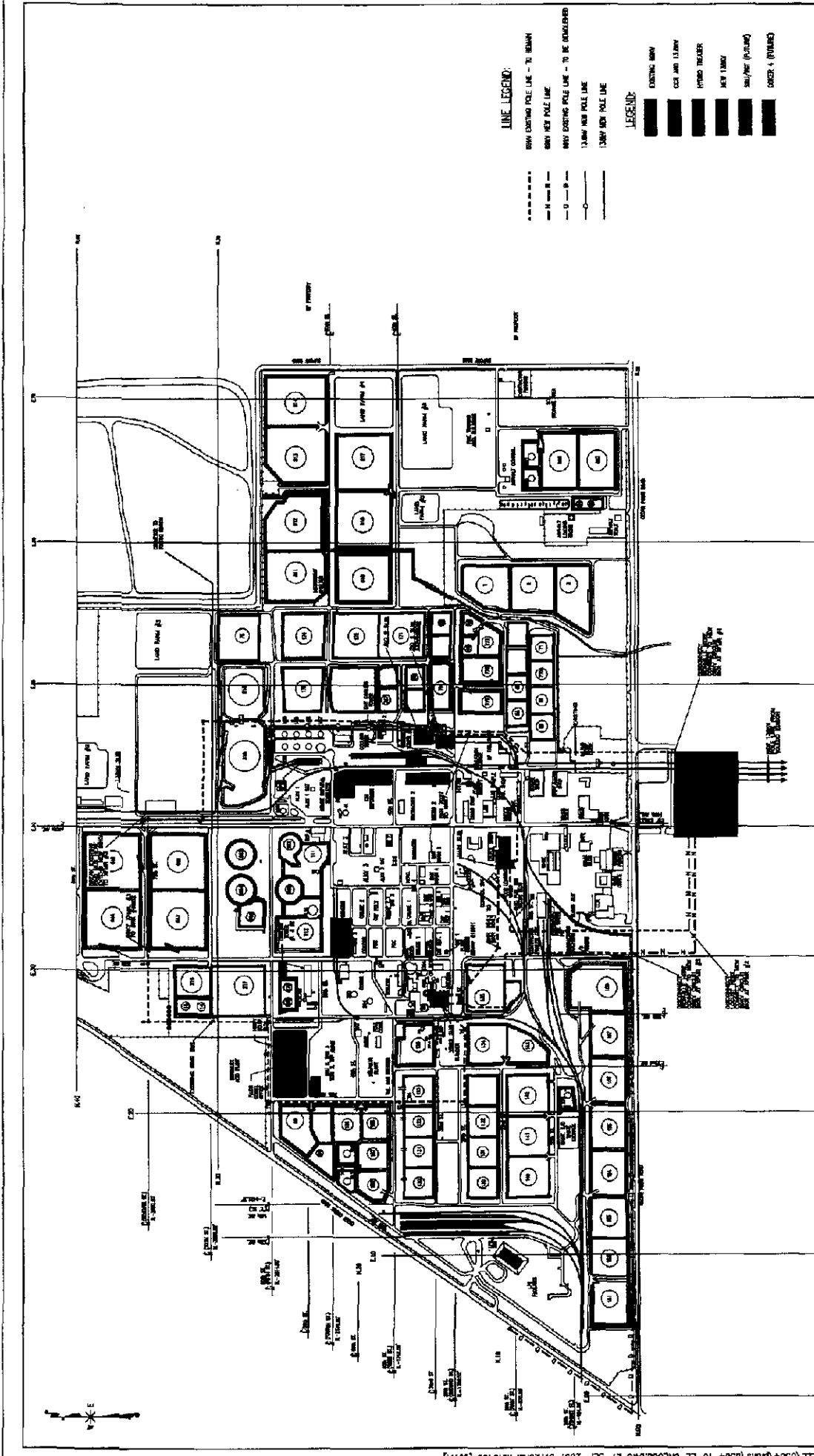
This site offered no significant development constraints, thus is the Preferred site for the Project.

This site is also located on land that is currently zoned C-I by the City of Oregon (Figure 3.3), owned by BP-Husky, mostly open cropland, and like the other alternative, is not located in close proximity to residential areas, parks, public recreation areas, institutions, or noise sensitive areas (Figure 3.4).

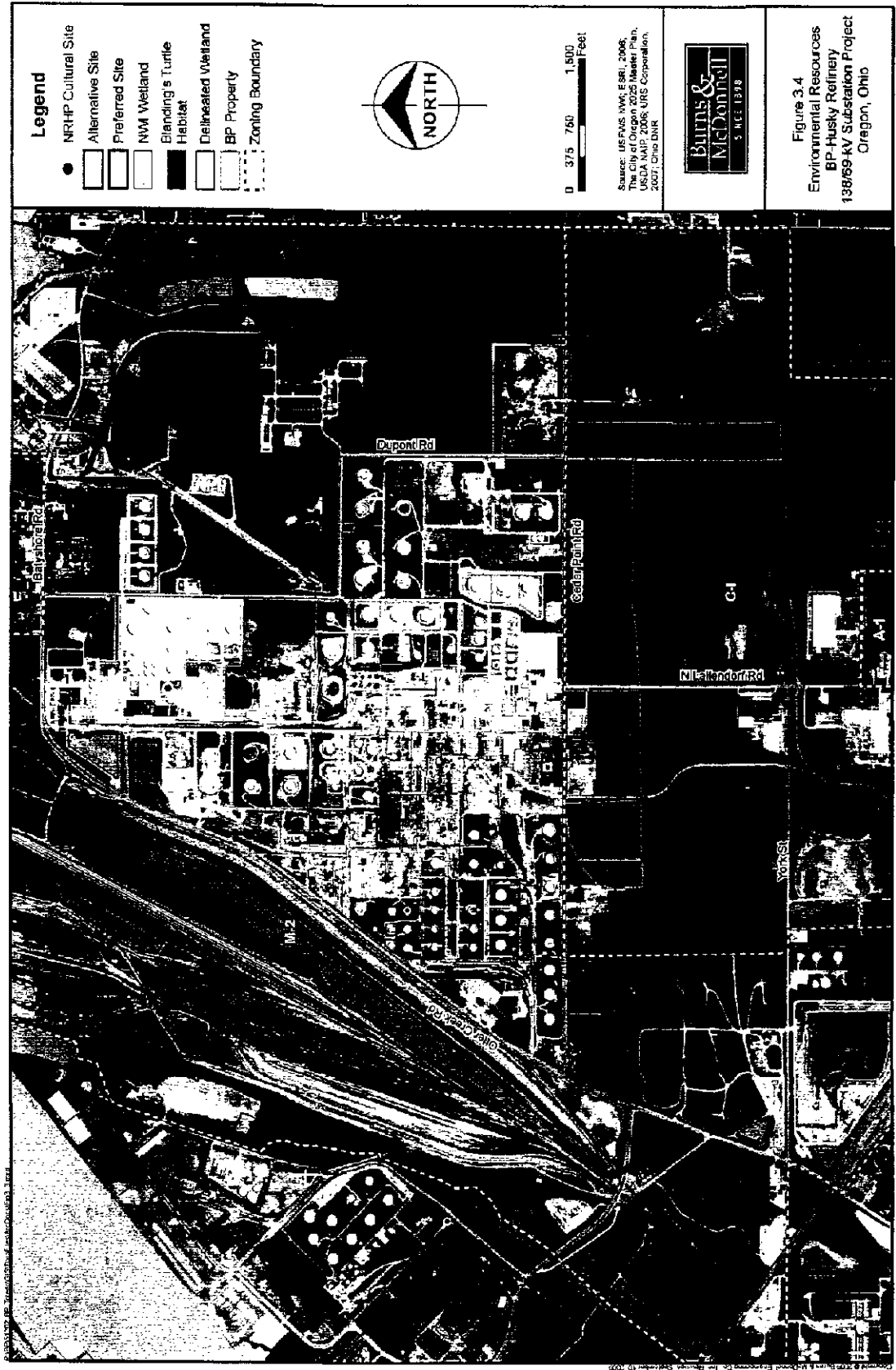
Table 3.1 Site Selection

Criteria	Alternate	Preferred
Located near refinery	X	X
Zoned appropriately	X	X
Minimum impacts to the environment	X	X
Ease for interconnection	X	X
Distance from nearest residence		X

Figure 3.2
 Alternative Site Location
 BP-Husky Refinery
 138/69-kv Substation
 Project
 Oregon, Ohio







NOTES:
1. THE MAIN REFERENCES ARE LINE
2. THE MAIN REFERENCES ARE LINE

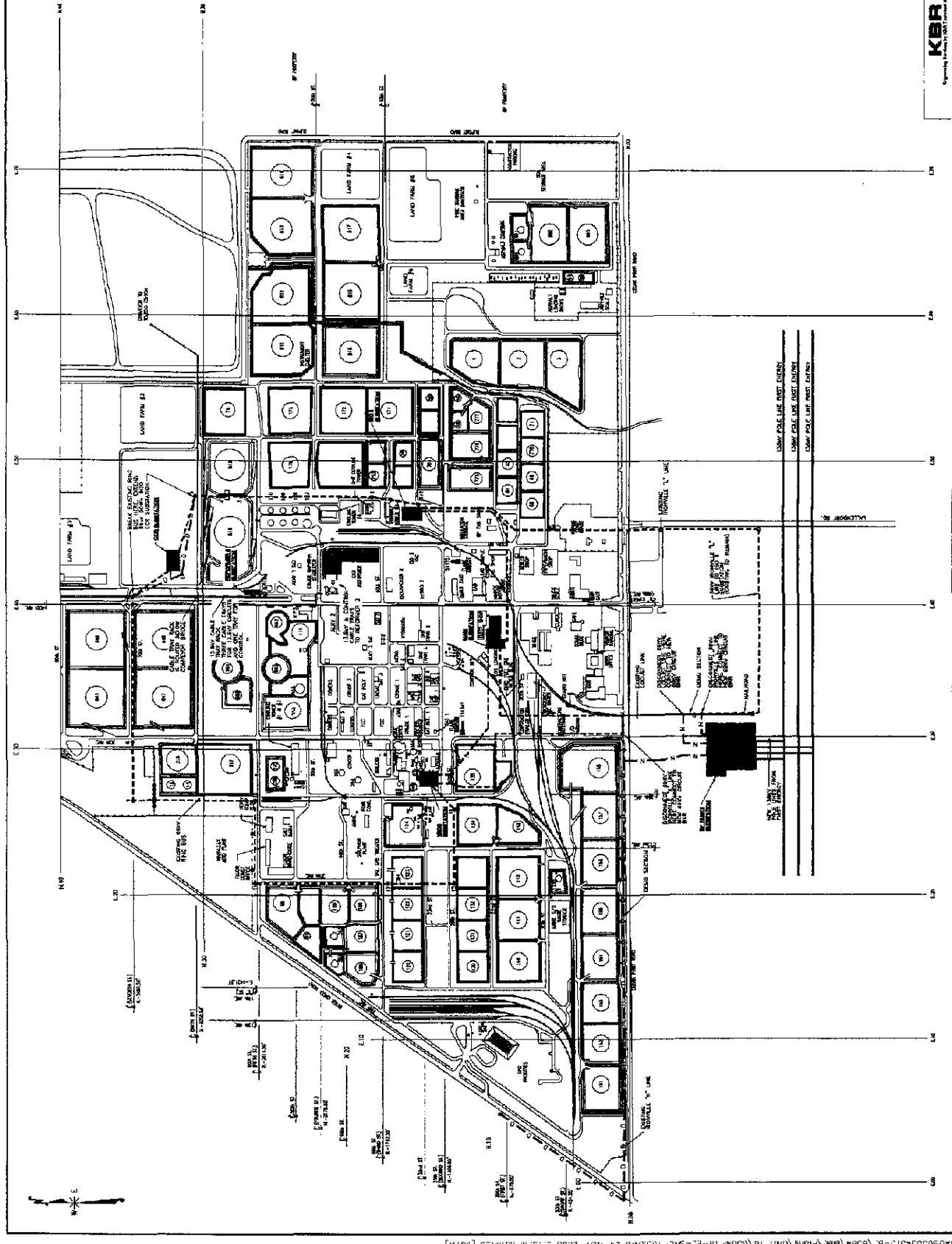
LINE LEGEND:

- EXISTING POLE LINE - TO REMAIN
- NEW POLE LINE
- EXISTING POLE LINE - TO BE DOWNGRADED
- NEW POLE LINE
- 138V CABLE TWIN BULK

LEGEND:

- EXISTING AND NEW BAY SUBSTATIONS
- REMOVED 3 SUBSTATION NEW
- NEW BAY SUBSTATION NEW

Figure 3.5
Preferred Site Location
HP-Husky Refinery
138/69-kv Substation Project
Oregon, Ohio



4.0 TECHNICAL DATA

4.1 COPY OF TECHNICAL DATA RULES

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

4.2 SITE ALTERNATIVES

Of the two sites that were reviewed for the Project, one was selected as the Preferred Site and one was chosen as the Alternative Site. These two sites were chosen based on a site selection process which is described in Section 3.2 above. The following text provides information on the location, major features, and the topographic, geologic, and hydrologic suitability of the Preferred and Alternative sites.

4.2.1 Geography and Topography

A 1:24,000 scale map depicting the Preferred and Alternative substation sites was developed using United States Geological Survey (USGS) 7.5-minute topographic maps. Detail regarding the Preferred and Alternative substation sites was provided by review of aerial photographs, soil survey data, and field reconnaissance (Preferred Site only). The proposed Preferred and Alternative substation sites are shown on Figures 4.1 and 4.2.

4.2.1.1 Transmission Lines

Transmission interconnections are the responsibility of FirstEnergy to install and operate.

4.2.1.2 Proposed Substation Sites

This application seeks certification for a BP-Husky 138/69-kV substation at the Preferred Site located outside the refinery at 3964 Cedar Point Road in Lucas County, Ohio (SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 27, T9S, R8E). Approximately nine acres of a 13-acre parcel owned by BP-Husky would be required to construct the 138/69-kV Substation Project on the Preferred Site. The Alternative Site is located on BP-Husky property at SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 27, T9S, R8E. Appropriate erosion and sediment control measures, such as silt fencing and a detention basin will be used to control storm water runoff during construction to protect water quality in the vicinity of the Project. A Storm Water Pollution Prevention Plan will be developed in accordance with the Ohio Environmental Protection Agency (EPA) Permit Number OHC000003.

4.2.1.3 Major Highways and Railroad Routes

A railroad spur is located immediately east of the Preferred Site and west of the Alternative Site, while Cedar Point Road is located immediately north of both sites. The existing 138-kV and 345-kV corridor will border the substation's property to the south. No road or railroad corridors are anticipated to be impacted by construction of the Project at either site.

4.2.1.4 Identifiable Air Transportation Facilities

No existing public air transportation facilities were identified within two miles of the proposed Preferred and Alternative substation sites. Culver Field, a private airstrip is the nearest airport (approximately two miles east of the Preferred Site). This airport is a privately owned grass airstrip that appears to be oriented north-south. Based on Federal Aviation Administration (FAA) criteria for obstructions, the proposed Preferred and Alternative sites and their interconnection transmission lines would not present a conflict with the Culver Field airport or FAA regulated airports or navigable airspace.

4.2.1.5 Utility Corridors

Electrical transmission lines owned and operated by FirstEnergy are located adjacent to and in the vicinity of both sites (within 400 feet), which each site location would use to interconnect the Project to the electric grid. A Mid-Valley Pipeline company meter terminal is located adjacent to the east side of the Preferred Site and just west of the Alternative Site (Figure 4.3). A Buckeye Pipeline corridor is located south of both sites. The metering station and pipelines are not anticipated to be impacted by the Project at either site.

4.2.1.6 Proposed Permanent Access Roads

A permanent access road will need to be constructed as part of the Project. The permanent access road is planned along the eastern edge of the Preferred Site on land owned by BP-Husky. The permanent access road will replace an existing dirt and gravel entrance way and parallel the north-south railroad spur that crosses Cedar Point Road and terminates at the BP Husky Toledo Refinery. No other permanent access roads are planned nor anticipated. The access road for the Alternative Site would also connect to Cedar Point Road and be located on BP-Husky-owned property.

4.2.1.7 Water Bodies

Based on background information, neither the Preferred nor the Alternative sites would significantly impact a stream, ditch, or pond. The Preferred Site was visited on November 19, 2008 and a wetland delineation was completed (Appendix C). It was determined that based on the results of the delineation and Project design, less than 0.1 acres of the wetland/ditch will be impacted. Based on the size of impact, a Section 404 Dredge and Fill permit will not be required from the U.S. Army Corps of Engineers (Corps). An on-site wetland delineation was not performed for the Alternative Site. An exemption waiver has been requested for on the Alternative site, because an on-site wetlands delineation was not performed.

4.2.1.8 Topographic Contours

The proposed Preferred and Alternative substation sites are located in the Lake Erie plain that is nearly level (0 to 2 percent slopes). A topographic plan for the Preferred Site is provided as Figure 4.2. The elevation of the Preferred Site varies approximately between 587 and 588 feet above mean sea level (AMSL). The elevation of the Alternative Site varies approximately between 580 and 587 feet AMSL, respectively (Figure 4.1).

4.2.1.9 Soil Associations

The soil associations that occur within the sites were identified (Figure 4.4) using the 2007 USDA *Soil Survey of Lucas County, Ohio*. Two soil types present within the Project footprint at the Preferred substation site include the Fulton silty clay loam series which occurs in the southwestern third of the Project Area and the Latty silty clay series which comprises the remaining two thirds, both are considered hydric soils. The Fulton silty clay loam soil series consists of very deep, somewhat poorly drained, with slow to moderately permeable soils, and is considered a hydric soil. The Latty silty clay soil series consists of very deep, very poorly drained, slowly permeable soils, and is considered a hydric soil.

According to the Natural Resources Conservation Service (NRCS) Soil Survey of Lucas County, Ohio (retrieved on May 6, 2009 from: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>) three soil types are present at the Alternative substation site. The Fulton silty clay loam series consists of very deep, somewhat poorly drained, with moderate permeability, and is considered a hydric soil. The Latty silty clay series consists of very deep, very poorly drained, and with moderately low permeability, and is considered a hydric soil. The Toledo silty clay loam soil series consists of very deep, very poorly drained soils with moderately low permeability.

4.2.1.10 Population Centers and Legal Boundaries

Both the Preferred and Alternative sites are located within the boundaries of the City of Oregon, Ohio. The major residential center of the City of Oregon is located approximately 1.5 to 1.75 miles southwest of the Preferred and Alternative sites, respectively.

4.2.2 Slope and Soil Mechanics

Neither the Fulton silty clay loam series, Latty silty clay series, nor the Toledo silty clay loam has slopes greater than 2 percent. The soils within the boundaries of the Preferred site and Alternative site are relatively level.

4.3 LAYOUT AND CONSTRUCTION

4.3.1 Site Activities

4.3.1.1 Surveying and Soil Testing

Aerial photographs and surveys were used to aid in site design process. The site was surveyed to establish the facility boundaries and ground elevations. The surveying was completed using conventional methods.

4.3.1.2 Grading and Excavation

Grading will be required to construct the substation and its associated facilities; however, since the sites are relatively flat, grading activities are expected to be minimal. Topsoil will be removed from the Project site. Imported material will be used for backfill to raise the site approximately three feet above the existing grade.

4.3.1.3 Temporary and Permanent Access Roads and Trenches

A permanent access road will be constructed along the eastern edge of the Preferred Site on land owned by BP-Husky. The permanent access road will replace the existing gravel entrance way and parallel the north-south railroad spur that crosses Cedar Point Road and terminates at the BP-Husky Refinery. No other permanent access roads are planned nor anticipated. A permanent access road would also be required for the Alternative Site, also on BP-Husky-owned property. Since the sites are relatively flat, grading activities for the development of the access roads is anticipated to be minimal.

4.3.1.4 Stringing of Cable and/or Laying Pipe

Conductor installation for the proposed Project will be accomplished using a short slack stringing method and will be completed by FirstEnergy and/or their subcontractors.

4.3.1.5 Post-Construction Reclamation

After construction is complete, exposed soils will be reseeded with an appropriate seed mixture and/or stabilized with appropriate erosion control measures. The site will be monitored until the vegetation becomes established and the site achieves final stabilization.

4.3.2 Layout for Associated Facilities

The layout for the Project on the Preferred Site is provided in Figure 4.3. Final grade of the 138/69-kV substation facility is provided in Figures 4.5 and 4.6.

4.3.3 Reasons for Proposed Layout

The proposed layout is driven by the close proximity to the 138-kV transmission lines and the existing 69-kV sub-transmission lines which will simplify all of the tie-ins, and reduce 138-kV & 69-kV line tap distances.

4.3.4 Plans for Future Modifications

The proposed Project has been designed to accommodate expansion planned for the next twenty years.

4.4 TRANSMISSION EQUIPMENT

4.4.1 Electric Transmission Line Design Specifications

This permit application is for construction of a 138/69-kV substation only. Permitting for the associated 138-kV line modifications to connect the 138-kV transmission system to the substation will be the responsibility of FirstEnergy.

4.4.2 Electric Transmission Substation Design Specifications

The proposed Project will contain the following major equipment.

1. Four (4) 138-kV line deadend structures
2. Twelve (12) 138-kV circuit breakers in a breaker-and-a-half bus arrangement
3. Twenty-Seven (27) 138-kV switches
4. Three (3) 138-69-kV, 60 MVA transformers
5. Three (3) 69-kV circuit breakers
6. Six (6) 69-kV switches
7. One (1) Pre-fabricated electrical equipment shelter (28 ft x 46 ft)
8. Twenty (20) Protection and Control Panels
9. Two (2) RTU/HMI systems
10. Two (2) 125VDC auxiliary power systems
11. Three (3) 120,240VAC auxiliary power systems

4.5 ENVIRONMENTAL AND AVIATION COMPLIANCE INFORMATION

4.5.1 Required Permits

See Appendix D for a Permit Matrix outlining permits that are required for this Project.

4.5.2 Removal and Disposal of Construction Debris

A variety of debris is associated with construction of the 138/69-kV substation; however, debris generated during construction will be disposed of properly at a licensed commercial landfill.

4.5.3 Storm Water

A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented to minimize erosion during construction and restoration of wetlands, and streams disturbed as a result of construction activities associated with this facility. A copy of the SWPPP will be available upon request.

4.5.4 Contaminated Soils and Hazardous Materials

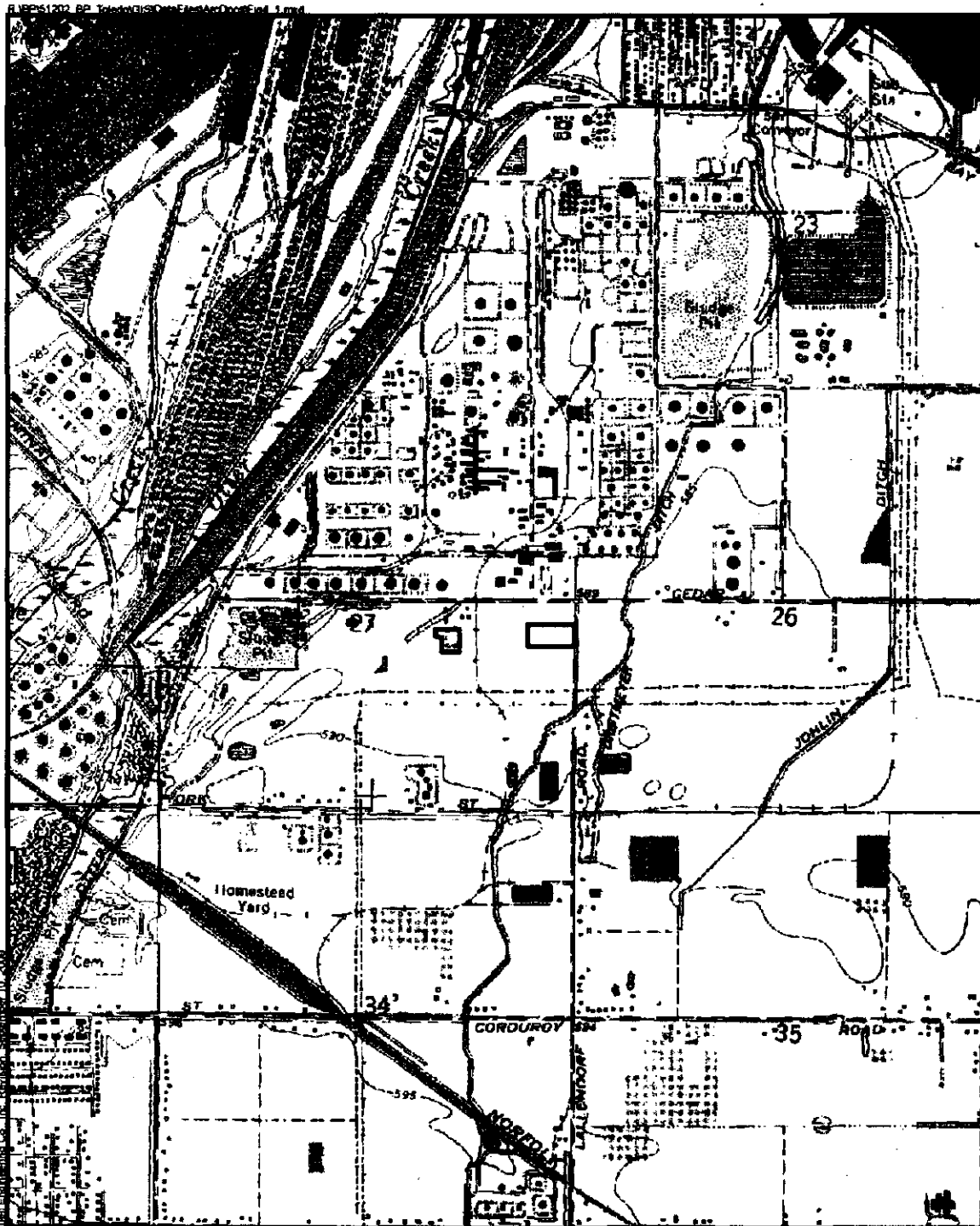
It is not anticipated that there will be contaminated soils or hazardous materials on-site.

4.5.5 Structure Height

The tallest structure is 92 feet tall from grade to the top of the lightning mast.

4.5.6 Muddy/Dusty Soil Conditions

Construction during excessively muddy soil conditions will be avoided. If it can not be avoided matting will be used. Dust controls will be used as necessary, such as watering or palliatives.



Source: USGS Topo Quad: Oregon, 1960

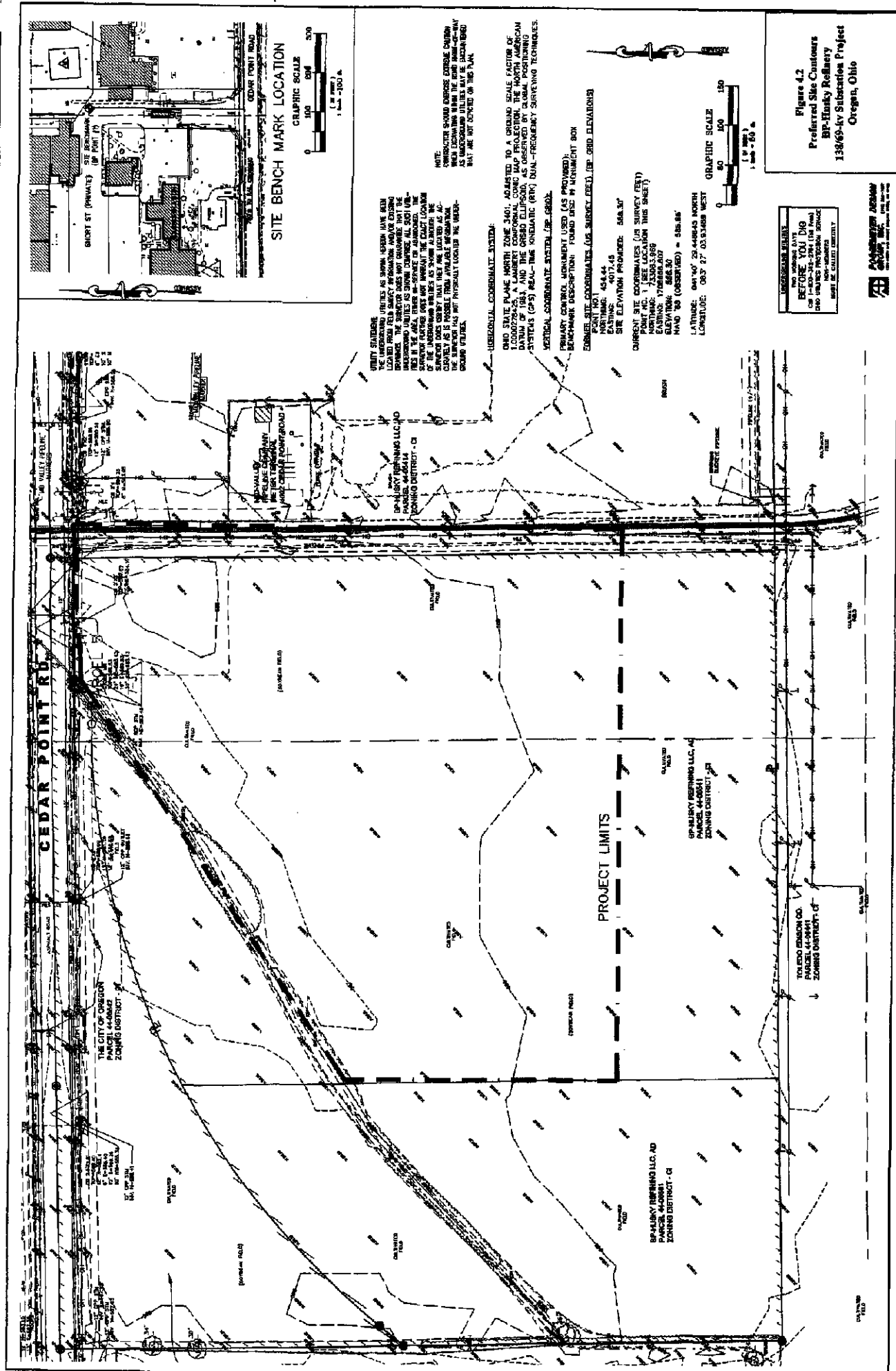
Preferred Site Alternative Site



0 1,000 2,000 4,000 Feet

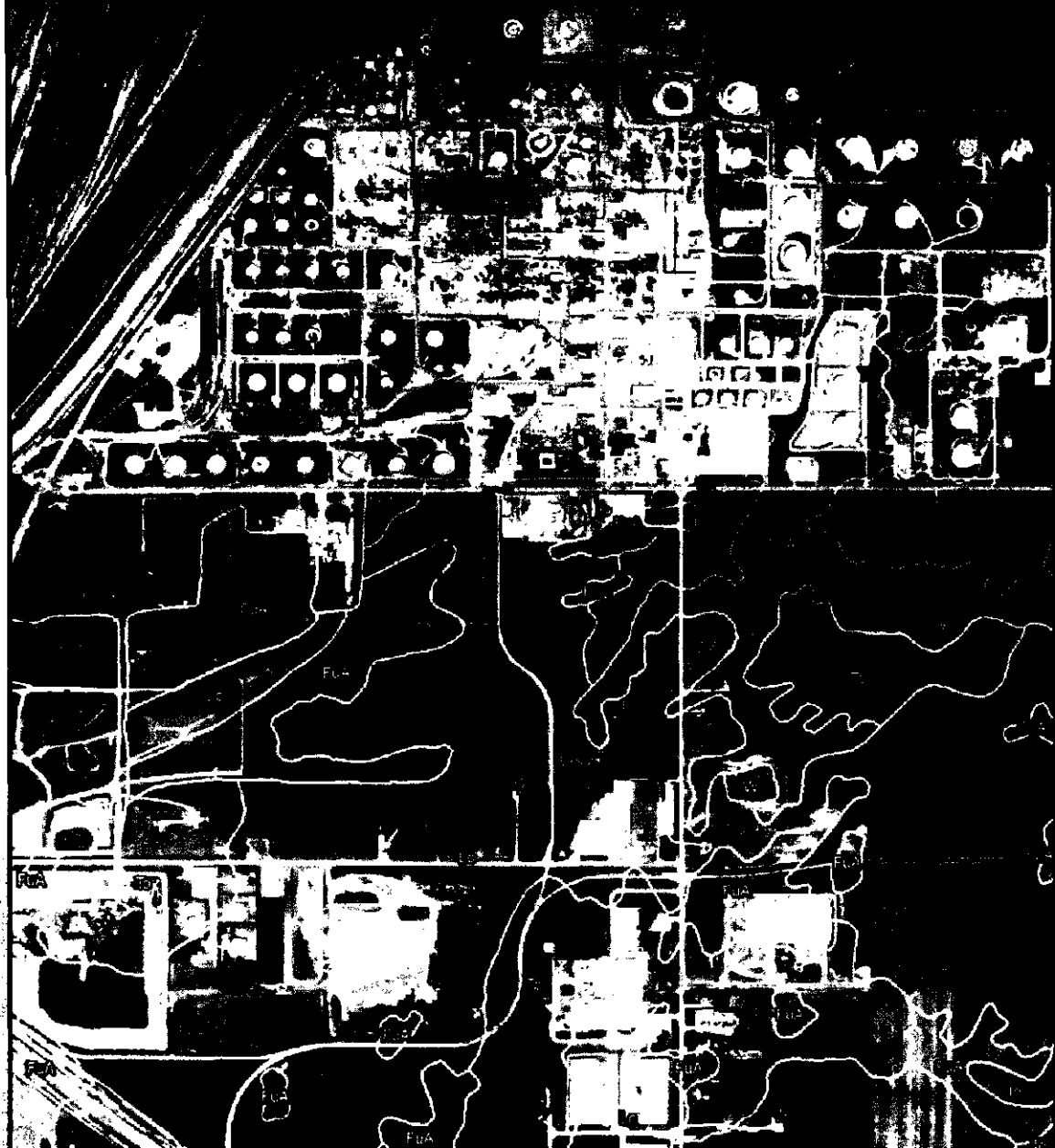


Figure 4.1
Alternative Site and
Preferred Site Topography
BP-Husky Refinery
138/69-kV Substation Project
Oregon, Ohio



R:\BP51202_BP_Toldeo\GIS\Data\Files\MapDocs\Soil.mxd

FuA - Fulton silty clay loam
 FuB - Fulton silty clay loam
 Lc - Latty silty clay
 To - Toledo silty clay
 Uo - Udorthents, loamy
 W - Water



Source: USDA NAIP, 2006; SSURGO

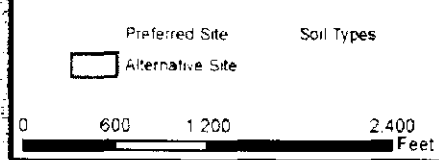


Figure 4.4
 USDA Soil Survey Map
 BP-Husky Refinery
 138/69-kV Substation Project
 Oregon, Ohio



5.0 FINANCIAL DATA

5.1 COPY OF FINANCIAL DATA RULES

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

5.2 OWNERSHIP

The 138/69-kV substation facility, structures, equipment, including the parcel of land containing the substation site and the 69-kV distribution line connection to the refinery, will be owned by the BP-Husky Refinery, FirstEnergy will operate and maintain the facility. The 138-kV interconnection lines will be constructed and operated by FirstEnergy and the easement for the lines will be provided by FirstEnergy.

5.3 ELECTRIC CAPITAL COSTS

5.3.1 Land and Land Rights

A copy of the property deed indicating that BP-Husky is the legal owner of the parcel where the Preferred Site is located is provided in Appendix E. Additional land will not need to be purchased for the Project.

5.3.2 Structures and Improvements

This permit application is for construction of a 138/69-kV substation only. Permitting for the associated 138-kV line modifications to connect the 138-kV transmission system to the substation will be the responsibility of FirstEnergy.

5.3.3 Substation Equipment

The total estimated cost of equipment to be installed in the substation is \$10,500,000 plus labor.

5.3.4 Poles and Fixtures

This permit application is for construction of a 138/69-kV substation only. Permitting for the associated 138-kV line modifications to connect the 138-kV transmission system to the substation will be the responsibility of FirstEnergy.

5.3.5 Towers and Fixtures

This permit application is for construction of a 138/69-kV substation only. Permitting for the associated 138-kV line modifications to connect the 138-kV transmission system to the substation will be the responsibility of FirstEnergy.

5.3.6 Overhead Conductors

The total estimated cost of overhead conductors to be installed in the substation is \$270,000 plus labor.

5.3.7 Underground Conductors and Insulation

BP-Husky is not intending to construct underground conductors and insulation as part of this Project.

5.3.8 Underground-to-Overhead Conversion Equipment

BP-Husky is not intending to construct underground conductors as part of this Project; thus, no underground-to-overhead conversion equipment will be required.

5.3.9 Right-of-Way Clearing and Access

This permit application is for construction of a 138/69-kV substation on private land owned by BP-Husky. Some land clearing and grading will be required to prepare the site for the installation of facilities, including the substation yard, access road and storm water detention basin. Since the sites are comprised mostly of flat agricultural lands, clearing and grading are expected to be minimal. The effort for these activities is anticipated to be \$1,000,000. Activities associated with the interconnection lines are the responsibility of FirstEnergy.

6.0 SOCIOECONOMIC AND LAND USE IMPACT ANALYSIS

6.1 COPY OF SOCIOECONOMIC AND LAND USE IMPACT ANALYSIS RULES

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

6.2 SOCIOECONOMIC AND LAND USE CHARACTERISTICS

Figure 4.1 depicts the proposed Preferred and Alternative substation sites which are located in an area of Lucas County that is zoned industrial. The proposed footprint of the 138/69-kV substation is located south of the existing BP-Husky Refinery and Cedar Point Road, west of an existing railroad spur, and north and east of existing FirstEnergy 138-kV transmission line corridors and agricultural properties. No residents, parks, public recreation areas, institutions, or noise sensitive areas are located on, adjacent to, or in the vicinity of the Preferred or Alternative sites of the proposed Project (Figure 3.4)

The study area includes the northeast portion of Lucas County, Ohio. Both the Preferred and Alternative substation sites are located within the city limits of Oregon, Ohio. The City of Oregon is the county seat of Lucas County. Table 6-1 contains selected demographic and economic data from the U.S. Census Bureau 2000 census data for the City of Oregon, Lucas County, and the State of Ohio.

Table 6.1 Socioeconomic Characteristics for the City of Oregon, Lucas County, and the State of Ohio

Characteristic	City of Oregon	Lucas County	Ohio
Total Population	19,355	455,054	11,353,140
Minority	5.1%	22.5%	15%
Projected 2020 Population	not available	434,648	12,005,733
Total Housing	8,025	169,259	4,783,051
Median Value	\$117,600	\$90,700	\$130,700
Median Household Income	\$45,777	\$38,004	\$40,956
Total Labor Force	9,612	226,450	5,694,708
Unemployment Rate	5.4%	6.3%	5%

Source: U.S. Census Bureau United States Census 2000 data <http://www.census.gov/main/www/cen2000.html>;
Ohio Department of Development Ohio County Indicators July 2008
<http://www.development.ohio.gov/research/files/sl100.pdf>

The majority of the population within Lucas County is located within the Toledo metropolitan area which includes the City of Oregon. The primary population centers for the City of Oregon are located approximately 1.5 to 1.75 miles west of the Preferred and Alternative substation sites, respectively.

6.3 LAND USE IMPACTS

6.3.1 General Land Use

Both sites are currently used for agricultural purposes and both sites are zoned C-I (Commercial-Industrial) according to the City of Oregon's Master Plan for existing zoning. Both sites would require the land directly impacted by the Project to be taken out of agricultural production.

6.3.2 Residential

The proposed Project will not impact any residential areas.

6.3.3 Commercial

The proposed Project will not impact any commercial properties.

6.3.4 Industrial

BP-Husky is constructing the proposed Project to meet the energy needs of its Reformer 3 Project and the City of Oregon.

6.3.5 Cultural

A cultural resources review was completed for the site and an on-site survey was conducted by a qualified archeologist. A copy of the findings and a full report is located in Appendix F. Based on the review of the records at the Ohio Historic Preservation Office (OHPO) and the site visit, no known National Register of Historic Places eligible sites are within 1,000 feet of the Preferred or Alternative sites.

6.3.6 Agricultural

The Project will remove approximately 12 acres of agricultural land from crop production; however, both the Preferred and Alternative sites are located on land currently owned by BP-Husky and zoned as Commercial-Industrial.

6.3.7 Recreational

No parks or public recreation areas are located on or in the vicinity of either site; therefore, none will be impacted by the Project.

Based on a review of available information, no natural areas, preserves, recreational areas, or scenic rivers were identified within 1,000 feet of the Preferred or Alternative sites.

6.3.8 Institutional

No schools, hospitals, churches, government facilities are located on or in the vicinity of either the Preferred or Alternative site; therefore, none will be impacted by the Project.

6.3.9 Transportation Corridors

Neither site will impact the railroad spur, located east of the Preferred site and west of the Alternative site, or Cedar Point Road, located north of each site. No other road or railroad corridors in the vicinity of the Project are anticipated to be impacted by construction of the Project.

6.3.10 Regional Development Plans

The City of Oregon's 2025 Master Plan serves as a general policy guide for directing community growth and development in the city through the year 2025. Based on this 2025 Master Plan, the proposed Project at either site would not impact development plans or other goals laid out in the Master Plan. The Master Plan shows the sites and surrounding areas for commercial/industrial uses. The City of Oregon also has a Zoning Code to regulate development in the City. Both the Preferred and Alternative sites are currently zoned as C-I. Construction of the proposed Project would be consistent with other commercial and industrial land uses in the vicinity.

6.3.11 Existing Utility Corridors

The proposed Project is located adjacent to an existing east-west FirstEnergy high-voltage overhead transmission line corridor located south of the Preferred and Alternative sites and a north-south 69-kV distribution line corridor located along the eastern edge of Preferred Site along an existing railroad spur corridor.

6.3.12 Noise Sensitive Areas

No noise sensitive areas, such as residential neighborhoods, recreational parks, and institutions (e.g., schools, hospitals, churches, government facilities, etc.), are located within the vicinity of the Preferred Site. The City of Oregon noise regulation (Ordinance No. 531.14) sets a commercial noise limit of 70 dBA during daytime operation (7:00 AM to 10:00 PM), and 65 dBA during nighttime operation (10:00 PM to 7:00 AM). A preliminary noise study has been completed for the site which measured ambient noise conditions at the site and predicted noise levels once the proposed substation is operational. The results indicated no significant increase to the nearest residence or business. A copy of this study is included in Appendix G.

6.3.13 Agricultural District Land

According to the Lucas County Auditor's Real Estate Information System, no agricultural district land is located on or within the vicinity of the Preferred or Alternative sites for the proposed Project. No impacts to agricultural district lands are anticipated.

6.4 LAND USE IMPACT

6.4.1 Residential Structures

There are no residential structures within one thousand feet of the Preferred Site.

6.4.2 Construction

Agricultural land will be disturbed during construction; however, areas not needed for Project facilities will be seeded and stabilized according to best management practices and converted back to preconstruction conditions, with the exception of vegetation as compared to cultivated land. Permanent facilities not being reverted back to preconstruction conditions include the fenced substation yard (will contain gravel), access road, and detention basin and outlet.

6.4.3 Operation and Maintenance

Operation and maintenance of the Project should have very little to no impact on the Project site. Routine maintenance will be conducted to ensure the substation facilities are operating appropriately and that the storm water system is functioning effectively.

6.4.4 Mitigation Procedures

Since no significant environmental or socioeconomic impacts are anticipated as a result of the Project, no mitigation measures are being proposed.

6.5 PUBLIC INTERACTION INFORMATION

The following describes the impact of the proposed Project on the general public, including information on government jurisdictions within the project area, public offices contacted, programs planned for increasing public knowledge of the proposed project, insurance and public benefits related to the new facility, effects on local taxes, and impacts of the facility on regional development.

6.5.1 Government Jurisdictions

The Preferred and Alternative sites for the proposed Project are located within the Oregon Township of Lucas County and within the City of Oregon.

6.5.2 Public Officials Contacted

Initially, representatives from the BP-Husky informally contacted public official representing the City of Oregon. On August 6, 2009, BP-Husky met with Paul Roman, the City of Oregon's Director of Public Service, to discuss the proposed Project this meeting resulted in Project introduction meeting with Paul

Roman, Jim Gilmore, and Paul Buhrer from the City of Oregon on September 10, 2009. On August 27, 2009, Jim O'Dell from the Ohio Power Siting Board (OPSB) was contacted by BP-Husky to identify the Project and begin technical discussion about the proposed Project, this resulted in a Project information meeting and site visit with Jim O'Dell, Jason Cross, and Nick Doss from the OPSB on September 4, 2009. These same officials were subsequently invited to the Public Information Meeting held on September 10, 2009 to solicit input on the Preferred and Alternative sites for the Project. Appendix H includes the meeting minutes from the meetings with the OPSB and the City of Oregon, information and boards presented at the Public Information Meeting, and a copy of the public notice published in the Toledo Blade on September 2, 2009.

6.5.3 Public Information Programs

A Public Information Meeting was held on September 10th, 2009 to present the project to the public and collect comments from local stakeholders as dictated by the OPSB. The meeting was attended by approximately 15 people. The attendees to the Public Information Meeting included public officials, City Council members including the Mayor, and local electrical union officials. All attendees were in favor of the Project. There were no comments from the attendees beyond when the project was anticipated to start and who was going to perform the skilled construction labor.

6.5.4 Liability Compensation

BP-Husky currently self-insures against primary general liability and property damage exposure, as well as primary liability exposure in connection with its refining operations.

6.5.5 Serving the Public Interest

The project will serve the public interest by providing improved system reliability and voltages of the 69-kV sub-transmission system by moving BP-Husky to the 138-kV transmission system without negatively impacting the reliability of the transmission system in the area. Specifically, the proposed 138/69-kV substation will provide power to planned upgrades at the BP-Husky Refinery. The planned upgrade involves replacing two existing Reformer 1 and Reformer 2 with a new Reformer 3 which will employ state-of-the-art continuous catalytic regeneration technology. The replacement of two catalytic reformers with one new state-of-the-art reformer is expected to reduce the emissions produced by the BP-Husky Refinery, which benefits the public in the City of Oregon by reducing air emissions by 5% and reducing the water usage of the facility.

6.5.6 Tax Revenues

The Preferred and Alternative sites for the proposed 138/69-kV substation are entirely within the City of Oregon and Lucas County. BP-Husky will directly remit property tax assessed on the substation facilities to the City of Oregon and Lucas County. The appropriate annual property tax associated with the Preferred and Alternative sites is \$2,640 and \$ 19,844, respectively. It is anticipated the new tax revenues as a result of the new facility on the Preferred and Alternate sites would be \$299,103 and \$316,245 respectively.

6.5.7 Impact on Regional Development

The Project is likely to have a small, but positive impact on regional development within the City of Oregon and Lucas County through improved 69-kV system reliability service to the local community. No negative impacts to regional development are anticipated.

6.6 HEALTH AND SAFETY INFORMATION

6.6.1 Compliance with Safety Regulations

The construction and operation of the proposed Project and associated transmission and sub-transmission line modifications will comply with the requirements specified in the National Electric Safety Code and by the Public Utilities Commission of Ohio, and will meet all applicable safety standards established by the Occupational Safety and Health Administration (OSHA).

6.6.2 Electric and Magnetic Field Production

Factors that affect these levels include the variance in the right-of-way widths, daily and projected long-term line loading, contingency operations, phase configuration, direction of current flows, conductor sag, ground elevations, unbalanced conditions, and other nearby magnetic field sources or conductors of neutral current including water mains, metallic fences, and railroad tracks. Electric field computations assume that shrubs, trees, buildings, and other objects are not in proximity to the facilities, as they produce significant shielding effects. Other transmission or distribution facilities in the vicinity of the substation may also affect the calculated fields. The calculations assume current flows in the direction expected under normal system operating conditions. Finally, the calculated field levels assume a reference point approximately 3 feet (1 meter) above ground. The Preferred Site of the proposed 138/69-kV substation is located adjacent to the existing east-west FirstEnergy 138-kV transmission line corridor located, south of the proposed site, and a north-south 69-kV sub-transmission line corridor located along the eastern edge of proposed site. The Alternative Site is also located adjacent to the existing east-west FirstEnergy 138-kV transmission line corridor.

6.6.2.1 Calculated Electric and Magnetic Fields

Electric and magnetic field calculations have not been performed for the substation, however, a reasonable estimate is that the electric field will be less than 0.5-kV/m and the magnetic field will be less than 10 mG at the nearest property line to the new substation. Below is the calculations for the transmission lines.

EMF CALCULATIONS		Electric Field kV/meter	Magnetic Field mGauss
Normal Loading	Under Lowest Conductor	2.51	122.8
	At Right-of-Way Edges	0.4	32.55/12.79
Emergency Loading	Under Lowest Conductor	2.51	338.8
	At Right-of-Way Edges	0.4	104/29.89
Winter Rating	Under Lowest Conductor	2.51	498.3
	At Right-of-Way Edges	0.4	206.2/61.56

6.6.2.2 Current EMF Knowledge

Electric and magnetic fields (EMF) are invisible lines of force found throughout nature and around all living things, including every person's central nervous system. In fact, the Earth is the largest natural source of magnetic fields, which cause compass needles to point North. Electric and magnetic fields also result from the flow of electric power and are found around all electric appliances and house wiring, as well as around power lines. The strength of these fields decreases rapidly with distance from the source.

Relatively few studies have suggested that there may be some risk associated with EMF exposure, but the risk would be very slight compared to other environmental risks encountered in everyday life. Some research completed to date has not determined what EMF levels, if any, might be considered potentially "harmful." In fact, there is evidence suggesting that stronger fields may not pose health risks any more than weaker fields.

The electric utility industry and members of the scientific community, worldwide, have completed a number of major research programs. Much of the research was sponsored by EPRI, the research arm of the electric utility industry. Since 1973, electric utilities have invested more than \$80 million to learn more about EMF. A national EMF measurement project funded by 60 electrical companies and through the participation of utility workers tracked actual EMF readings where utility employees work and live.

As a part of the National Energy Policy Act of 1992, the Electric and Magnetic Fields Research and Public Information Dissemination (EMF RAPID) program was initiated within the five-year effort under the National EMF Research Program. The culmination of this five-year effort resulted in a final RAPID Working Group report, which was released for public review in August 1998. The Director of the National Institutes of Environmental Health Sciences (NIEHS) then prepared a final report to Congress after receiving public comments.

The NIEHS' Director's final report, released to Congress on May 4, 1999, concluded that extremely low frequency electric and magnetic field (ELF-EMF) exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. However, the Director further stated that the conclusion of this report is insufficient to warrant aggressive regulatory concern.

The U.K. Childhood Cancer Study, published in *The Lancet Medical Journal* on December 4, 1999, found no increased risk of leukemia, brain tumors, or other types of cancer among children living in homes with high electromagnetic field (EMF) exposures. Researchers compared levels of EMF—which surround power lines and electrical cables—in the homes, schools, and nurseries of two groups of 2,226 children, one group with cancer and the other without. The eight-year study found no connection to cancer incidences even in the 10 percent of homes exposed to the highest levels of EMF.

6.6.2.3 Design Considerations to Reduce Electric Magnetic Fields

Although no studies have provided conclusive links between EMF exposure and health impacts, facility design generally seeks to minimize EMF exposure to workers and the general public. The substation electrical conductors and equipment will be installed using typical industry standard spacing between conductors and will be installed at a height above grade to maintain safe electrical clearances per the National Electric Safety Code. No extraordinary design measures will be taken to reduce EMF; however, the substation fence will keep pedestrians at least 30 ft (horizontal distance) from any energized conductor and the Preferred site is more than 400 ft from any normally occupied facility.

6.6.3 Aesthetic Impact

The proposed Project and associated overhead lines will have a minimal aesthetic impact because the Project is located in an industrial area that is zoned C-I for such activities. The sites are adjacent to an existing public road, railroad corridor, the BP Husky Toledo Refinery, and crop fields. Residential neighborhoods, public parks, or historic districts are not located within the vicinity of the substation; thus,

no important view sheds or historic or aesthetic settings within the landscape would be negatively impacted.

6.6.4 Radio and Television Impact

The following information relates to the electromagnetic influence of the proposed Project and distributions lines upon both radio frequency interference (RFI) noise and television interference (TVI) noise. During the operation of the proposed Project and associated overhead lines, gas type discharges (corona) could result in either of these two types of electromagnetic influence. However, large corona levels are typically not encountered at 138-kV or 69-kV transmission lines, so these types of interference do not generally occur.

The radio frequency noise level of the proposed 138/69-kV substation and associated overhead lines during heavy rain may be greater than the fair weather radio frequency noise level. However, the quality of radio reception under typical heavy rain conditions is affected more by atmospheric conditions than by operation of substations and their associated transmission and sub-transmission lines.

Gas-type (corona) discharges can also produce radio frequency (RFI) and television (TVI) interference. These are localized effects (from ball and socket hardware in insulators, hardware to hardware, line to hardware, etc.) primarily from defective hardware and may be easily and quickly detected. Once detected, the hardware either may be repaired or replaced, thus eliminating the interference source.

6.7 CULTURAL RESOURCE IMPACT

6.7.1 Identification of Landmarks

As part of the data collection, cultural resource records were researched at the OHPO to identify historic and archaeological sites within the study area (Appendix F). National Register of Historic Places eligible places are not present within 1,000 feet of the Preferred or Alternative sites.

6.7.2 Construction Impacts

Although not required by Section 106 of the National Historic Preservation Act, a cultural resources pedestrian survey was conducted at the Preferred site to make sure no known significant cultural resources will be impacted by the Project (Appendix F). The survey was conducted in accordance with the 1994 archaeology guidelines issued by the OHPO in conjunction with the Ohio Archaeology Council. A report summarizing background and archival research, results of field testing, and interpretation of survey results was prepared and is Appendix F.

Construction of the Project at either the Preferred or Alternative sites is expected to have no impacts on natural areas, preserves, recreational areas, or scenic rivers. A separate review for the Alternate Site was not performed due to the proximity of the Preferred Site. A waiver has been requested from these requirements.

6.7.3 Operation and Maintenance

Maintenance of the substation and associated facilities may require removal of vegetation that may interfere with the operation of equipment. Vegetation removal will be conducted periodically to prevent re-growth of incompatible vegetation within and immediately adjacent to the fenced area of the substation. The Preferred Site will require minimal vegetation clearing.

6.7.4 Mitigation Procedures

No known areas of mitigation exist within 1,000 feet of the Preferred or Alternative substation sites at this time. If areas requiring mitigation procedures are identified, they will be mitigated appropriately on an individual basis.

6.8 NOISE EMISSIONS

The City of Oregon noise regulation (Ordinance No. 531.14) sets a commercial noise limit of 70 dBA during daytime operation (7:00 AM to 10:00 PM), and 65 dBA during nighttime operation (10:00 PM to 7:00 AM). Please refer to Section 6.3.1.2 above and the noise study located in Appendix G for operational noise levels.

6.8.1 Site Clearing and Construction

Audible noise during site clearing and construction is associated with construction equipment and is temporary and localized. Proper maintenance, operation, and use of equipment with mufflers will lessen the noise impacts during the site clearing and construction phases of the Project. Impacts to noise sensitive areas are also not anticipated during construction (Table 6.2). The result shows no audible increase from construction activities at the nearest residence and businesses. Vehicle and equipment noise in relation to accessing the site will be no significant increase of normal equipment and vehicle traffic near the refinery.

Anticipate air emissions from construction activities are out lined in Table 6.3 below

6.8.2 Operation and Maintenance Impacts

The proposed Project will be equipped with low noise 138/69-kV transformers to minimize noise emissions from the facility. The proposed Project will be designed to not have a significant increase to the existing noise levels of the Project area.

Inspections of the substation facilities, including the associated overhead lines, are conducted periodically. Repairs and/or adjustments are made without undue delay. Standard tests and checkouts are periodically conducted along with routine equipment maintenance. Noise sources during maintenance activities will be similar to the noise sources during the construction phase. Noise levels during maintenance activities will be less than construction noise levels and of a shorter duration because fewer vehicles and crews will be deployed.

6.8.3 Mitigation Procedures

Since construction of the proposed Project involves a time of less than one year, construction noise impacts will be minimal. Thus, noise mitigation beyond those described previously was judged to be unnecessary.

Table 6.2 Predicted Noise Impacts During Construction

	Equipment	Qty	Est. Run Time (Hrs/Day)	Est. Duration (Days)	Estimated Total Hours	Reference Distance (feet)	Approx sound level at reference distance (dBA) ¹	Dist to nearest residence (feet)	Predicted Construction Noise at receiver (dBA)	Lowest measured ambient at closest receiver (dBA)	Predicted future noise level at nearest residence (dBA)
Sitework	Bull-Dozer (180 Cat)	1	8	15	120	50	95	1,760	25	57	57,003
	Road Grader	1	8	10	80	50	91	1,760	24	57	57,002
	Dump Truck (15 yd)	2	8	20	320	50	94	1,760	25	57	57,003
	Sheep's Foot Roller	1	8	10	80	50	78	1,760	23	57	57,002
	Flat Roller	1	8	5	40	50	78	1,760	23	57	57,002
	Excavator	1	8	10	80	50	95	1,760	25	57	57,003
	Loader/Backhoe	1	8	30	180	50	96	1,760	25	57	57,003
Foundations	Pile Rig	1	8	25	160	50	98	1,760	25	57	57,003
	Loader/Backhoe	1	8	40	240	50	98	1,760	25	57	57,003
	Small Crane (Truck Mounted 25 Ton)	1	4	37	148	50	70	1,760	22	57	57,001
	Dump Truck (15 yd)	1	8	8	64	50	96	1,760	25	57	57,003
	Bobcat	1	4	16	64	50	77	1,760	23	57	57,002
	3/4 Ton Pickup	4	2	37	268	50	83	1,760	23	57	57,002
	Small Crane (Truck Mounted 25 Ton)	1	4	60	240	50	70	1,760	22	57	57,001
Above/Below Grade Electrical	Large Crane (100 Ton)	1	6	13	90	50	94	1,760	25	57	57,003
	Loader/Backhoe	1	4	35	140	50	96	1,760	25	57	57,003
	Small Excavator	1	8	30	180	50	92	1,760	24	57	57,002
	Dump Truck (15 yd)	1	8	10	80	50	96	1,760	25	57	57,003
	Manlift	2	8	80	720	50	70	1,760	23	57	57,001
	Permit	1	6	60	360	50	70	1,760	23	57	57,001
	Bobcat	1	4	30	120	50	77	1,760	23	57	57,002
	3/4 Ton Pickup	4	2	60	480	50	83	1,760	23	57	57,002

¹ Values taken from FHWA Highway Construction noise (<http://www.fhwa.dot.gov/environment/noise/highway/hcnoise.htm>) and the Hears database.

Table 6.3 Predicted Air Emissions from Construction

	Equipment	Qty	Est. Run Time (Hrs/Day)	Est. Duration (Days)	Estimated Total Hours	Equipment Size (H.P.)	CO2e (Mton/yr)
Sitework	Bulldozer (D6D Cat)	1	8	15	120	200	12.2
	Road Grader	1	8	10	80	183	7.5
	Dump Truck (15 yd)	2	8	20	320	330	37.5
	Sheep's Foot Roller	1	8	10	80	188	6.4
	Flat Roller	1	8	6	40	188	1.0
	Excavator	1	8	10	80	148	0.4
Foundations	Loader/Backhoe	1	6	30	180	102	0.0
	Drill Rig	1	6	25	150	330	25.3
	Loader/Backhoe	1	6	40	240	102	12.3
	Small Crane (Truck Mounted 25 Ton)	1	4	37	148	200	15.1
	Dump Truck (15 yd)	1	8	8	64	330	10.8
	Bobcat	1	4	16	64	82	2.7
Above/Below Grade Electrical	3/4 Ton Pickup	4	2	37	288	360	46.2
	Small Crane (Truck Mounted 25 Ton)	1	4	80	240	200	24.5
	Large Crane (100 Ton)	1	6	15	90	275	12.6
	Loader/Backhoe	1	4	35	140	102	7.3
	Small Excavator	1	6	30	180	58	5.1
	Dump Truck (15 yd)	1	8	10	80	330	13.5
	Manlift	2	6	60	720	75	25.4
	Forklift	1	8	60	360	98	18.2
	Bobcat	1	4	30	120	82	5.0
	3/4 Ton Pickup	4	2	80	480	360	79.0
	Total CO2e						368.1

7.0 ECOLOGICAL IMPACTS ANALYSIS

7.1 COPY OF ECOLOGICAL IMPACTS ANALYSIS RULES

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.

Effective: 12/15/2003

119.032 review dates: 9/30/13

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Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 10/10/78, 3/20/87, 8/28/98

7.2 SUMMARY OF ECOLOGICAL IMPACT STUDY

An ecological review was conducted for the study area in general at the Preferred and Alternative Substation sites. The review consisted of collecting information from the Ohio Department of Natural Resources (ODNR), Corps - Buffalo District, U.S. Fish and Wildlife Service (USFWS), aerial photography obtained from Google Earth and U.S. Department of Agriculture – Natural Resources Conservation Service, and USFWS National Wetland Inventory (NWI) maps of the study area. Burns & McDonnell performed a field reconnaissance of the Preferred Site and conducted a desktop review of the Preferred and Alternative site to document site conditions, including local vegetation, habitats, and wildlife at and in the vicinity of the sites. The field visit for the Preferred Site was performed on November 19, 2008.

7.3 ECOLOGICAL FEATURES

The study area is characterized as having terrain that is nearly level and open agricultural land. There are no forested areas on or in the vicinity of the proposed Preferred and Alternative sites. Streams, creeks, and ditches flow north towards Lake Erie. The Oregon USGS 7.5-minute topographic map (Figure 4.1) and associated NWI map (Figure 7.1) were used to depict the physical features of the study area.

7.3.1 Route Alignments

The Preferred and Alternative sites are located adjacent to existing electrical transmission and distribution lines. FirstEnergy is responsible for routing and interconnecting the Project to the existing high voltage lines.

7.3.2 Substations

The Preferred and Alternative sites are presented in Figure 3.1. These sites are summarized in Section 3 of this document.

7.3.3 Undeveloped Areas

Most of the undeveloped land on and in the vicinity of the Preferred and Alternative sites is comprised of agricultural land. The specific site characteristics will be discussed in the following sections.

7.3.4 Soil Associations

The soil associations that occur within the sites were identified (Figure 4.4) using the 2007 USDA *Soil Survey of Lucas County, Ohio*. Two soil types present within the Project footprint at the Preferred substation site include the Fulton silty clay loam series occurring in the southwestern third of the Project

Area and the Latty silty clay series comprises the remaining two thirds, both are considered hydric soils. The Fulton silty clay loam soil series occurring consists of very deep, somewhat poorly drained, and slow to moderately permeable soils, and is considered a hydric soil. The Latty silty clay soil series consists of very deep, very poorly drained and slowly permeable soils, and is considered a hydric soil.

According to the Natural Resources Conservation Service (NRCS) Soil Survey of Lucas County, Ohio (retrieved on May 6, 2009 from: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>) three soil types are present within the Project footprint at the Alternative substation site. The Fulton silty clay loam series consists of very deep, somewhat poorly drained, with moderate permeability, and is considered a hydric soil. The Latty silty clay series consists of very deep, very poorly drained, and with moderately low permeability, and is considered a hydric soil. The Toledo silty clay loam soil series consists of very deep, very poorly drained soils with moderately low permeability.

Neither the Fulton silty clay loam series, Latty silty clay series, nor the Toledo silty clay loam has slopes greater than 2 percent. The soils within the boundaries of the Preferred site and Alternative site are relatively level.

7.4 STREAMS, DRAINAGE CHANNELS, PONDS, LAKES, AND RESERVOIRS

The surface water features within the study area are discussed below and are depicted in Figures 7.1 and 7.2.

7.4.1 Construction

The proposed construction of the Preferred Site would exclusively involve clearing and grading approximately 3.4 acres of crop field to construct the gravel pad for the substation equipment. Where practical, selective clearing by hand will be used to remove incompatible species where the Preferred footprint abuts the unnamed ditch. The roots of hand cleared vegetation along the unnamed ditch will be left in place to stabilize the bank. Measures will be taken to maintain existing compatible vegetation along the unnamed ditch. Best Management Practices (BMPs) would be implemented, such as straw bales and silt fencing, during construction to control erosion. Generally, the existing unnamed ditch bank adjacent to the Preferred Site has existing ground cover vegetation, and the restoration of these areas would occur rapidly following the completion of construction. The erosion potential along the unnamed ditch should be minimal because of the relatively flat terrain.

The desktop review indicated that the Alternative Site does not have wetlands on the site. A waiver has been requested for performing a full wetland review of the Alternate Site since the area is all agriculture lands.

7.4.2 Operation and Maintenance

Once the substation is operable, the area along the bank of the unnamed ditch, if disturbed, would re-vegetated and stabilized, thus should not require additional maintenance. Thus, no significant impact to streams or water bodies should result from the operation and maintenance of the Project.

7.4.3 Mitigation Procedures

If necessary, incompatible vegetation along the unnamed ditch would be cleared by cutting the incompatible woody vegetation by hand to reduce ground disturbance. Best Management Practices would be implemented during construction to control erosion. Areas of ground disturbance along the unnamed ditch would be seeded and/or mulched or stabilized where the ground has been disturbed to prevent soil erosion and sedimentation. Avoiding unnecessary site clearing will reduce the amount of vegetation cover disturbance and the potential extent of the impacts. Erosion controls, such as temporary berms, terraces, and ditches will be constructed to control runoff. Straw bales and silt fences will be used to reduce stream siltation. Water sprays or other dust suppression techniques or materials will be used on-site as necessary to minimize the potential for dust generation and the consequent impacts. Areas that are temporarily disturbed will be re-vegetated as soon as practical. These measures will preserve the aesthetic qualities along the project area, prevent erosion, and promote habitat diversity.

7.5 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 (Environmental Laboratory, 1987). To determine if potential wetlands exist within the Preferred and Alternative sites a desktop study was performed for both sites, which included review of NWI maps, NRCS electronic web soil survey (<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>), and aerial photography. A site reconnaissance of the Preferred Site was performed in accordance with the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987).

On November 19, 2008, Burns & McDonnell conducted an ecological survey for the Preferred Site to identify the native herbaceous and woody vegetation. The vegetation was observed and a wetland was identified (Appendix C).

The NRCS electronic web soil survey indicates that both of the two soil units found within the Preferred Site study area are hydric soils. The only significant soil disturbance observed during the site reconnaissance was agriculture.

7.5.1 Desktop Wetlands

Based on the desktop review, the wetlands that are present within the study area are shown on Figures 7.1 and 7.2. Palustrine wetlands are defined as non-tidal wetland areas less than 20 acres in size, with a maximum depth of approximately 7 feet at low water, and dominated by trees, shrubs, and persistent emergence. The following is a brief description of the vegetative types of wetlands observed during the wetland delineation and generally within the study area.

7.5.1.1 Emergent Wetlands

This type of wetland is situated in nearly level drainage areas and depressions. The vegetation within this wetland included bulrush (*Scirpus* sp.), common reed (*Phragmites australis*), cattail (*Typha latifolia*), sedges (*Carex* spp.), and rushes (*Juncus* spp.).

7.5.1.2 Farmed Wetlands

This type of wetland is located within agricultural fields and is subject to regular disturbance. Typically, only crops and very hardy hydrophytic vegetation are present within this type of wetland.

7.5.2 Preferred Site Wetlands

Based on the wetland delineation for the Preferred Site, a small wetland was identified adjacent to the main Project footprint (Figure 7.2). Although no wetlands were observed within the Project Area, one combination palustrine emergent (PEM) and palustrine scrub/shrub (PSS) wetland swale of 0.22 acres (W-1) was located immediately outside of the northwest site boundary, extending to the west. Wetland-1 is associated with Stream-1 (S-1); the stream extending southwest from a culvert below Cedar Point Road. Stream-1 is ephemeral in nature, with a total delineated length of 383.5 feet. This wetland is considered a Category 1 wetland by the Ohio Rapid Assessment Method (ORAM).

The information below summarizes the approximate acreages of wetlands that will be impacted by the preferred and Alternative substation sites.

7.5.3 Construction

There will be minimal impacts (less than 0.1 acres) to the Category 1 wetland that is adjacent to the Preferred Site; however, impacts will not require a Section 404 permit from the Corps. This ditch/wetland will be used as the outfall from the storm water detention basin that will be constructed as part of the Project.

Based on the desktop review it is anticipated that no wetlands will be impacted by construction at the Alternative Site.

7.5.4 Operation and Maintenance

Once the storm water detention basin outfall is stabilized at the Preferred Site, no additional wetlands will be impacted by the operation and maintenance of the Project. Wetland impacts are not anticipated for operation and maintenance of the Project at the Alternative Site.

7.5.5 Mitigation Procedures

The wetland area that will be disturbed at the Preferred Site for installing the outfall structure (pipe and rip rap) will be reverted to its preconstruction condition, with the exception of the area containing the pipe and rip rap. Because wetlands are not anticipated to be impacted on the Alternative Site, no mitigation is proposed.

7.6 NATURAL VEGETATION

The Preferred and Alternative sites occur within existing agricultural fields. Woody and herbaceous areas are located along the unnamed creek and local roadways. The following is a brief description of habitat observed on the proposed routes.

7.6.1 Cropland

Croplands found in open areas along the Preferred and Alternative sites are predominately used to grow corn and soybeans. Small areas of hay fields are also present in the vicinity of both sites.

7.6.2 Riparian Woodlands

Riparian woodlands dominated by maple and willow species are limited to narrow areas fringing the unnamed ditch. Other riparian areas are not present or adjacent to either site.

7.6.3 Herbaceous Cover

Herbaceous cover was observed along roads, field borders, and pastures. Grazing, mowing, plowing, clearing, and grubbing have disturbed the herbaceous plant communities. This community is dominated by aggressive weedy forbs, shrubs, and grasses.

7.6.4 Construction

The proposed construction of the Preferred Site would exclusively involve clearing and grading approximately 3.4 acres of crop field to construct the gravel pad for the substation equipment. Where practical, selective clearing by hand will be used to remove incompatible species where the preferred footprint abuts the unnamed ditch. The roots of hand cleared vegetation along the unnamed ditch will be left in place to stabilize the bank. Measures will be taken to maintain existing compatible vegetation. Best Management Practices would be implemented, such as straw bales and silt fencing, during construction to control erosion. Generally, the existing unnamed ditch bank adjacent to the Preferred Site has existing ground cover vegetation, and the restoration of these areas would occur rapidly following the completion of construction. The erosion potential along the unnamed ditch should be minimal because of the relatively flat terrain. The area would be re-seeded as soon as possible after construction is completed.

7.6.5 Operation and Maintenance

Once the substation is operable, minimal herbaceous cover maintenance would be required.

7.6.6 Mitigation Procedures

Re-seeding as part of erosion control measures in areas disturbed by the Project that will not contain permanent facilities will be completed.

7.7 MAJOR SPECIES

The Preferred and Alternative sites are located in areas that provide minimal habitat for game species that are tolerant of human disturbances. The study area consisted mostly of farmland and industrial areas. These land uses provided minimal habitat for birds and mammals. The following descriptions are of major species that were observed or are expected to be present within the study area and in the vicinity of the Preferred and Alternative sites.

7.7.1 Commercial Species

The commercial species includes those species that are hunted or trapped for fur. The commercial species likely to occur within the study area (including both Preferred and Alternative sites) includes the following:

Red fox (*Vulpes vulpes*) – The red fox occurs throughout the state of Ohio and is mostly found in forested areas and near farmland. This species is expected to be within the study area.

Raccoon (*Procyon lotor*) – The raccoon is found throughout the state of Ohio and prefers to be in wooded and farmland areas. This species is expected to be present within the study area.

7.7.2 Recreational Species

The habitats typically associated with recreational species are present within the study area (including both the Preferred and Alternative sites). Recreational species include those species which are hunted or fished as game. The recreational species likely to occur within the study area includes the following.

Cottontail rabbit (*Sylvilagus floridanus*) – The cottontail rabbit is Ohio's most hunted wild game. It is abundant throughout the rural and urban areas of Ohio. The species prefers over-grown open, brushy, and thicket areas. This species is found within the study area, and was observed during the field visit. Given the similarity in habitat it would also be found in the area of the Alternative Site.

Gray, red, and fox squirrels – These tree squirrels are found through out the state of Ohio. The fox squirrel (*Sciurus niger*) is found to inhabit small isolated wood lots. This species was observed during the field visit. The gray squirrel (*Sciurus carolinensis*) and red squirrel (*Tamiasurius virginiana*) prefer more heavily wooded areas. These species were also observed during the field visit and would likely be found in the area of the Alternative Site as well.

Opossum (*Didelphis virginiana*) – Opossum's are found throughout the state of Ohio near farmland and wooded areas along creeks and rivers. Tracks of this species were observed within the study area during the field visit.

White-tailed deer (*Odocoileus virginianus*) – White-tailed deer occur throughout the state of Ohio. Deer prefer wooded habitat and feed in croplands and pasture lands. This species is expected to be within the area of both the Preferred and Alternative sites.

Ruffed grouse (*Bonasa umbellus*) – The ruffed grouse prefers a habitat located in wooded areas with clearings. They also tend to inhabit pastures and farmland. This species is expected to be within the area of both the Preferred and Alternative sites.

Wild turkey (*Meleagris gallopavo*) – This species is typically found in wooded and open areas throughout Ohio. This species is expected to be within the area of both the Preferred and Alternative sites.

Ring-necked pheasant (*Phasianus colchicus*) – The ring-necked pheasant is found throughout the state of Ohio, which inhabits pastures and farmlands. Ring-necked pheasants can be found along wooded and brushy areas. This species is expected to be within the area of both the Preferred and Alternative sites.

7.7.3 Fish

Only small ditches with intermittent flow occur in the vicinity of the Preferred and Alternative sites; thus, no fish are expected to occur within the study area.

7.7.4 Protected Species

Correspondence (Appendix I) was submitted to the USFWS and ODNR on August 19, 2009 requesting information on federal and state lists of threatened and endangered species. Responses from these agencies are included within Appendix G, there are no anticipated impacts to federal and state lists of threatened and endangered species. State- and federally listed plant and wildlife species are known or likely occur within Lucas County. According to the USFWS, there are five animals and one plant that are listed as a threatened, endangered, or candidate species and are known or likely to occur within Lucas County (Table 7-1). These species are the Indiana bat, Piping Plover, Eastern massasauga, Karner blue butterfly, rayed bean (a mussel), and the Eastern prairie fringed orchid. In correspondence regarding a separate BP-Husky project that occurred within the vicinity of the Preferred and Alternative sites, the ODNR indicated that three state-listed species (Bald Eagle, channel darter, and Common Tern) and one species of concern (Blanding's turtle) are known to occur within the study area.

Table 7.1 Listed Species Known or Likely to Occur within Lucas County, Ohio

Species	Federal Status	State Status	Preferred Habitat
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Delisted	Threatened	Nests and roosts in tall trees or on high cliff ledges near open water.
Blanding's turtle (<i>Emydoidea blandingi</i>)	None	Species of Concern	Inland streams, and wet meadows, and lakes and ponds with marshy shorelines.
Channel darter (<i>Percina copelandi</i>)	None	Threatened	Large shallow sandy areas, submerged sand bars, pools, and sluggish riffles with silt-free gravel or rocky bottoms.
Common Tern (<i>Sterna hirundo</i>)	None	Endangered	Nests on beaches, dredge disposal areas, and natural or man-made islands that are free of mammalian predators and human disturbance.
Eastern massasauga (<i>Sistrurus catenatus</i>)	Candidate	Endangered	Wet prairies, marshes and low areas along rivers and lakes; hibernates in crayfish burrows or in small mammal burrows
Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>)	Threatened	Threatened	Mesic to wet prairies and meadows
Indiana bat (<i>Myotis sodalis</i>)	Endangered	Endangered	Hibernates in caves and mines. Summers in well developed riparian woods and upland forests
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	Endangered	Endangered	Pine barrens and oak savannas on sand containing wild lupines
Piping Plover (<i>Charadrius melodus</i>)	Endangered	Endangered	Beaches along shorelines of the Great Lakes
Rayed bean (<i>Villosa fabalis</i>)	Candidate	Endangered	Prefers smaller, headwater creeks but may be found in larger rivers. Also found in or near shoal or riffle areas and in the shallow, wave-washed areas of glacial lakes, including Lake Erie.

Source: <http://www.fws.gov/midwest/Endangered/lists/ohio-cty.html> and <http://www.dnr.state.oh.us/Portals/9/pdf/pub356.pdf>

On November 19, 2008, Burns & McDonnell biologists conducted an ecological survey at the Preferred Site to determine if potential habitat for state- or federally listed plant and wildlife species occurred at the Preferred Site. No potential habitat for state- or federally listed plant or wildlife species was observed at the Preferred Site. The Preferred Site is located in an industrial area of the City of Oregon and within the Toledo metropolitan area and consists of a cultivated crop field located immediately south of Cedar Point Road and the existing BP-Husky refinery facility. Crop fields are also located adjacent to the east, south, and west sides of the Preferred Site. A north-south railroad spur, which terminates in the existing BP refinery facility, is located along the eastern edge of the Preferred Site. Other existing infrastructure adjacent to the site includes 115-kV transmission lines, a 69-kV transmission line, electrical distribution lines, and gas pipelines. A small drainage ditch dominated by common reed (*Phragmites australis*) is located on the northwest edge of the Preferred Site. The drainage ditch appeared to be ephemeral in nature. No trees are present within the footprint of the proposed Project.

7.7.4.1 Protected Plants

Based on available information, only one state- and federally listed plant species, the Eastern prairie fringed orchid (*Platanthera leucophaea*), is known or likely to occur within the vicinity of the Preferred and Alternative sites. Eastern prairie fringed orchids are typically found within mesic- to wet prairies and meadows. No potential habitat for the Eastern prairie fringed orchid (mesic- to wet prairies and meadows) or other state- or federally listed plant species was observed at the Preferred Site during the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell.

7.7.4.2 Protected Wildlife

According to the USFWS, three federally listed as endangered species and two wildlife species that are candidates for federal listing are known or likely to occur within Lucas County. Additionally, the ODNR has identified two threatened, one endangered, and one species of concern that are state-listed species and known to occur within the study area. Below is a list of the species and description of their habitat.

Bald Eagle (*Haliaeetus leucocephalus*) – The Bald Eagle is found near open water and nests in tall trees or on high cliff ledges. According to ODNR, this species is known to occur in Bay View Park along the Maumee River, approximately 1.75 miles northwest of the sites. No potential roosting or nesting trees were observed at the Preferred Site during the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell.

Blanding's Turtle (*Emydoidea blandingi*) – Blanding's turtles are limited primarily to the areas along Lake Erie, where they inhabit the marshy shorelines, inland streams, and wet meadows. Although essentially aquatic, the Blanding's turtle often wanders about on land, but is seldom far from water. According to ODNR, this species is known to occur in Otter Creek, approximately 0.75 mile west of the Preferred Site and one mile west of the Alternative Site. No perennial streams, wet meadows, or lakes and ponds with marshy shorelines were observed at the Preferred Site during the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell.

Channel Darter (*Percina copelandi*) – Channel darters prefer large shallow sandy areas, submerged sand bars, pools, and sluggish riffles with silt-free gravel or rocky bottoms. This species remains in water that is deeper than three feet during the day and migrates into shallow water at night. According to ODNR, Populations of channel darters are known to occur in Maumee Bay, approximately 1.6 miles north of the sites. Based on the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell, no perennial stream or potential channel darter habitat is present at the Preferred Site.

Common Tern (*Sterna hirundo*) – The preferred nesting sites of Common Terns are natural or man-made islands that are free of mammalian predators and human disturbance. They will also utilize mainland beaches and dredge disposal areas, but only when islands are unavailable. According to ODNR, Common Terns are known to occur on a manmade island in Maumee Bay, approximately 2 miles northeast of the sites. No beaches, dredge disposal areas, or natural or man-made islands that are free of mammalian predators and human disturbance are present at the Preferred Site. Based on the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell, no potential Common Tern habitat is present at the Preferred Site.

Eastern Massasauga (*Sistrurus catenatus*) – Eastern massasaugas are typically found in wet prairies, marshes, and low areas along rivers and lakes. This venomous snake species will hibernate in crayfish burrows or in small mammal burrows. No wet prairies, marshes, and low areas along rivers and lakes are present at the Preferred Site. Based on the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell, no potential Eastern massasauga habitat is present at the Preferred Site.

Indiana Bat (*Myotis sodalis*) – Indiana bats hibernate in caves and mines. During the summer months, Indiana bats roost in snags and under loose bark of trees in well developed riparian woods and upland forests. No caves, mines, or suitable snags and roost trees are present at the Preferred Site. Based on the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell, no potential Eastern massasauga habitat is present at the Preferred Site.

Karner blue Butterfly (*Lycaeides melissa sarnuelis*) – Karner blue butterflies typically occur in pine barrens and oak savannas on sand that contain wild lupines. The Preferred Site and surrounding areas, which consists of crop fields previously disturbed industrial developments, does not contain suitable habitats for Karner blue butterflies. Based on the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell, no potential Karner blue butterfly habitat is present at the Preferred Site.

Piping Plover (*Charadrius melodus*) – Piping Plovers nest on beaches along the shorelines of the Great Lakes. The Preferred Site, which consists of a crop field within a previously disturbed industrial area of the City of Oregon, is not located along the shore of Lake Erie and does not include any beach habitats. Based on the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell, no potential Piping Plover habitat is present at the Preferred Site.

Rayed Bean (*Villosa fabalis*) – The rayed bean mussel prefers smaller, headwater creeks but may also be found in larger rivers. This mussel species may also be found in or near shoal or riffle areas and in the shallow, wave-washed areas of glacial lakes, including Lake Erie. No perennial stream or potential channel darter habitat is present at the Preferred Site based on the November 19, 2008 ecological survey that was conducted by biologists from Burns & McDonnell.

7.7.5 Construction

Potential impacts to game fish are not anticipated. Only ditches with intermittent flow occur within the immediate vicinity of the Preferred and Alternative sites. Best Management Practices would be implemented during construction to minimize erosion and possible temporary, water quality degradation. Erosion control measures will include protecting exposed areas with mulch, matting, silt fencing, or similar materials until vegetation can be reestablished. It is anticipated that construction of either the Preferred or Alternative site would not impact the water quality of streams or other surface waters in the vicinity of the Project.

Furthermore, based on the location and nature of the sites, it is unlikely there will be impacts to wildlife and plants. The sites are both located adjacent to existing facilities, roads, railroads, etc. and are dominated by cultivated lands.

7.7.6 Operation and Maintenance

Impacts as a result of operations and maintenance of the substation at either of the locations are not anticipated to adversely affect wildlife.

7.7.7 Mitigation Procedures

Since impacts to wildlife are not anticipated, mitigation is not being proposed for the Project.

7.8 SLOPES AND HIGHLY ERODIBLE SOILS

The Preferred and Alternative sites are located on the Lake Erie lake plain that is nearly level (0 to 2 percent slopes). The majority of the study area consists of moderately erodible soils. None of the soil associations within the Project footprint at the Preferred Site and mentioned in the previous sections have highly erodible soil characteristics.

7.8.1 Construction

The proposed construction would not have impacts on highly erodible soils because none occur within either site. The Project would involve grading and placement of fill and gravel to construct the base of the substation facility. Incompatible vegetation within the limits of construction would be removed.

Although highly erodible soils do not occur within the Project footprint, in areas where soils are exposed, BMPs would be used to control erosion. Erosion control measures will include protecting exposed areas with mulch, matting, silt fencing, or similar materials until vegetation can be reestablished.

7.8.2 Operation and Maintenance

Once construction is complete and the Project site has been stabilized, the operation and maintenance will not adversely affect soils or highly erodible soils.

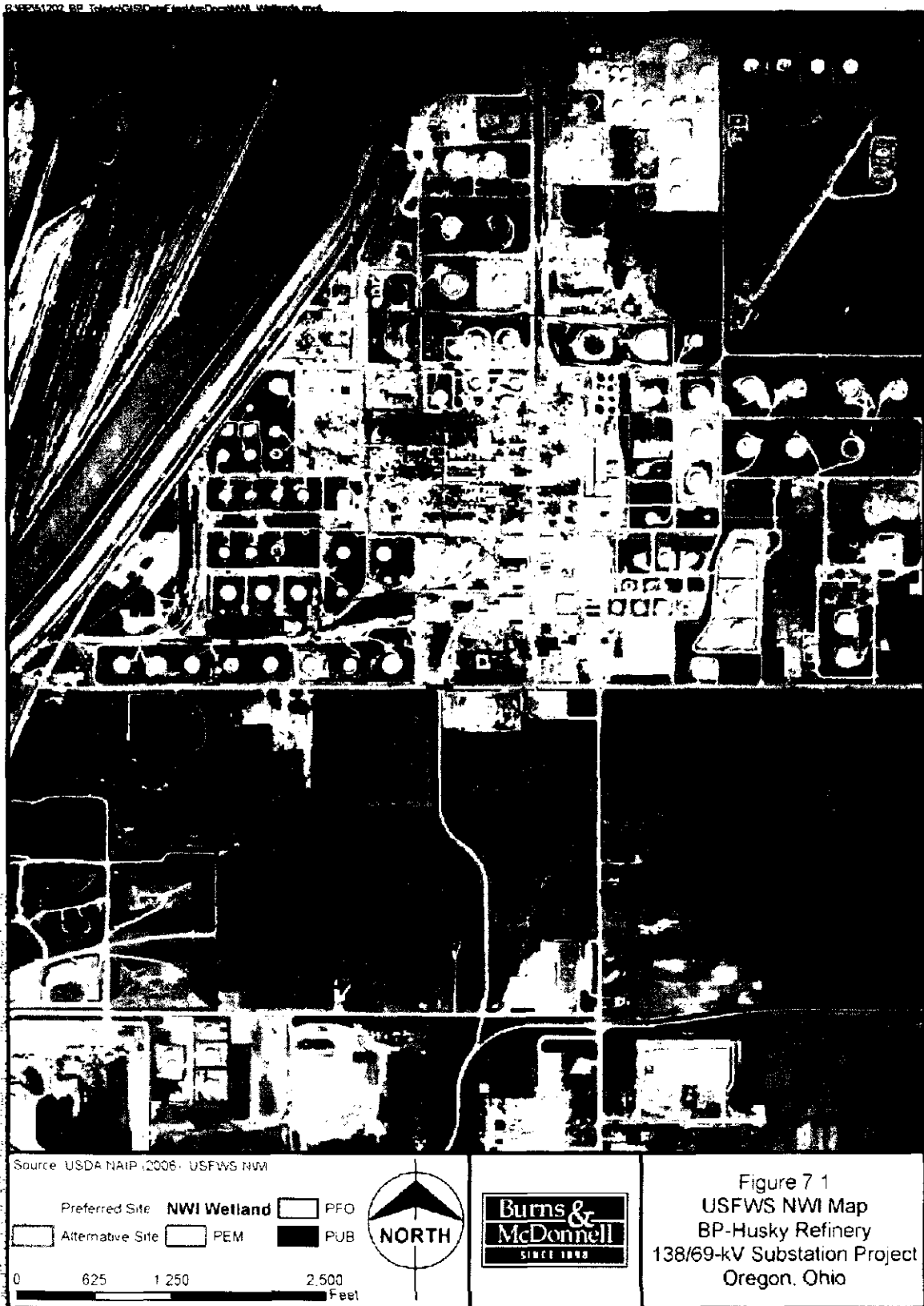
7.8.3 Mitigation Procedures

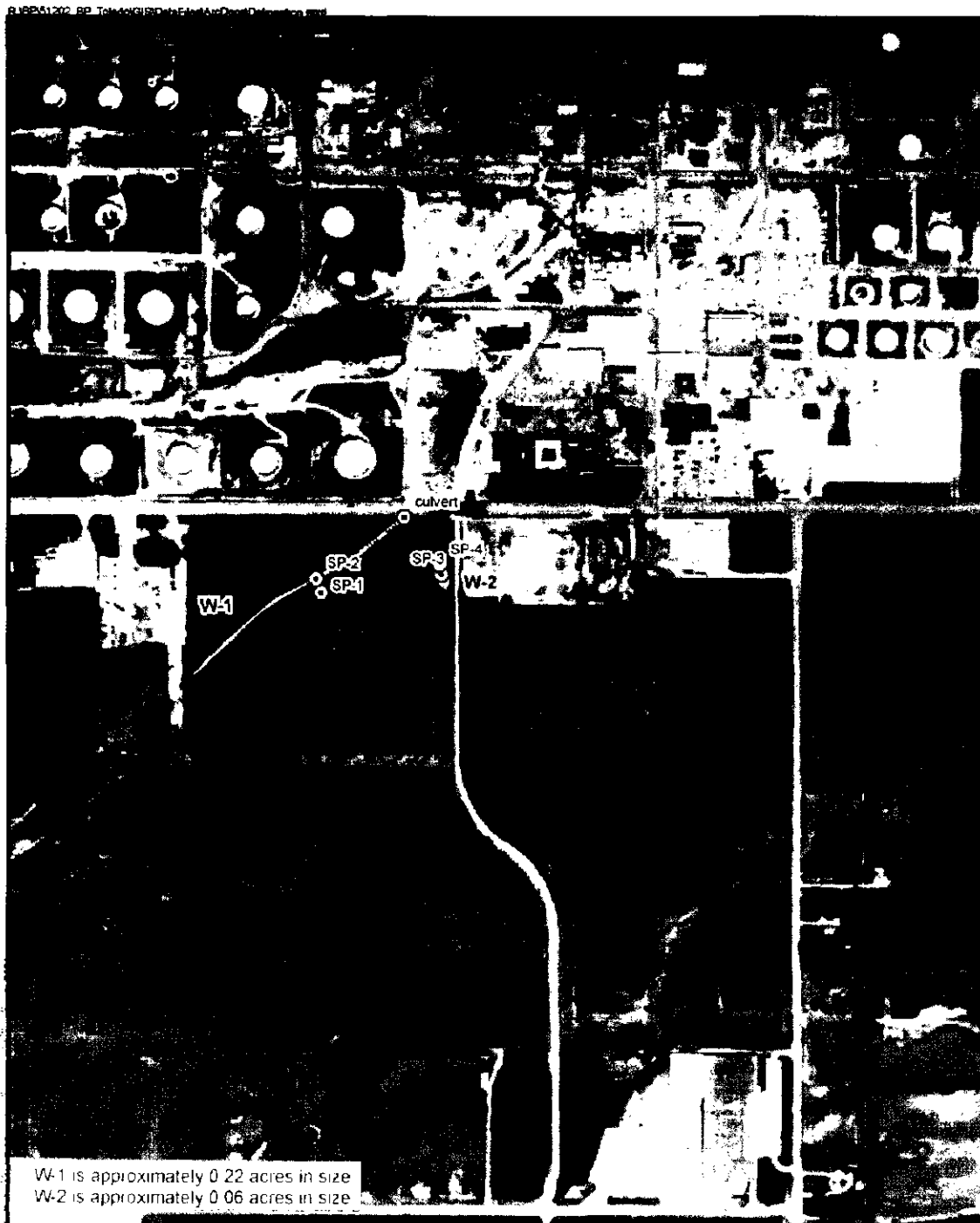
Best Management Practices will be implemented during construction to control erosion. Selective cutting of woody species along the existing ditches will occur to minimize impacts to the ditches. Erosion controls such as temporary berms, terraces, and ditches may be constructed to control run-off. Straw bales and silt fences will be used to minimize stream siltation. Water sprays or other dust suppression techniques or materials would be used at the site as necessary to minimize the potential for dust generation and the consequent impacts. Areas that are temporarily disturbed would be revegetated as soon as practical.

These measures would preserve the aesthetic qualities within the Project area, prevent erosion, and promote habitat diversity.

7.9 OTHER SIGNIFICANT ECOLOGICAL ISSUES OF CONCERN

A review of the possible impacts resulting from the proposed construction, operation, and maintenance of the proposed Preferred substation site and Alternative substation site has been conducted to determine if there are other significant ecological issues. It has been determined that there are no ecological issues other than those discussed above.





Source: USDA NRI (1986)

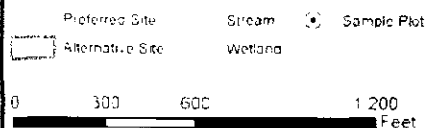
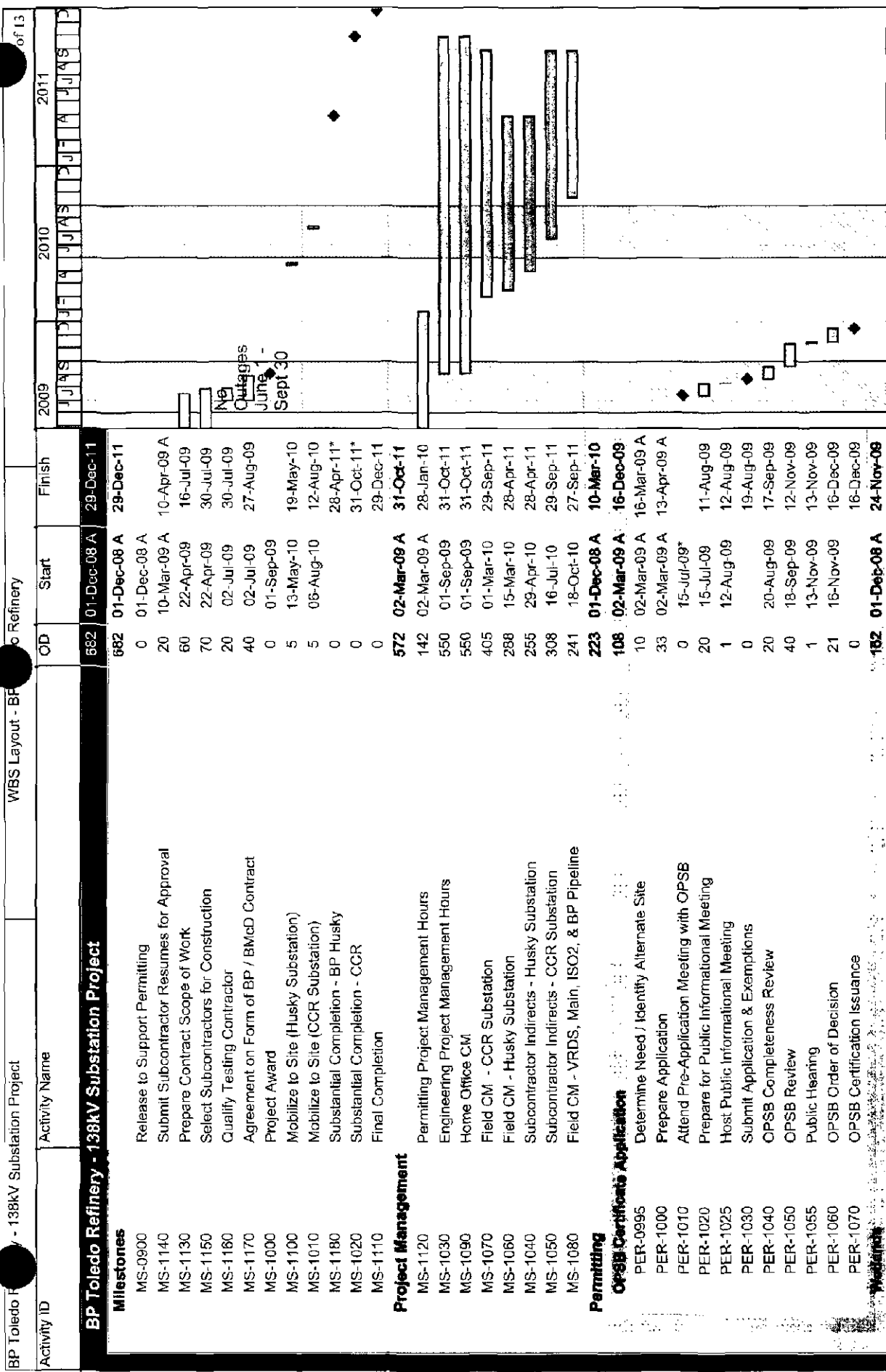


Figure 7.2
Location Map of Wetlands
and Other Waters of the U.S.
BP-Husky Refinery
138/69-kV Substation Project
Oregon, Ohio

APPENDIX A - Project Schedule



Start Date: 01-Dec-08

Finish Date: 29-Dec-11

Data Date: 22-Apr-09

Run Date: 19-Jun-09

Remaining Level of Effort

Actual Work

Remaining Work

Critical Remaining Work

Milestone

BP Toledo Refinery

138kV Substation Project

Preliminary EPC Schedule

bp

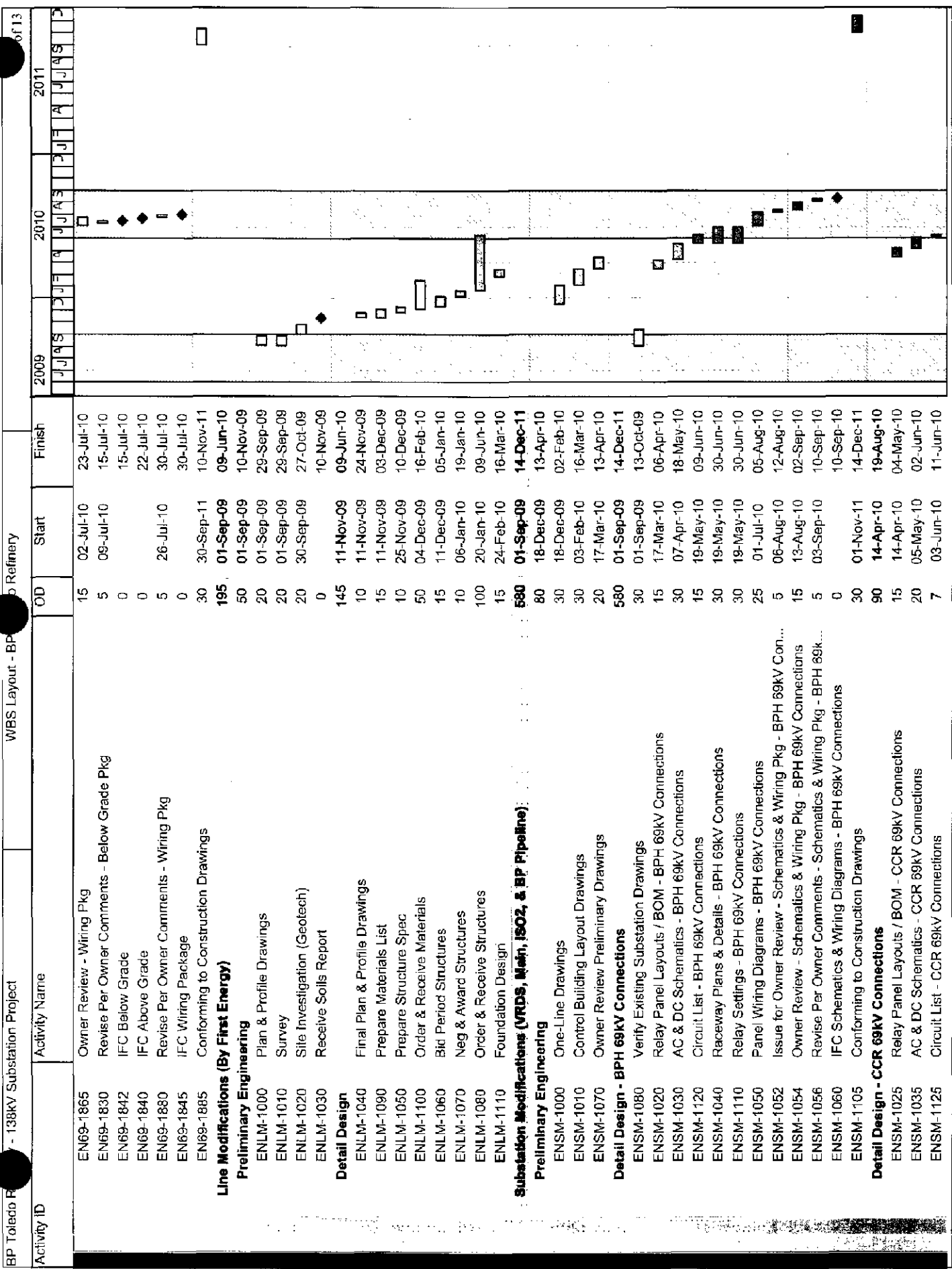
Burns & McDonnell

SINCE 1898

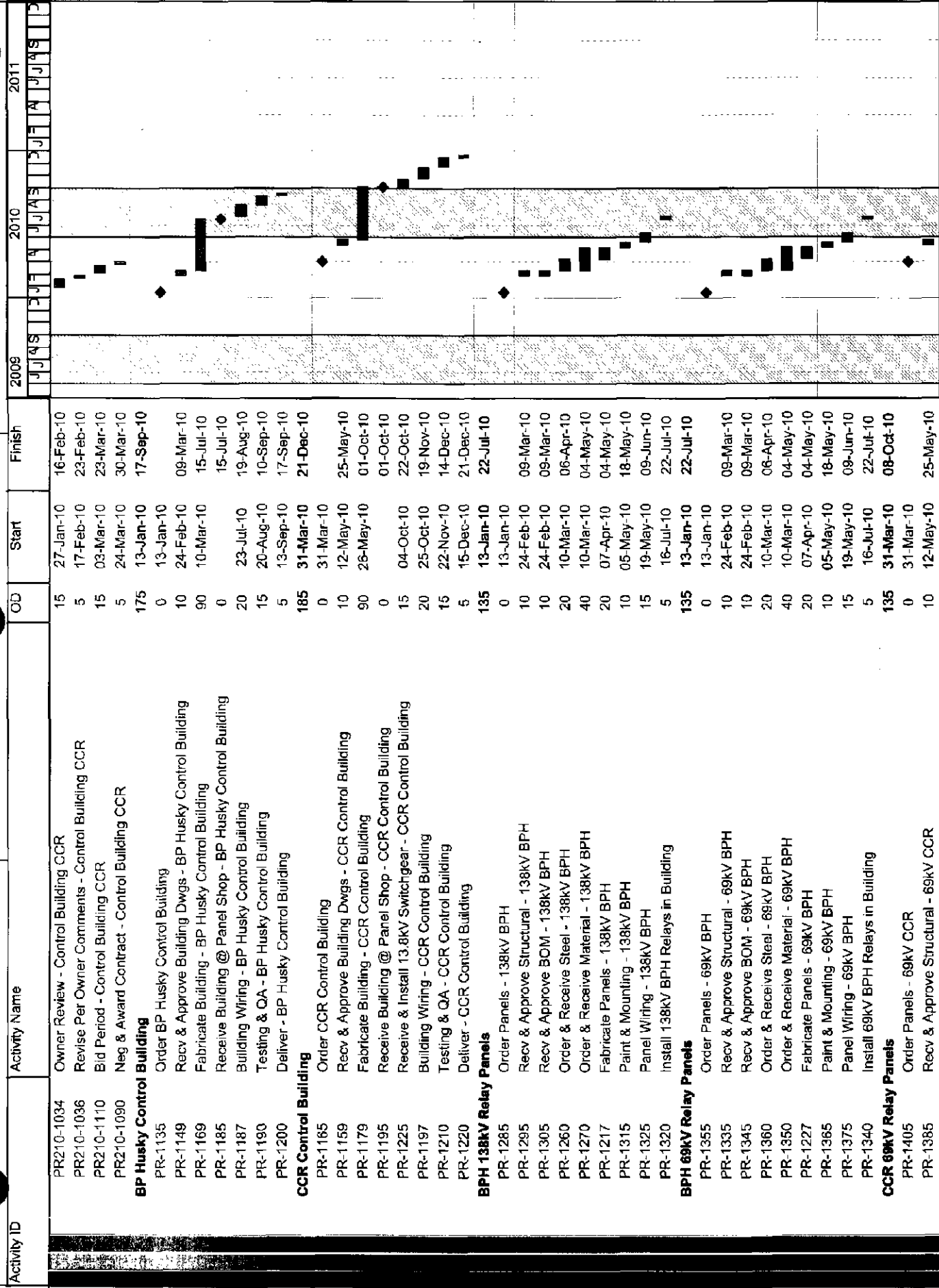
Activity ID	Activity Name	OD	Start	Finish	2009	2010	2011
PER-2000	Collect Background Data	11	01-Dec-08 A	15-Dec-08 A	J		
PER-2010	Conduct Survey / Delineation	2	22-Apr-09	23-Apr-09	J		
PER-2020	Prepare Report	15	24-Apr-09	14-May-09	J		
PER-2030	Prepare & Submit Applications	15	15-May-09	05-Jun-09	J		
PER-2040	Agency Review / Permit Issuance	120	08-Jun-09	24-Nov-09	J		
Cultural Resources Concurrence							
PER-2100	Collect Background Data	81	01-Dec-08 A	29-May-09	J		
PER-2120	Conduct Survey	11	01-Dec-08 A	15-Dec-08 A	J		
PER-2110	OHPO Consultation / Response	2	22-Apr-09	23-Apr-09	J		
PER-2130	Prepare Report (if needed)	20	22-Apr-09	19-May-09	J		
PER-2140	OHPO Consultation / Response (if needed)	10	24-Apr-09	07-May-09	J		
PER-2150	OHPO Concurrence	15	08-May-09	29-May-09	J		
T&E Concurrences							
PER-2200	Collect Background Data	101	01-Dec-08 A	12-Jun-09	J		
PER-2220	FWS & ODNR Consultation	11	01-Dec-08 A	15-Dec-08 A	J		
PER-2210	Conduct Habitat Assessment (if needed)	20	15-Dec-08 A	12-Jan-09 A	J		
PER-2230	Prepare Report (if needed)	2	22-Apr-09	23-Apr-09	J		
PER-2240	FWS & ODNR Consultation / Concurrence (if needed)	10	24-Apr-09	07-May-09	J		
PER-2250	Receive Concurrences	25	08-May-09	12-Jun-09	J		
Noise Study							
PER-2300	Record Ambient Noise Measurements	25	22-Apr-09	27-May-09	J		
PER-2310	Obtain Equipment Data & Layout Info	2	22-Apr-09	23-Apr-09	J		
PER-2320	Prepare & Run Model	5	24-Apr-09	30-Apr-09	J		
PER-2330	Analyze Results & Prepare Report	5	01-May-09	07-May-09	J		
PER-2340	Demonstrate Compliance with Local Noise Regulations	13	08-May-09	27-May-09	J		
FEMA Floodplain Study							
PER-2400	Obtain & Review FEMA Floodplain Maps	2	15-Dec-08 A	17-Dec-08 A	J		
FAA/ODOT Structure Height Review							
PER-2500	Determine Proposed Max Structure Height On-site	8	14-Oct-09	23-Oct-09	J		
PER-2510	Conduct Airport Search and Review ODOT Regulations	2	14-Oct-09	15-Oct-09	J		
PER-2520	Determine Need for Notifications	5	16-Oct-09	22-Oct-09	J		
PER-2700	Prepare NOI	1	23-Oct-09	23-Oct-09	J		
PER-2710	Prepare SWP3	14	23-Nov-09	28-Jan-10	J		
PER-2720	Submit NOI to OEPA	5	23-Nov-09	01-Dec-09	J		
PER-2730	OEPA Review	21	23-Nov-09	23-Dec-09	J		
PER-2740	Receive General Permit	1	28-Dec-09	28-Dec-09	J		
Exception Allowed							
PER-3000	Prepare & Submit Application	22	13-Nov-09	10-Mar-10	J		
PER-3010	City Review & Approval	22	13-Nov-09	16-Dec-09	J		
Zoning Review (SUP/CUP)							
PER-3100	Prepare & Submit Application	20	17-Nov-09	16-Nov-09	J		
PER-3110	City Review & Approval	57	17-Dec-09	10-Mar-10	J		
		15	17-Dec-09	11-Jan-10	J		
		42	12-Jan-10	10-Mar-10	J		

Activity ID	Activity Name	OD	Start	Finish	2009	2010	2011
Site Plan & Building Permit Approval							
PER-3200	Prepare & Submit Application	32	13-Nov-09	04-Jan-10			
PER-3210	City Review & Approval	10	13-Nov-09	30-Nov-09			
Site Grading Permit							
PER-3300	Prepare & Submit Application	22	01-Dec-09	04-Jan-10			
PER-3310	City Review & Approval	32	23-Nov-09	12-Jan-10			
Other City Permits							
PER-3400	Prepare & Submit Application	10	23-Nov-09	08-Dec-09			
PER-3410	City Review & Approval	22	09-Dec-09	12-Jan-10			
Engineering							
BP Husky Substation							
Preliminary Engineering							
EN138-1300	Survey (By Owner)	580	01-Sep-09	14-Dec-11			
EN138-1000	One - Line	451	01-Sep-09	10-Jun-11			
EN138-1400	General Arrangement Drawings	45	01-Sep-09	03-Nov-09			
EN138-1410	Control Building Plan	10	01-Sep-09	15-Sep-09			
EN138-1420	AC & DC Aux Power One-Lines	15	01-Sep-09	22-Sep-09			
EN138-1310	Site Investigation (Geotech & Soil Resistivity - By Owner)	15	01-Sep-09	22-Sep-09			
EN138-1430	Owner Review Preliminary Drawings	25	01-Sep-09	06-Oct-09			
EN138-1440	First Energy Review Preliminary Drawings	15	23-Sep-09	13-Oct-09			
EN138-1320	Receive Soils Report	15	23-Sep-09	13-Oct-09			
Detail Design							
EN138-1525	Receive Final Shop Drawings for Owner Furnished Equipment	0	01-Sep-09	10-Jun-11			
EN138-1600	Foundation Plan	451	01-Sep-09	01-Sep-09			
EN138-1510	Plans & Sections	0	14-Oct-09	03-Nov-09			
EN138-1515	Relay Panel Layouts / BOM	15	14-Oct-09	03-Nov-09			
EN138-1635	Control Building Plan & Elevations	20	14-Oct-09	10-Nov-09			
EN138-1500	Site Grading Design (By Owner)	40	14-Oct-09	10-Dec-09			
EN138-1520	Grounding Calculations	40	14-Oct-09	10-Dec-09			
EN138-1625	Raceway Plans & Details	20	26-Oct-09	20-Nov-09			
EN138-1615	Grounding Plans & Details	10	04-Nov-09	17-Nov-09			
EN138-1825	IFC Grading Package (By Owner)	15	04-Nov-09	24-Nov-09			
EN138-1700	AC & DC Schematics	15	18-Nov-09	10-Dec-09			
EN138-1605	Foundation Details	0	21-Dec-09	20-Nov-09			
EN138-1805	Equipment Connection Diagrams	50	11-Feb-10	03-Mar-10			
EN138-4080	Panel Wiring Diagrams	30	04-Mar-10	24-Mar-10			
EN138-1720	Circuit List	25	04-Mar-10	07-Apr-10			
EN138-1710	Relay Settings	45	04-Mar-10	05-May-10			
EN138-1628	Identify Telecomm Interface	45	04-Mar-10	05-May-10			
EN138-1882	Issue for Owner / FE Review - Above Grade Pkg	50	04-Mar-10	12-May-10			
EN138-1842	Issue for Owner / FE Review - Below Grade Pkg	60	04-Mar-10	26-May-10			
EN138-1892	Owner Review - Above Grade Pkg	5	24-Mar-10	30-Mar-10			
EN138-1902	First Energy Review - Above Grade Pkg	5	25-Mar-10	31-Mar-10			
EN138-1852	Owner Review - Below Grade Pkg	15	31-Mar-10	20-Apr-10			
		15	01-Apr-10	21-Apr-10			

Activity ID	Activity Name	OD	Start	Finish	2009	2010	2011
EN138-1862	First Energy Review - Below Grade Pkg	15	01-Apr-10	21-Apr-10	J		
EN138-1912	Revise Per Owner/FEE Comments - Above Grade Pkg	5	21-Apr-10	27-Apr-10	J		
EN138-1872	Revise Per Owner/FEE Comments - Below Grade Pkg	5	22-Apr-10	28-Apr-10	J		
EN138-1832	IFC Below Grade	0		28-Apr-10	J		
EN138-1830	IFC Above Grade	0		05-May-10	J		
EN138-1922	Issue for Owner / FE Review - Wiring Pkg	5	06-May-10	12-May-10	J		
EN138-1932	Owner Review - Wiring Pkg	15	13-May-10	03-Jun-10	J		
EN138-1942	First Energy Review - Wiring Pkg	15	13-May-10	03-Jun-10	J		
EN138-1952	Revise Per Owner/FEE Comments - Wiring Pkg	5	04-Jun-10	10-Jun-10	J		
EN138-1835	IFC Wiring Package	0		10-Jun-10	J		
EN138-1845	Conforming to Construction Drawings	30	29-Apr-11	10-Jun-11			
CCR Substation							
Preliminary Engineering							
EN69-1340	Site Investigation (Geotech & Soil Resistivity - By Owner)	558	01-Sep-09	10-Nov-11			
EN69-1350	Receive Soils Report	90	01-Sep-09	12-Jan-10			
EN69-1330	Survey (By Owner)	25	01-Sep-09	06-Oct-09			
EN69-1010	One - Line	0		03-Nov-09			
EN69-1410	General Arrangement Drawings	10	25-Nov-09	10-Dec-09			
EN69-1420	Control Building Plan	15	25-Nov-09	17-Dec-09			
EN69-1430	AC & DC Aux Power One-Lines	15	25-Nov-09	17-Dec-09			
EN69-1440	Owner Review Preliminary Drawings	15	18-Dec-09	12-Jan-10			
Detail Design							
EN69-1520	Receive Final Shop Drawings for Owner Furnished Equipment	498	25-Nov-09	10-Nov-11			
EN69-1530	Site Grading Design (By Owner)	20	25-Nov-09	28-Dec-09			
EN69-1855	IFC Grading Package (By Owner)	20	04-Dec-09	05-Jan-10			
EN69-1550	Grounding Calculations	0		05-Jan-10			
EN69-1610	Foundation Plan	10	13-Jan-10	26-Jan-10			
EN69-1540	Plans & Sections	15	13-Jan-10	02-Feb-10			
EN69-1525	Relay Panel Layouts / BOM	20	13-Jan-10	09-Feb-10			
EN69-1655	Grounding Plans & Details	25	13-Jan-10	16-Feb-10			
EN69-1665	Raceway Plans & Details	15	03-Feb-10	23-Feb-10			
EN69-1675	Control Building Plan & Elevations	10	17-Feb-10	02-Mar-10			
EN69-1710	AC & DC Schematics	45	25-Feb-10	28-Apr-10			
EN69-1850	Issue for Owner Review - Above Grade Pkg	5	24-Mar-10	30-Mar-10			
EN69-1835	Owner Review - Above Grade Pkg	15	31-Mar-10	20-Apr-10			
EN69-1860	Revise Per Owner Comments - Above Grade Pkg	5	21-Apr-10	27-Apr-10			
EN69-1645	Foundation Details	30	28-Apr-10	09-Jun-10			
EN69-1730	Circuit List	15	29-Apr-10	19-May-10			
EN69-1815	Equipment Connection Diagrams	25	29-Apr-10	03-Jun-10			
EN69-4070	Panel Wiring Diagrams	40	29-Apr-10	24-Jun-10			
EN69-1720	Relay Settings	50	29-Apr-10	09-Jul-10			
EN69-1820	Issue for Owner Review - Below Grade Pkg	5	10-Jun-10	16-Jun-10			
EN69-1825	Owner Review - Below Grade Pkg	15	17-Jun-10	08-Jul-10			
EN69-1870	Issue for Owner Review - Wiring Pkg	5	25-Jun-10	01-Jul-10			



Activity ID	Activity Name	OD	Start	Finish	2009	2010	2011
EN69-1865	Owner Review - Wiring Pkg	15	02-Jul-10	23-Jul-10			
EN69-1830	Revise Per Owner Comments - Below Grade Pkg	5	09-Jul-10	15-Jul-10			
EN69-1842	IFC Below Grade	0		15-Jul-10			
EN69-1840	IFC Above Grade	0		22-Jul-10			
EN69-1880	Revise Per Owner Comments - Wiring Pkg	5	26-Jul-10	30-Jul-10			
EN69-1845	IFC Wiring Package	0		30-Jul-10			
EN69-1885	Conforming to Construction Drawings	30	30-Sep-11	10-Nov-11			
Life Cycle Management (BPH, BPH, BPH)							
Preliminary Engineering							
ENLM-1000	Plan & Profile Drawings	50	01-Sep-09	09-Jun-10			
ENLM-1010	Survey	20	01-Sep-09	29-Sep-09			
ENLM-1020	Site Investigation (Geotech)	20	01-Sep-09	29-Sep-09			
ENLM-1030	Receive Soils Report	20	30-Sep-09	27-Oct-09			
Detail Design							
ENLM-1040	Final Plan & Profile Drawings	145	11-Nov-09	09-Jun-10			
ENLM-1090	Prepare Materials List	10	11-Nov-09	24-Nov-09			
ENLM-1050	Prepare Structure Spec	15	11-Nov-09	03-Dec-09			
ENLM-1100	Order & Receive Materials	10	25-Nov-09	10-Dec-09			
ENLM-1060	Bid Period Structures	50	04-Dec-09	16-Feb-10			
ENLM-1070	Neg & Award Structures	15	11-Dec-09	05-Jan-10			
ENLM-1080	Order & Receive Structures	10	06-Jan-10	19-Jan-10			
ENLM-1110	Foundation Design	100	20-Jan-10	09-Jun-10			
Substation Modifications (VRDS, Main, ISO2, & BP Pipeline)							
Preliminary Engineering							
ENSM-1000	One-Line Drawings	15	24-Feb-10	16-Mar-10			
ENSM-1010	Control Building Layout Drawings	580	01-Sep-09	14-Dec-11			
ENSM-1070	Owner Review Preliminary Drawings	80	18-Dec-09	13-Apr-10			
Detail Design - BPH 69kV Connections							
ENSM-1080	Verify Existing Substation Drawings	30	18-Dec-09	02-Feb-10			
ENSM-1020	Relay Panel Layouts / BOM - BPH 69kV Connections	30	03-Feb-10	16-Mar-10			
ENSM-1030	AC & DC Schematics - BPH 69kV Connections	20	17-Mar-10	13-Apr-10			
ENSM-1120	Circuit List - BPH 69kV Connections	580	01-Sep-09	14-Dec-11			
ENSM-1040	Raceway Plans & Details - BPH 69kV Connections	30	01-Sep-09	13-Oct-09			
ENSM-1110	Relay Settings - BPH 69kV Connections	15	17-Mar-10	06-Apr-10			
ENSM-1050	Panel Wiring Diagrams - BPH 69kV Connections	30	07-Apr-10	18-May-10			
ENSM-1052	Issue for Owner Review - Schematics & Wiring Pkg - BPH 69kV Con...	15	19-May-10	09-Jun-10			
ENSM-1054	Owner Review - Schematics & Wiring Pkg - BPH 69kV Connections	30	19-May-10	30-Jun-10			
ENSM-1056	Revise Per Owner Comments - Schematics & Wiring Pkg - BPH 69k...	25	01-Jul-10	05-Aug-10			
ENSM-1060	IFC Schematics & Wiring Diagrams - BPH 69kV Connections	5	06-Aug-10	12-Aug-10			
ENSM-1105	Conforming to Construction Drawings	15	13-Aug-10	02-Sep-10			
Detail Design - CCR 69kV Connections							
ENSM-1025	Relay Panel Layouts / BOM - CCR 69kV Connections	0	03-Sep-10	10-Sep-10			
ENSM-1035	AC & DC Schematics - CCR 69kV Connections	0	10-Sep-10	10-Sep-10			
ENSM-1125	Circuit List - CCR 69kV Connections	30	01-Nov-11	14-Dec-11			
		90	14-Apr-10	19-Aug-10			
		15	14-Apr-10	04-May-10			
		20	05-May-10	02-Jun-10			
		7	03-Jun-10	11-Jun-10			



Activity ID	Activity Name	OD	Start	Finish	2009	2010	2011
PR-1395	Recv & Approve BOM - 69kV CCR	10	12-May-10	25-May-10	J		
PR-1400	Order & Receive Steel - 69kV CCR	20	26-May-10	23-Jun-10		J	
PR-1390	Order & Receive Material - 69kV CCR	40	26-May-10	22-Jul-10		J	
PR-1237	Fabricate Panels - 69kV CCR	20	24-Jun-10	22-Jul-10		J	
PR-1415	Paint & Mounting - 69kV CCR	10	23-Jul-10	05-Aug-10		J	
PR-1425	Panel Wiring - 69kV CCR	15	06-Aug-10	26-Aug-10		J	
PR-1380	Install 69kV CCR Relays in Building	5	04-Oct-10	08-Oct-10		J	
	VRDS, Main, ISO 2, & BP Pipeline Panels	195	13-Jan-10	15-Oct-10		J	
PR-1255	Order Panels - VRDS, Main, ISO 2, & BP Pipeline	0	13-Jan-10				
PR-1235	Recv & Approve Structural - VRDS, Main, ISO 2, & BP Pipeline	10	24-Feb-10	09-Mar-10			
PR-1245	Recv & Approve BOM - VRDS, Main, ISO 2, & BP Pipeline	10	24-Feb-10	09-Mar-10			
PR-1207	Fabricate Panels - VRDS, Main, ISO 2, & BP Pipeline	20	10-Mar-10	06-Apr-10			
PR-1250	Order & Receive Steel - VRDS, Main, ISO 2, & BP Pipeline	20	10-Mar-10	06-Apr-10			
PR-1180	Order & Receive Material - VRDS, Main, ISO 2, & BP Pipeline	40	10-Mar-10	04-May-10			
PR-1265	Paint & Mounting - VRDS, Main, ISO 2, & BP Pipeline	20	05-May-10	02-Jun-10			
PR-1275	Panel Wiring - VRDS, Main, ISO 2, & BP Pipeline	15	03-Jun-10	23-Jun-10			
PR-1230	Testing & QA - VRDS, Main, ISO 2, & BP Pipeline	5	24-Jun-10	30-Jun-10			
PR-1240	Deliver - VRDS, Main, ISO 2, & BP Pipeline Panels	5	11-Oct-10	15-Oct-10			
	Substation Equipment / Steel Package	260	30-Sep-09	08-Oct-10			
	Bid Package						
PR-1000	Prepare Spec - Equipment / Steel Pkg	60	30-Sep-09	28-Dec-09			
PR-1002	Issue for Owner Review - Equipment / Steel Pkg	15	30-Sep-09	20-Oct-09			
PR-1004	Owner Review - Equipment / Steel Pkg	5	21-Oct-09	27-Oct-09			
PR-1006	Revise Per Owner Comments - Equipment / Steel Pkg	15	28-Oct-09	17-Nov-09			
PR-1010	Bid Period - Equipment / Steel Pkg	5	18-Nov-09	24-Nov-09			
PR-1050	Neg & Award - Equipment / Steel Pkg	15	25-Nov-09	17-Dec-09			
	138kV Substation Equipment / Steel Pkg						
PR138-1102	Recv & Approve Structural Calculations	170	10-Feb-10	08-Oct-10			
PR138-1104	Recv & Approve Electrical Arrangement Dwg	10	10-Feb-10	23-Feb-10			
PR138-1320	Fabricate Equipment	10	10-Feb-10	23-Feb-10			
PR138-1114	Recv & Approve Structural Details	120	24-Feb-10	12-Aug-10			
PR138-1100	Recv & Approve Anchor Bolt Plan	10	07-Apr-10	20-Apr-10			
PR138-1310	Fabricate Anchor Bolts	10	07-Apr-10	20-Apr-10			
PR138-1300	Fabricate Steel Pkg	25	21-Apr-10	25-May-10			
PR138-1410	Deliver Anchor Bolts	70	21-Apr-10	29-Jul-10			
PR138-1420	Deliver Steel Pkg	5	26-May-10	02-Jun-10			
PR138-1400	Deliver Major Equipment	10	30-Jul-10	12-Aug-10			
PR138-1430	Deliver Miscellaneous Equipment	30	13-Aug-10	24-Sep-10			
	CCR Substation Equipment / Steel Pkg	40	13-Aug-10	08-Oct-10			
PR69-1112	Recv & Approve Structural Calculations	140	10-Feb-10	26-Aug-10			
PR69-1124	Recv & Approve Electrical Arrangement Dwg	10	10-Feb-10	23-Feb-10			
PR69-1330	Fabricate Equipment	10	10-Feb-10	23-Feb-10			
PR69-1134	Recv & Approve Structural Details	90	24-Feb-10	30-Jun-10			
PR69-1110	Recv & Approve Anchor Bolt Plan	10	07-Apr-10	20-Apr-10			

Activity ID	Activity Name	OD	Start	Finish	2009	2010	2011
PR-2580	Negotiate & Award - Substation Testing	2	28-Apr-10	29-Apr-10			
PR-2510	Mobilize - Substation Testing	5	28-Jan-11	03-Feb-11			
Construction							
BP Husky Substation							
CN138S-1000	Rough Grade Driveways (Owner)	427	01-Mar-10	31-Oct-11			
CN138S-1002	Rough Grade Substation Pad (Owner)	288	15-Mar-10	28-Apr-11			
CN138S-1200	Procure Reinforcing Steel	30	15-Mar-10*	23-Apr-10			
CN138S-1300	Procure Below Grade Conduit Materials	30	22-Mar-10	30-Apr-10			
CN138S-1304	Procure Grounding Materials	15	29-Apr-10	19-May-10			
CN138S-1308	Procure Cable Trench	20	29-Apr-10	26-May-10			
CN138S-1004	Install Final Driveway Surface Rock (Owner)	20	29-Apr-10	26-May-10			
CN138S-1202	Tie Drilled Pier Foundations Cages	30	29-Apr-10	10-Jun-10			
CN138S-1206	Install Slab Foundations	5	03-May-10	07-May-10			
CN138S-1204	Install Drilled Pier Foundations	10	20-May-10	03-Jun-10			
CN138S-1302	Install Below Grade Conduit	30	20-May-10	01-Jul-10			
CN138S-1306	Install Below Grade Grounding	25	04-Jun-10	09-Jul-10			
CN138S-1420	Off-Load and Set Transformers (KBR)	25	12-Jul-10	13-Aug-10			
CN138S-1310	Install Cable Trench	25	26-Jul-10	27-Aug-10			
CN138S-1422	Field Assemble Transformers (KBR)	9	03-Aug-10	13-Aug-10			
CN138S-1424	Oil-Fill Transformers (KBR)	30	09-Aug-10	20-Sep-10			
CN138S-1410	Off-Load, Set & Weather Seal Control Building	18	18-Aug-10	09-Sep-10			
CN138S-1436	Commission Transformers (KBR)	6	10-Sep-10	17-Sep-10			
CN138S-1400	Install Deadend Structures	2	20-Sep-10	21-Sep-10			
CN138S-1402	Install Switch Stands	20	20-Sep-10	15-Oct-10			
CN138S-1412	Install Misc. Equipment in Control Building	15	21-Sep-10	11-Oct-10			
CN138S-1414	Reconnect Wiring Across Building Shipping Splits	15	21-Sep-10	11-Oct-10			
CN138S-1404	Install Equipment Stands	3	22-Sep-10	24-Sep-10			
CN138S-1406	Install Bus Support	15	27-Sep-10	15-Oct-10			
CN138S-1500	Install Switches	15	12-Oct-10	01-Nov-10			
CN138S-1500	Install Rigid Tubular Bus	15	12-Oct-10	01-Nov-10			
CN138S-1502	Install Instrument Transformers	15	02-Nov-10	22-Nov-10			
CN138S-1508	Install Circuit Breakers	25	02-Nov-10	08-Dec-10			
CN138S-1604	Install Flexible Conductor Jumpers	5	23-Nov-10	01-Dec-10			
CN138S-1504	Install Station Service Transformers	15	23-Nov-10	15-Dec-10			
CN138S-1506	Install Surge Arresters	5	02-Dec-10	08-Dec-10			
CN138S-1602	Install Strain Bus	5	09-Dec-10	15-Dec-10			
CN138S-1415	Install Fiber-Optic Communications Circuits	15	09-Dec-10	30-Dec-10			
CN138S-1720	Install Control & Low Voltage Power Cable for 138kV Equipment	10	16-Dec-10	30-Dec-10			
CN138S-1417	Connect RTU's to New Communications Circuits	20	16-Dec-10	13-Jan-11			
CN138S-1810	Final Rock Surfacing	5	31-Dec-10	06-Jan-11			
CN138S-1724	Terminate Control & Low Voltage Power Cables for 138kV Equipment	10	31-Dec-10	13-Jan-11			
CN138S-1722	Install Control & Low Voltage Power Cable for 69kV Equipment	15	07-Jan-11	27-Jan-11			
CN138S-1726	Terminate Control & Low Voltage Power Cables for 69kV Equipment	10	14-Jan-11	27-Jan-11			
CN138S-1730	Test Circuit Breakers	10	21-Jan-11	03-Feb-11			
		10	04-Feb-11	17-Feb-11			

Activity ID	Activity Name	OD	Start	Finish	2009	2010	2011
CN138S-1740	Relay Commissioning Tests	30	04-Feb-11	17-Mar-11			
CN138S-1732	Test Switches	5	18-Feb-11	24-Feb-11			
CN138S-1734	Test Instrument Transformers	5	25-Feb-11	03-Mar-11			
CN138S-1736	Test Station Service Transformers	5	04-Mar-11	10-Mar-11			
CN138S-1738	Test Surge Arresters	5	11-Mar-11	17-Mar-11			
CN138S-1742	Control Circuit Function Tests	30	18-Mar-11	28-Apr-11			
CN138S-1426	Final Test & Commission Transformers (KBR)	20	01-Apr-11	28-Apr-11			
CN138S-1800	Energize Substation	0		28-Apr-11			
CCR Substation							
CN69S-1010	Rough Grade Driveways (Owner)	405	01-Mar-10	29-Sep-11			
CN69S-1012	Rough Grade Substation Pad (Owner)	10	01-Mar-10*	12-Mar-10			
CN69S-1014	Install Final Driveway Surface Rock (Owner)	55	01-Mar-10	14-May-10			
CN69S-1210	Procure Reinforcing Steel	5	17-May-10	21-May-10			
CN69S-1212	Tie Drilled Pier Foundation Cages	20	16-Jul-10	12-Aug-10			
CN69S-1216	Install Slab Foundations	10	13-Aug-10	26-Aug-10			
CN69S-1310	Procure Below Grade Conduit Materials	15	13-Aug-10	02-Sep-10			
CN69S-1314	Procure Grounding Materials	20	13-Aug-10	10-Sep-10			
CN69S-1318	Procure Cable Trench	20	13-Aug-10	10-Sep-10			
CN69S-1214	Install Drilled Pier Foundations	30	13-Aug-10	24-Sep-10			
CN69S-1312	Install Below Grade Conduit	15	27-Aug-10	17-Sep-10			
CN69S-1316	Install Below Grade Grounding	15	20-Sep-10	08-Oct-10			
CN69S-1450	Off-Load and Set Transformers (KBR)	15	27-Sep-10	15-Oct-10			
CN69S-1320	Install Cable Trench	5	04-Oct-10	08-Oct-10			
CN69S-1452	Field Assemble Transformers (KBR)	15	04-Oct-10	22-Oct-10			
CN69S-1454	Oil-Fill Transformers (KBR)	10	11-Oct-10	22-Oct-10			
CN69S-1430	Install Deadend Structures	5	25-Oct-10	29-Oct-10			
CN69S-1432	Install Switch Stands	10	25-Oct-10	05-Nov-10			
CN69S-1456	Test Transformers (KBR)	20	25-Oct-10	05-Nov-10			
CN69S-1464	Bus Duct	20	01-Nov-10	30-Nov-10			
CN69S-1434	Install Equipment Stands	25	01-Nov-10	07-Dec-10			
CN69S-1436	Install Bus Supports	10	08-Nov-10	19-Nov-10			
CN69S-1510	Install Switches	10	08-Nov-10	19-Nov-10			
CN69S-1610	Install Rigid Tubular Bus	10	22-Nov-10	07-Dec-10			
CN69S-1614	Install Flexible Conductor Jumpers	10	22-Nov-10	07-Dec-10			
CN69S-1512	Install Instrument Transformers	15	01-Dec-10	21-Dec-10			
CN69S-1518	Install Circuit Breakers	5	08-Dec-10	14-Dec-10			
CN69S-1612	Install Strain Bus	10	08-Dec-10	21-Dec-10			
CN69S-1514	Install Station Service Transformers	10	08-Dec-10	21-Dec-10			
CN69S-1516	Install Surge Arresters	2	15-Dec-10	16-Dec-10			
CN69S-1730	Off-Load, Set & Weather Seal Control Building	3	17-Dec-10	21-Dec-10			
CN69S-1732	Install Misc. Equipment in Control Building	2	22-Dec-10	23-Dec-10			
CN69S-1772	Test 13.8kV Switchgear & Bus Duct	3	27-Dec-10	29-Dec-10			
CN69S-1753	Final Rock Surfacing	5	27-Dec-10	31-Dec-10			
CN69S-1734	Reconnect Wiring Across Building Shipping Splits	10	27-Dec-10	07-Jan-11			
		15	30-Dec-10	19-Jan-11			

Activity ID	Activity Name	OD	Start	Finish	2009	2010	2011
CN69L-1080	Cutover Main 69kV Sub from Locust to 138kV Sub (FE)	5	03-Oct-11	07-Oct-11	J		
CN69L-1070	Test & Commission	2	10-Oct-11	11-Oct-11			
Outage - Ironville / VRDS 69kV Cutover							
CN69L-1080	Cutover VRDS 69kV Sub from Ironville to 138kV Sub (FE)	7	12-Oct-11	20-Oct-11	J		
CN69L-1085	Test & Commission	5	12-Oct-11	18-Oct-11			
Outage - Ironville / ISO II 69kV Cutover							
CN69L-1090	Cutover ISO II 69kV Sub and BP Pipeline Sub from Ironville to 138kV...	7	21-Oct-11	31-Oct-11			
CN69L-1095	Test & Commission	5	21-Oct-11	27-Oct-11			
69kV Line Work (Connect new CCR Sub to 69kV Lines)							
Outage - ISO II / VRDS 69kV Lines							
CN69L-1110	Install new Relaying at ISO II Sub	178	20-Jan-11	29-Sep-11			
CN69L-1120	Install new Relaying at VRDS Sub	178	20-Jan-11	29-Sep-11			
CN69L-1105	Connect 69kV Line to CCR Substation (FE)	10	20-Jan-11	02-Feb-11			
CN69L-1115	Test & Commission CCR - ISO II 69kV Line	10	03-Feb-11	16-Feb-11			
CN69L-1125	Test & Commission CCR 69kV Breakers	3	19-Sep-11*	21-Sep-11			
CN69L-1135	Test & Commission CCR - VRDS 69kV Line	2	22-Sep-11	23-Sep-11			
		2	26-Sep-11	27-Sep-11			
		2	28-Sep-11	29-Sep-11			

APPENDIX B – Transcription Diagrams

The following table itemizes the line loading of the transmission line loops being installed in the proposed Project. The normal line loading amps is based on the maximum load to be served to the customer owned substation and the normal configuration of the transmission system. The emergency line loading is based on the maximum load to be served by the customer owned substation with a single element outage of the transmission system that produces the highest loads in the new line loops. This is an outage of a 138 kV breaker at the Bayshore generating plant.

Line Name	Normal Loading Amps	Emergency Loading Amps	Winter Rating Amps
Bayshore-BP Oil No. 1 Line Loop to BP Oil	457.3	1121	1221.6
Bayshore-Lemoyne Line Loop to BP Oil	61.9	460.2	1221.6
Bayshore-BP Oil No. 2 Line Loop to BP Oil	454.8	1121	1221.6
Bayshore-Jackman Line Loop to BP Oil	596.9	1137.9	1221.6

Table 1

**BP Oil Toledo Refinery
69kV Supply Voltage Contingency Analysis
for Study Year 2017**

Contingencies	Thermal Loadings in % of Summer Emergency Ratings						Bus Voltages in p.u.		
	IronK-VRDS 69kV Line	Locust-Main 69kV Line	IronL-ISO2 69kV Line	Bayshore-Iron. 138kV Line	Ironville 138-72kV Tr1	Maclea-SunO 69kV Line	VRDS 72	MAIN 72	ISO2 72
BP Load = 65MW	SE - 95	SE - 89	SE - 87	SE - 264	SE - 252	SE - 108			
Base Case									
Ironville K to VRDS	58.5	32.9	51.2	80.1	83.0	49.9	0.994	0.993	0.994
Ironville K to VRDS / Ironville L to ISO2	-	22.5	104.5	79.1	82.0	54.5	0.986	0.986	0.987
Ironville L to ISO2	102.3	90.9	-	65.4	68.1	103.4	0.921	0.921	0.921
		30.1	-	97.0	86.4	66.2	0.989	0.988	0.987
BP Load = 80MW									
Base Case									
Ironville K to VRDS	65.2	29.1	58.1	82.8	85.7	52.0	0.989	0.989	0.989
Ironville K to VRDS / Ironville L to ISO2	-	17.8	118.7	81.7	84.6	57.2	0.980	0.980	0.982
Ironville L to ISO2	115.4	112.8	-	66.4	69.0	113.7	0.905	0.905	0.905
		20.7	-	82.0	84.8	56.0	0.983	0.982	0.981
BP Load = 85MW									
Base Case									
Ironville K to VRDS	67.4	21.4	60.6	83.7	86.5	52.7	0.988	0.987	0.987
Ironville K to VRDS / Ironville L to ISO2	-	16.2	123.5	82.6	85.4	58.1	0.978	0.978	0.98
Ironville L to ISO2	119.8	120.2	-	68.1	70.7	116.9	0.900	0.900	0.899
		19.1	-	82.8	85.7	56.9	0.981	0.980	0.979

Notes

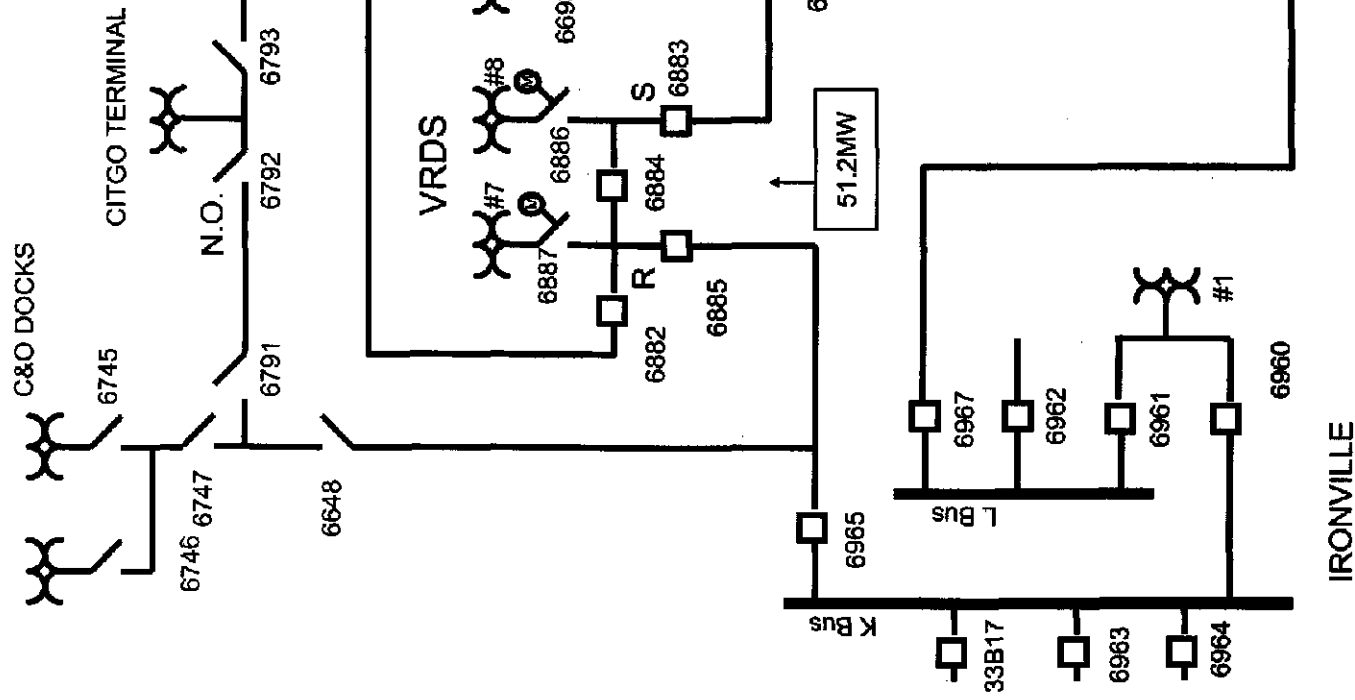
- Values in red indicate thermal loading and voltage violations.
- FE operates the Toledo 69kV system closer to 72kV.

BP HUSKY - TOLEDO REFINERY 69 KV

POWER FLOW INDEX

1. Normal Operating Conditions, Existing Power Distribution System
2. Ironville Line to ISO-2 Substation Out of Service, Existing Power Distribution System
3. Ironville Line to VRDS Substation Out of Service, Existing Power Distribution System
4. Ironville Substation Out of Service, Existing Power Distribution System
5. Normal Operating Conditions, Future After Reformer 3 Addition
6. Ironville Line to ISO-2 Substation Out of Service, Future After Reformer 3 Addition
7. Ironville Line to VRDS Substation Out of Service, Future After Reformer 3 Addition
8. Ironville Substation Out of Service, Future After Reformer 3 Addition
9. Outflow 55MW, Refinery Load at 62MW, June 2009, Existing Power Distribution System
10. Outflow 55MW, Refinery Load at 62MW, Ironville Line to ISO-2 Substation Out of Service, Existing Power Distribution System
11. Outflow 55MW, Refinery Load at 62MW, Ironville Line to VRDS Substation Out of Service, Existing Power Distribution System

Existing Power Distribution System



C&O DOCKS

6745

6746 6747

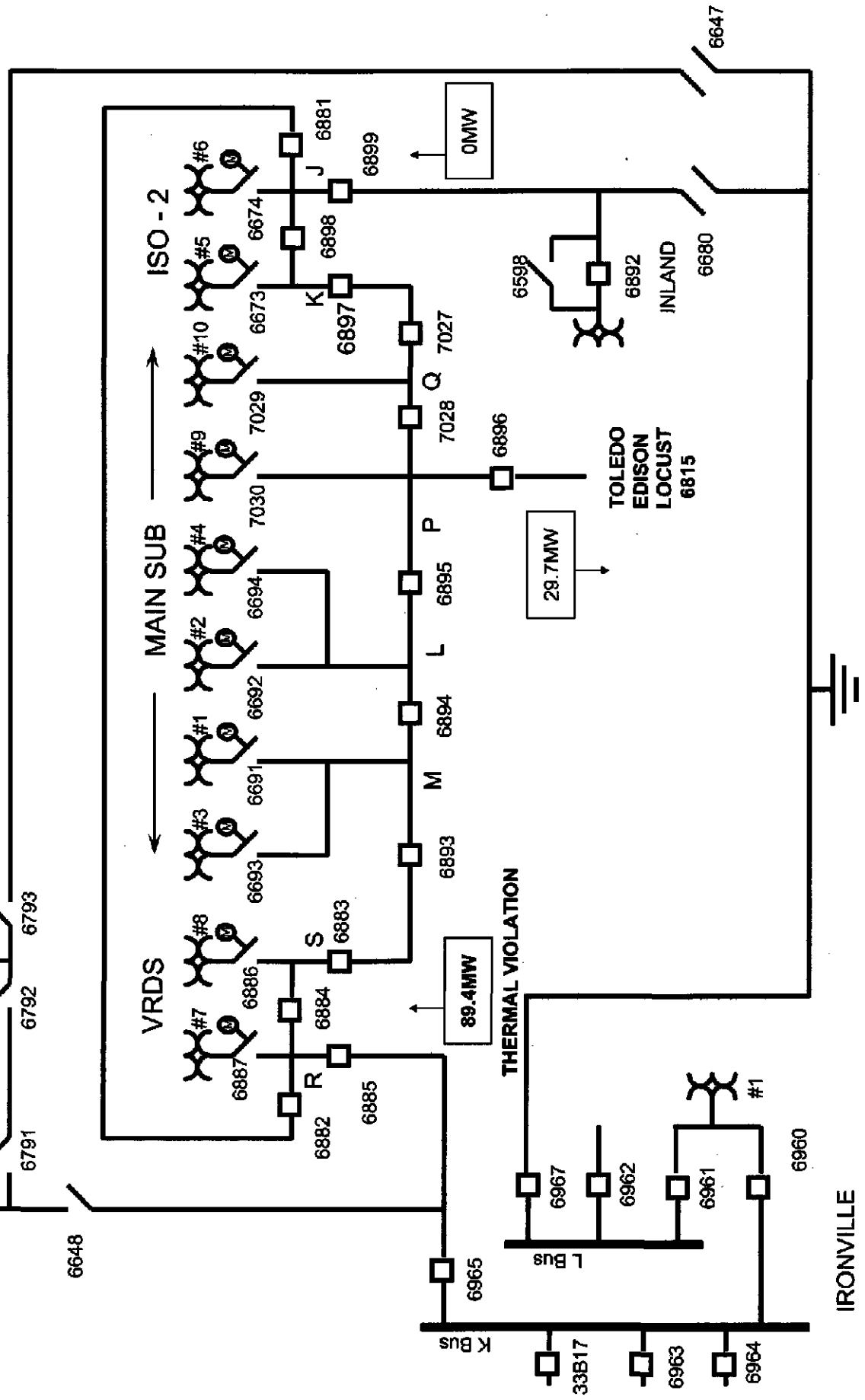
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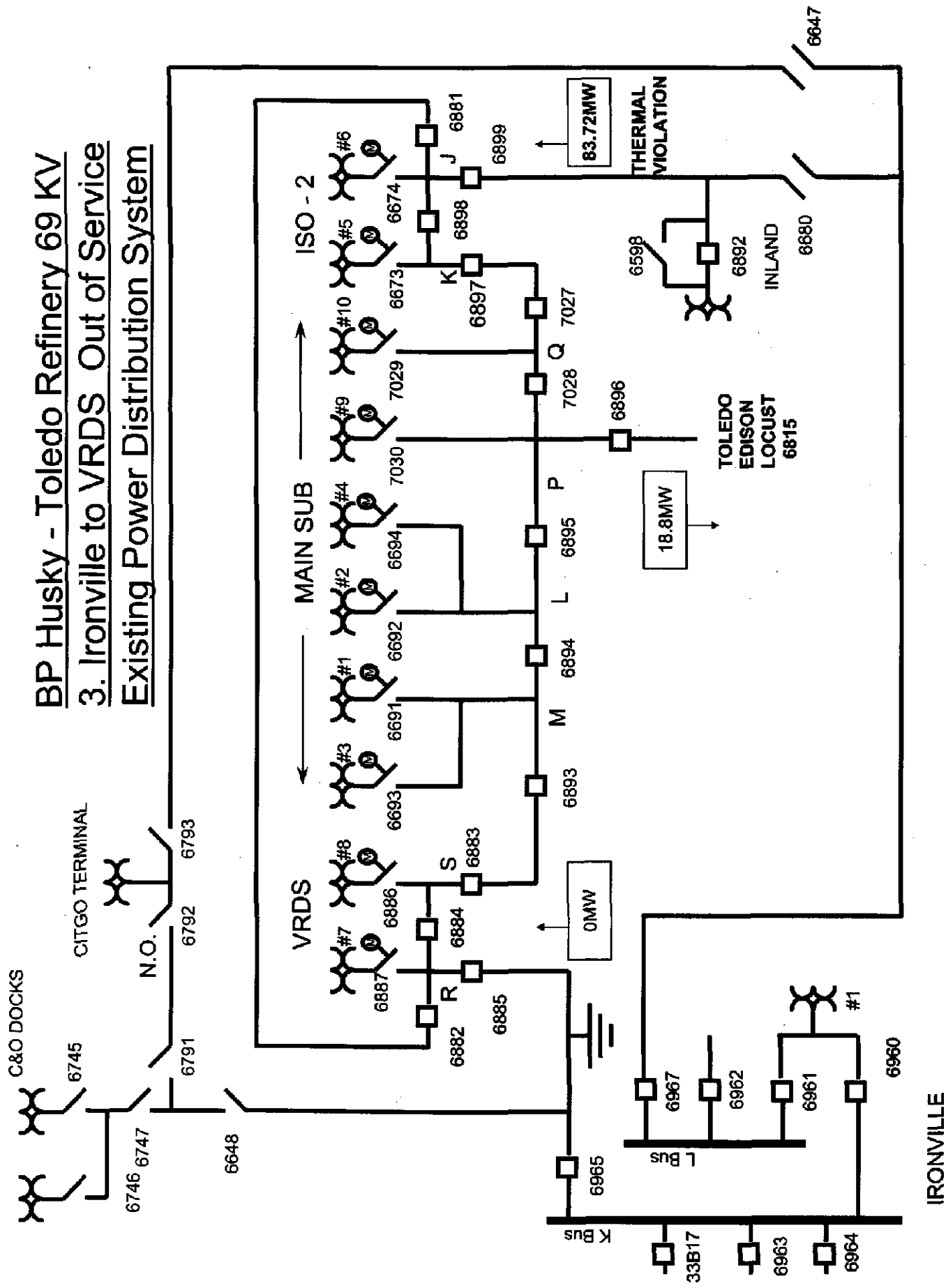
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CITGO TERMINAL

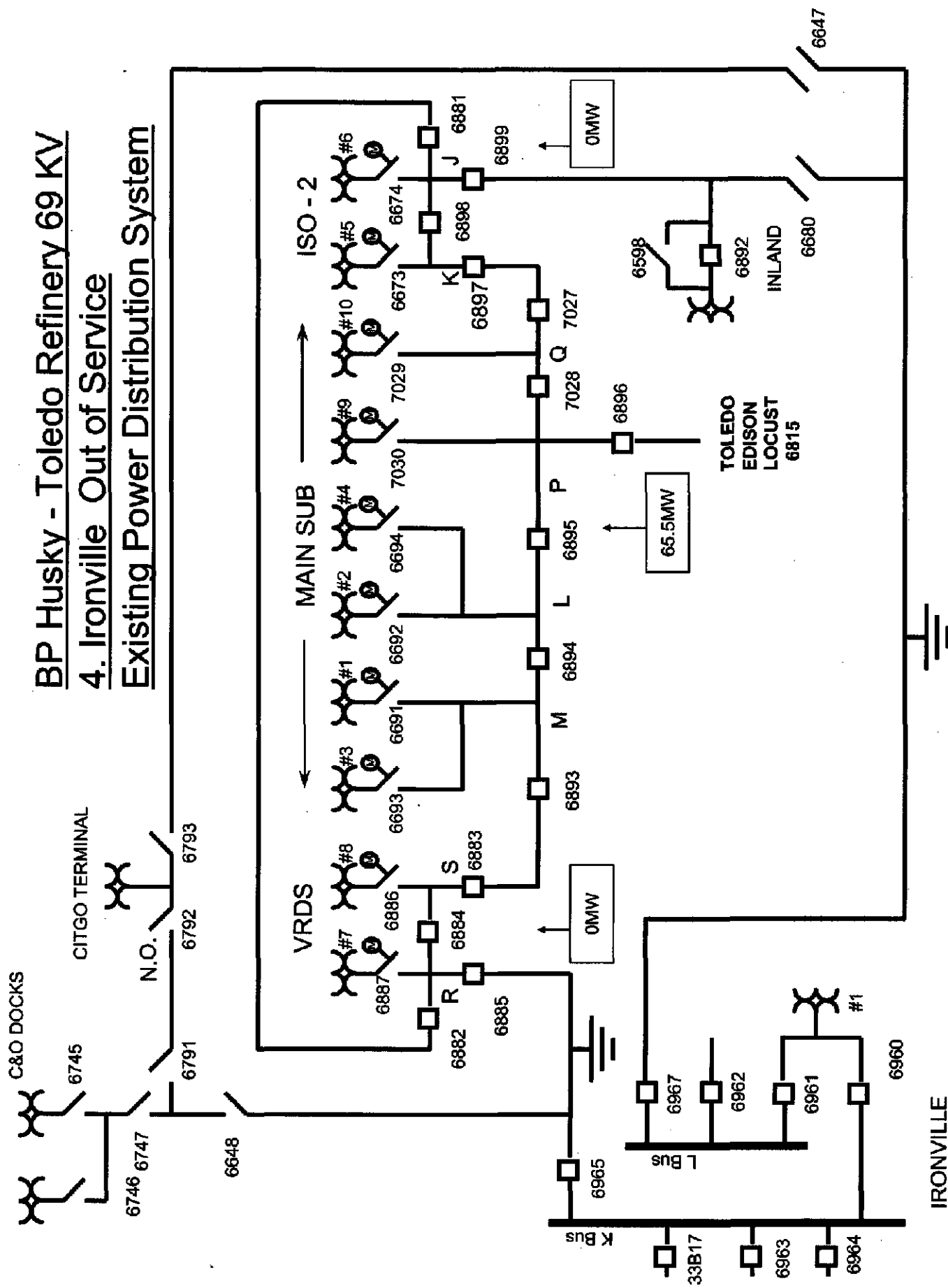
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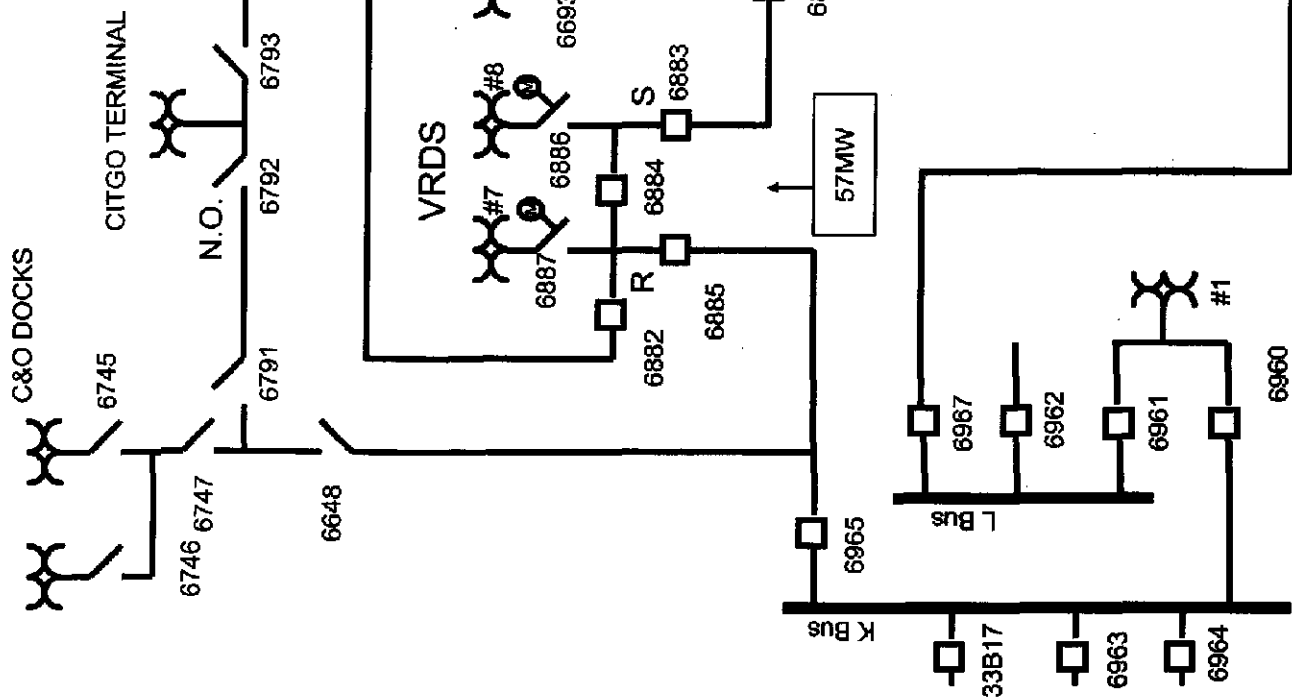
BP Husky - Toledo Refinery 69 KV
3. Ironville to VRDS Out of Service
Existing Power Distribution System



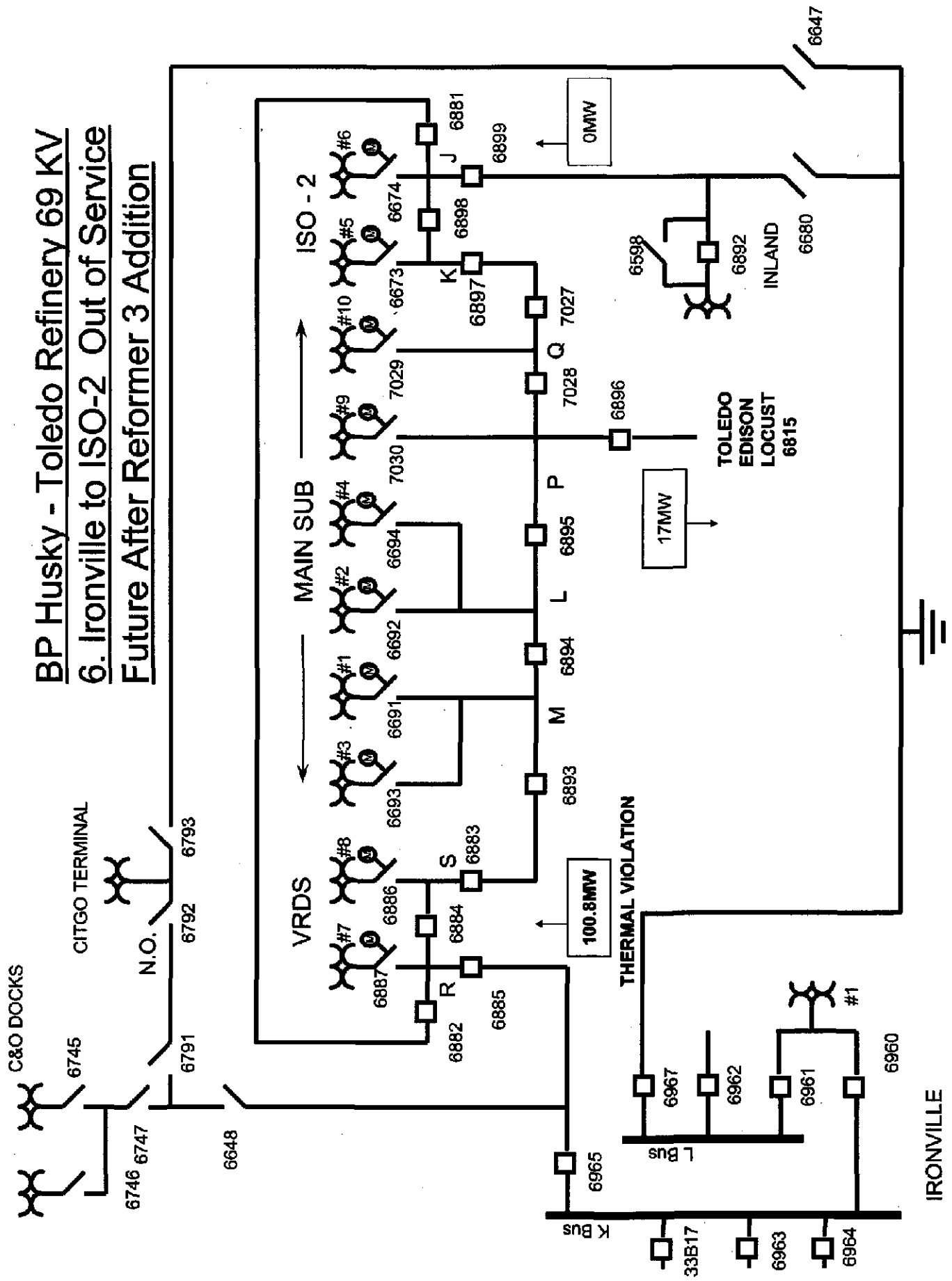
Existing Power Distribution System



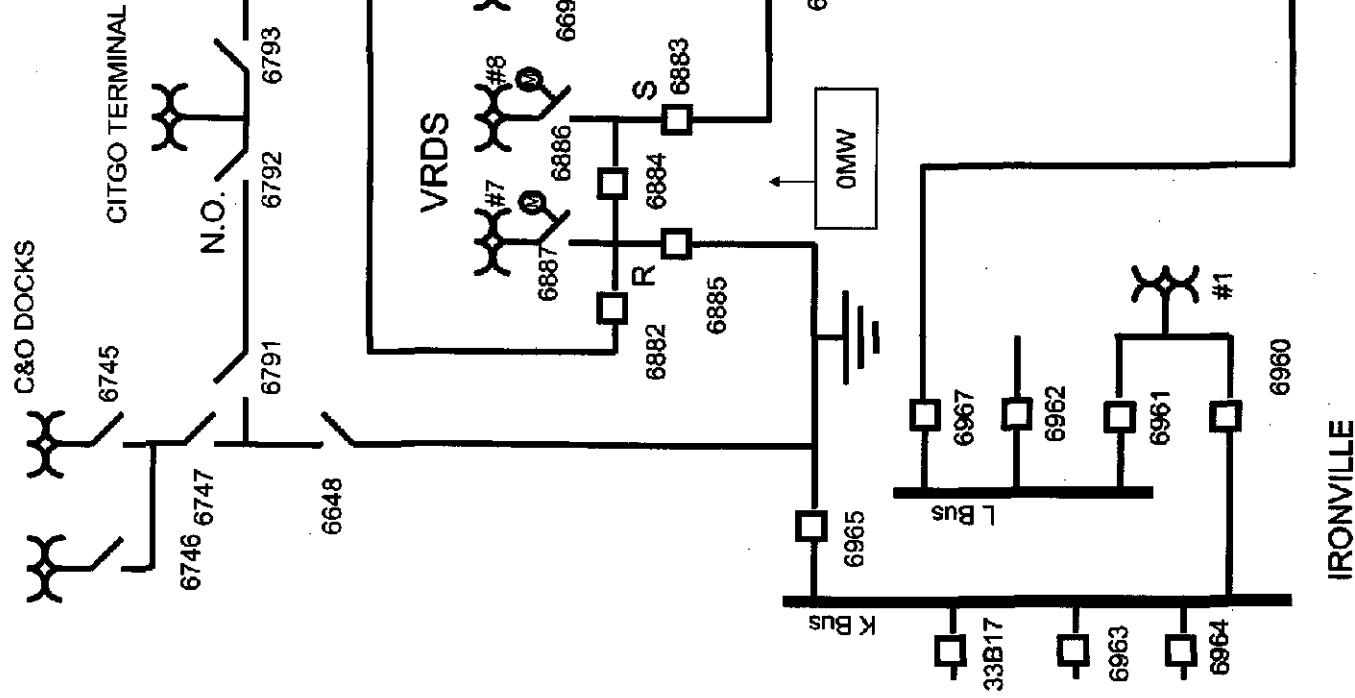
BP Husky - Toledo Refinery 69 KV 5. Normal Operating Conditions Future After Reformer 3 Addition



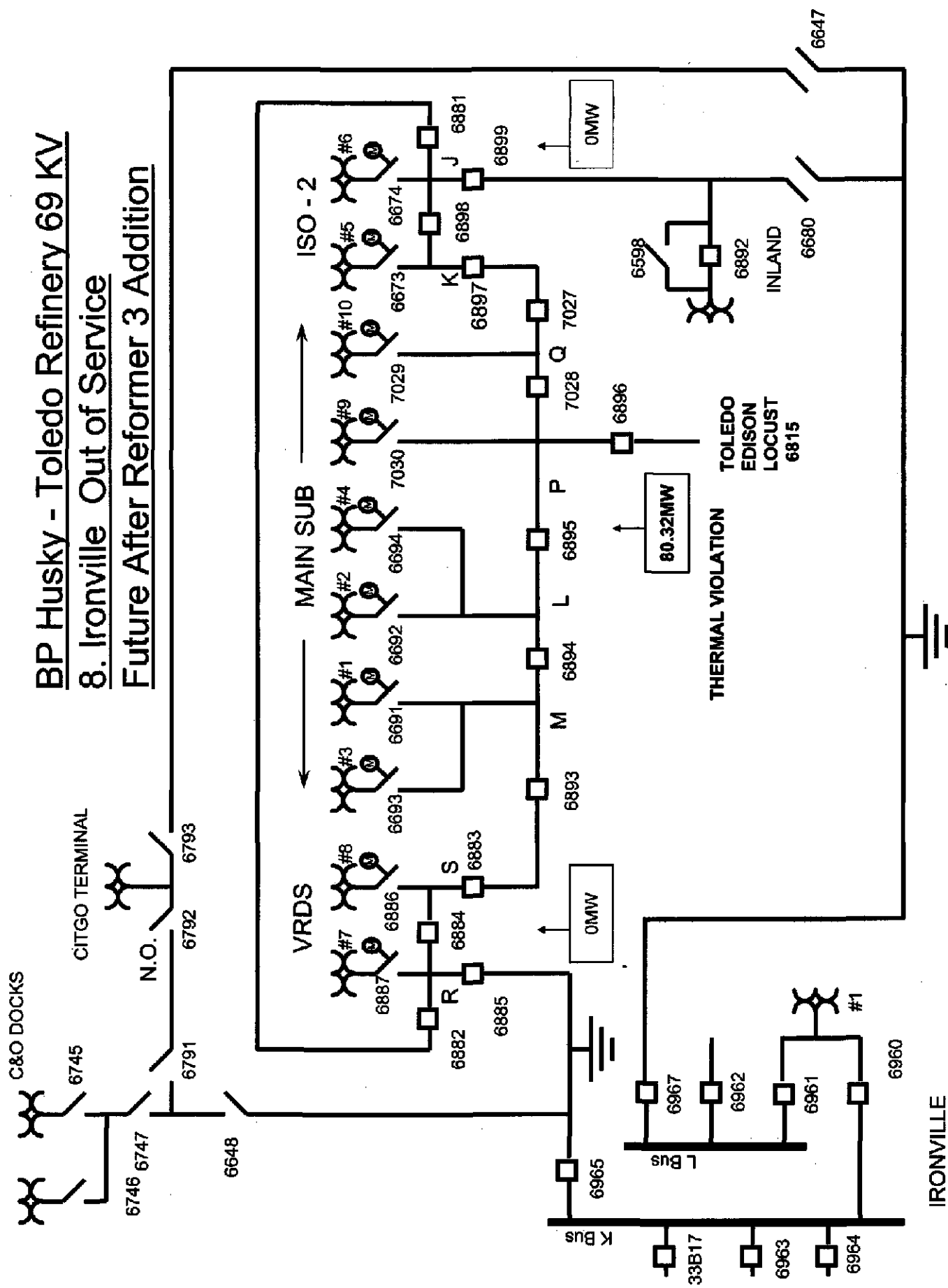
Future After Reformer 3 Addition



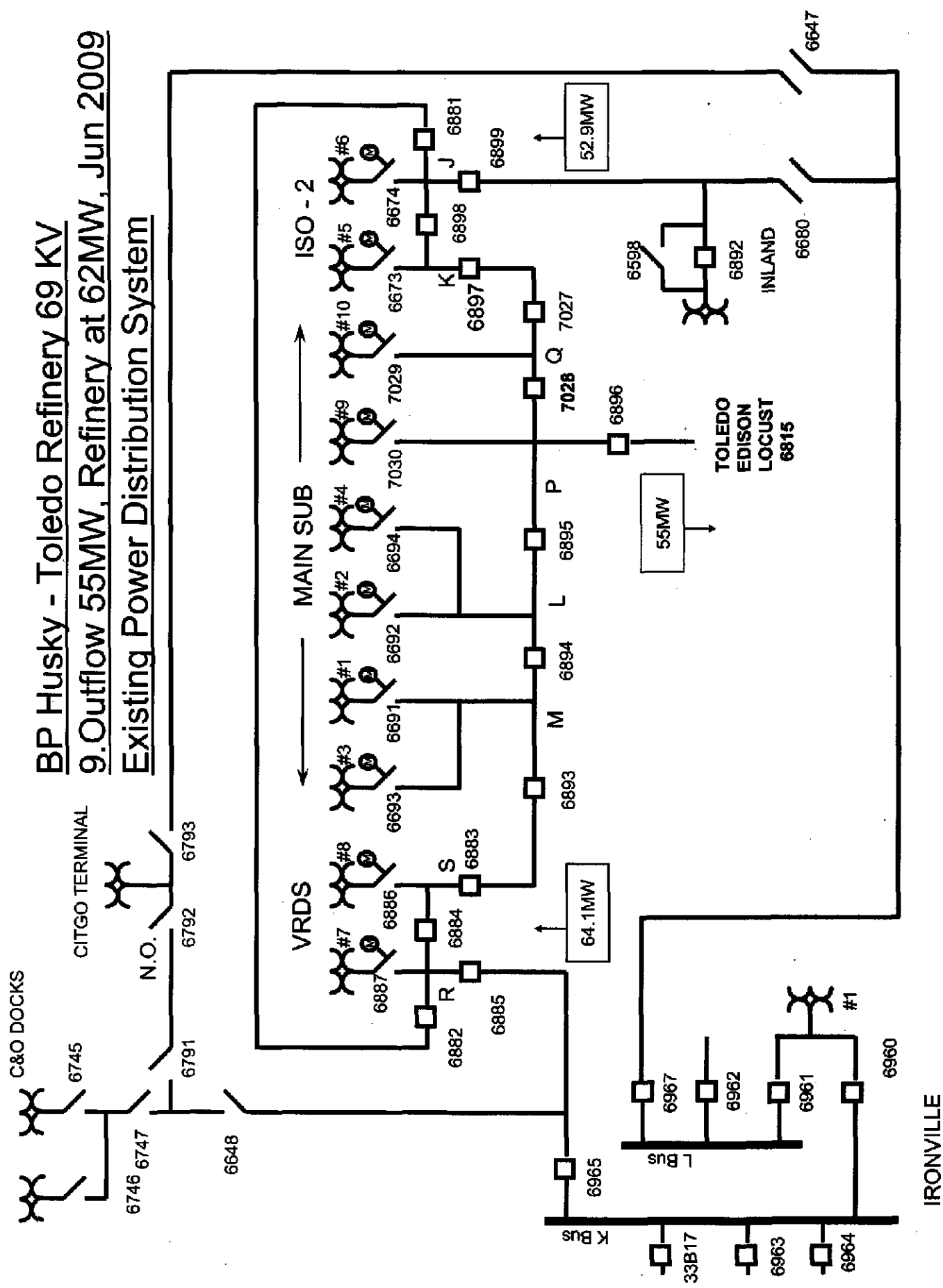
BP Husky - Toledo Refinery 69 KV
7. Ironville to VRDS Out of Service
Future After Reformer 3 Addition



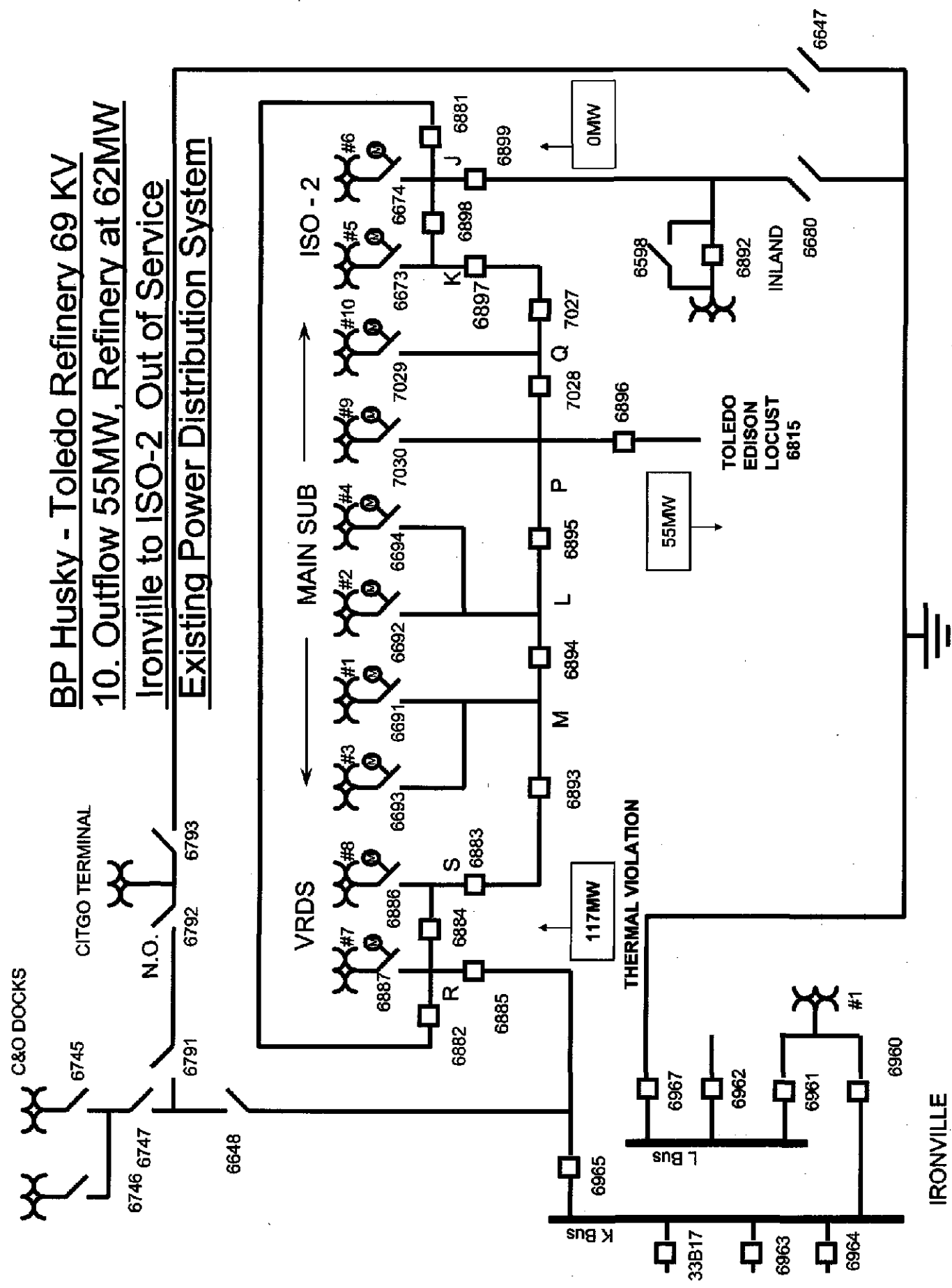
Future After Reformer 3 Addition



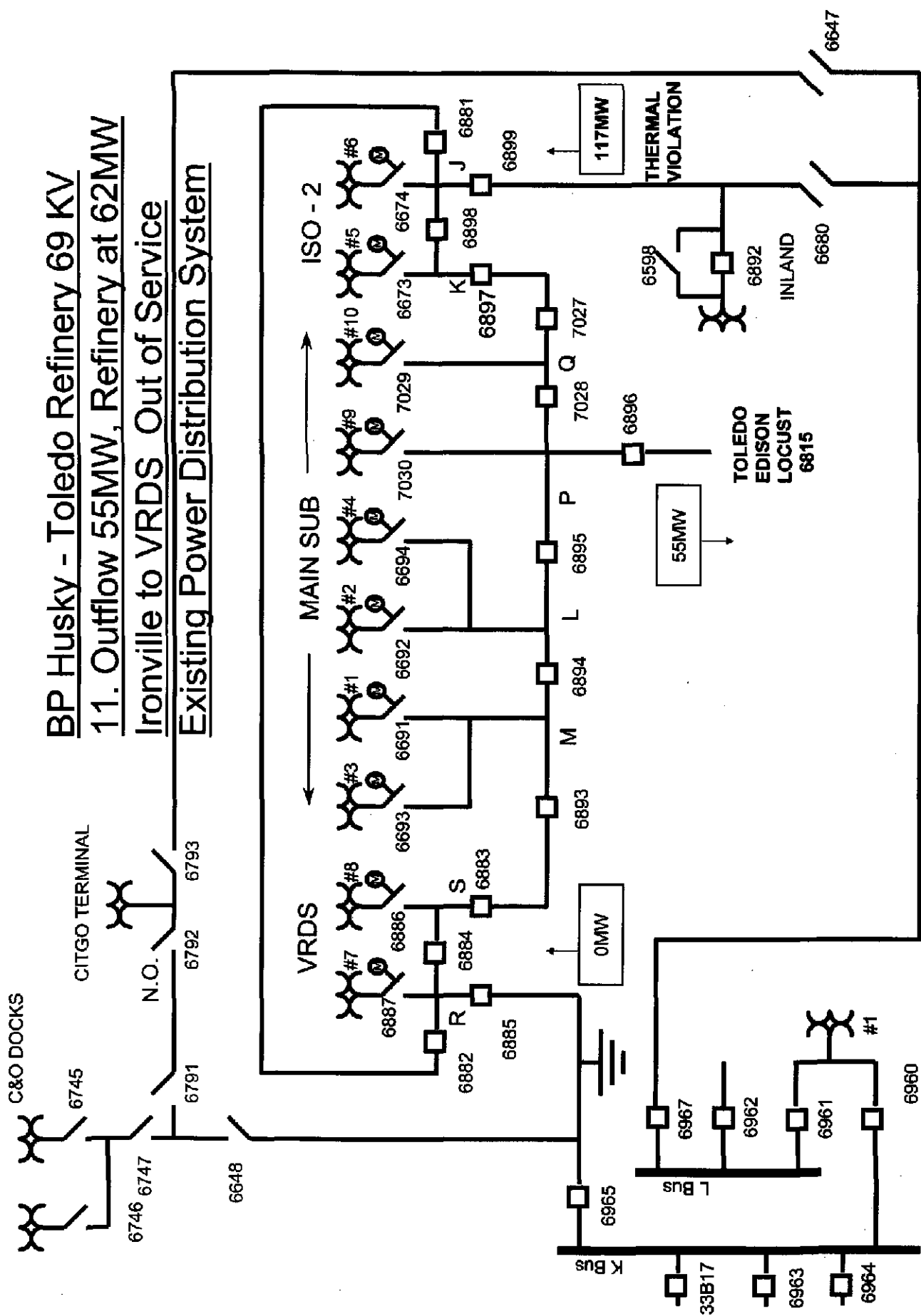
9. Outflow 55MW, Refinery at 62MW, Jun 2009 Existing Power Distribution System



BP Husky - Toledo Refinery 69 KV
10. Outflow 55MW, Refinery at 62MW
Ironville to ISO-2 Out of Service
Existing Power Distribution System



BP Husky - Toledo Refinery 69 KV 11. Outflow 55MW, Refinery at 62MW Ironville to VRDS Out of Service Existing Power Distribution System



APPENDIX C – Wetland Delineation Report



December 15, 2008

Jim Laybourn
BP Products North America Inc.
P.O. Box 696, Toledo, OH 43697-0696
4001 Cedar Point Road
Oregon, Ohio 43616

Wetland Delineation Report for BP Products North America, Inc. – Husky Substation
Oregon, Ohio – Lucas County
Burns & McDonnell Project No. 48810

Dear Mr. Laybourn:

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) has been retained by BP Products North America Inc. (BP) to conduct a wetland delineation on an agricultural parcel in Lucas County, Ohio. The approximately 13-acre parcel is being considered for the construction of a power generation substation adjacent to the existing BP Husky refinery (Project). The proposed Project will be located north of State route 2 (Navarre Avenue) and south of Cedar Point Road (Project Area) in Oregon, Ohio (Figure 1 in Appendix I).

Introduction

BP has proposed the construction of an additional 138-kV power generation substation to the south of the existing BP Husky refinery property. The proposed substation will provide power to new equipment being installed at the BP Husky Refinery. Currently a 345-kV transmission line runs east to west approximately 500 feet south of the Project Area, and a 69-kV line runs north to south along the eastern Project Area boundary. The Project Area lies just south of Cedar Point Road, and is bordered on the east by Norfolk and Western railroad tracks. The approximately 13-acre parcel is currently used for agricultural purposes, specifically the farming of corn crops. Photographs 1-5 in Appendix III show the general site characteristics and relative location. Crop slides from the Ottawa Lucas Farm Service Agency (FSA) in Oak Harbor, Ohio along with National Agriculture Imagery Program (NAIP) aerial photography indicate that the Project Area has been farmed annually for at least the past ten years. Burns & McDonnell staff evaluated the Project Area for waters of the United States and waters of the State by both desktop and field survey methods.

Methods

Preliminary Investigation

Burns and McDonnell conducted a desktop review prior to field investigation of the Project Area to determine the potential presence of waters of the United States and waters of the State. A United States Geological Survey (USGS) topographic map, United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map (Oregon Quadrangle), United States Department of Agriculture (USDA) *Soil Survey of Lucas County, Ohio*, FEMA floodplain map, and existing 2006 aerial photography were reviewed for such waters.

The 1980 USGS topographic map and the 2004 USFWS NWI map, Oregon Ohio-Michigan quadrangle, were examined to as a preliminary evaluation of potential waters of the United States present in the Project Area. The approximate boundary of the Project Area was superimposed onto the topographic map for reference (Figure 1 in Appendix I). The topographic map indicates the presence of Otter and Duck Creeks approximately half a mile to the northwest. A depression is also observed adjacent to the northwest Project Area boundary; this likely represents the ephemeral stream bed identified during the site visit. The NWI map (Figure 2 in Appendix I) did not indicate the presence of wetlands within the boundary of the Project Area, nor within the immediate vicinity. Wetland identification criteria differ between the USFWS and the U.S. Army Corps of Engineers (Corps); as a result, wetlands shown on a NWI map may not be under the jurisdiction of the Corps. Similarly, jurisdictional wetlands are often not included on the NWI maps. Wetland abundance based on NWI maps cannot be assumed to be an accurate assessment of jurisdictional wetlands; therefore, a field delineation was conducted on-site.

The 1980 USDA *Soil Survey of Lucas County, Ohio* shows two soil types present within the Project Area (Figure 3 in Appendix I). Both of these soil types are classified as hydric; the Fulton silty clay loam series that appears in the southwestern third of the Project Area and the Latty silty clay series that comprises the remaining two thirds. The Fulton silty clay loam soil series consists of very deep, somewhat poorly drained, and slow to moderately permeable soils formed from glaciolacustrine deposits. These soils are often found on lake plain landforms. The Latty silty clay soil series consists of very deep, very poorly drained and slowly permeable soils formed from clayey glaciolacustrine deposits. The Latty series of soils are often found on lake plains and drainageways.

The 2006 NAIP aerial photograph was also reviewed for indication of wetlands and other waters of the United States. From the aerial photograph a small differentiated area was noted on or just outside of the northwestern Project Area boundary; this was suspected and later confirmed as representing the ephemeral stream with wetland inclusions that drains from southwest to northeast to a culvert under Cedar Point road. The data gathered during the wetland delineation of the Project Area was superimposed onto the



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December 15, 2008
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aerial photograph. The Project Area is comprised of a combination of land cover types; the majority of the property is classified as upland/agricultural. Additionally, the FEMA floodplain map (Figure 5 in Appendix I) indicates no record of a 100 year floodplain within the Project Area.

As previously mentioned, crop slides from the Ottawa Lucas FSA office were reviewed for the years 1998 through 2003. Photographs were taken of the projected slides and are included in Appendix I (Figures 6a, 6b and 6c). These crop slides were evaluated for the presence of hydrologic signatures and also as indicators of previous land use. NAIP aerial photography was used to supplement this study for the years 2004 through 2006 and is included in Appendix I (Figure 6c). From 1998 to 2006, the Project Area has been farmed with row crops. No hydrologic signatures were observed, other than the presence of the ephemeral stream adjacent to the northwestern Project Area boundary and two dark areas within the northeastern portion of the Project area visible in the 2005 and 2006 aerial photography (Figure 6c). The stream was visible on all crop slides and aerial photography from 1998 onward, and was also encountered during the site visit. The signatures in the northeastern portion of the Project Area were visible in only 2 of 9 years reviewed and can likely be attributed to the timing of the photography. Field review did not indicate this area as having the hydric soils necessary to classify it as a wetland.

Site Visit

On November 19, 2008, Burns & McDonnell personnel visited the Project Area to identify any waters of the United States and waters of the State, including wetlands (adjacent or isolated) that might be present. A comprehensive wetland delineation was performed in accordance with the *U.S. Army Corps of Engineers Wetland Delineation Manual* (1987 Manual) and other Corps guidance regarding the jurisdictionality of watercourses including the June 5, 2007, Corps memorandum entitled "*Clean Water Act Jurisdiction Following the United States Supreme Court's Decision in Rapanos v. United States & Carabell v. United States*". Sample plots that included wetland and upland data points were established on the site and mapped with the aerial photograph for ease of interpretation (Figure 4 in Appendix I). Routine Wetland Determination Data Forms from the 1987 Manual were completed for each sample plot to characterize the vegetation, hydrology, and soil conditions of the jurisdictional wetland areas and adjacent uplands (Appendix II). The locations of the wetland and upland sample plots were recorded using a global positioning system (GPS) unit (Trimble® Pro XRS sub-meter GPS unit), and natural color photographs which were taken of the site are included in Appendix III.

Results

The Project Area contained mostly agricultural and upland areas (Photographs 7-8, Appendix III), but a small wetland was also observed directly adjacent to the northwestern boundary. Both areas are described in more detail below.

Upland Vegetation

Upland areas comprise the majority of the Project area; as the parcel is an agricultural plot and had been recently harvested for corn. Vegetation observed in the upland areas consisted mostly of corn debris from the recent crop harvest, but also included Queen Anne's lace (*Daucus carota*), Kentucky bluegrass (*Poa pratensis*), tall fescue (*Schedonorus phoenix*), dandelion (*Taraxacum officinale*), Canada goldenrod (*Solidago canadensis*), and field pennycress (*Thlaspi arvense*).

Description of Wetland Area

Although no wetlands were observed within the Project Area, one combination palustrine emergent (PEM) and palustrine scrub/shrub (PSS) wetland swale of 0.22 acres (W-1) was located immediately outside of the northwest site boundary, extending to the west. (Photographs 6, 11-12, Appendix III). Wetland-1 is associated with Stream-1 (S-1); the stream extending southwest from a culvert below Cedar Point Road. (Table 1 below summarizes the features of identified waters of the United States). Stream-1 is ephemeral in nature, with a total delineated length of 383.5 feet; where present, the average water depth is six inches. This stream was mostly dry at the time of survey, and leaf litter and silt were observed as the stream bed substrate (Photographs 9-10, Appendix III). The northern portion of this wetland contained approximately six inches of standing water as well as typical hydrophytic vegetation at the time of survey; including herbaceous species like Broad-leaf cattail (*Typha latifolia*) and Common reed (*Phragmites australis*). Woody species in this wetland included Red-osier dogwood (*Cornus sericea* L.), Green ash (*Fraxinus pennsylvanica*) and Black willow (*Salix nigra*). The location and extent of the wetland within the Project Area were recorded using the GPS unit (Figure 4 in Appendix I). The wetland swale is narrow and extends southwest until it terminates at developed property. These areas are described in more detail below, and photographs of the site are included in Appendix III.

The dominant shrub and herbaceous plant types observed in the wetland swale are species that grow predominantly in wetland environments (Table 1). Additional species present in the wetland area include Red-root pigweed (*Amaranthus retroflexus*), Cocklebur (*Xanthium strumarium*) and White-panicle aster (*Symphotrichum lanceolatum*). Generally, soils can be characterized as silty clay loam and silty clay throughout the Project Area. Sampled soils were generally a dark (10YR 3/1 to 10YR 4/1) silty clay loam in the first 8 to 18 inches. Silty clay was generally encountered in the B horizon of the soil profile, about 18 inches or more below the ground surface. Mottling (10YR 5/8, 10YR 6/8, 7.5YR 4/6) was observed at depths in excess of 8 inches in three of the four sample points.

Mottling and low chroma colors found in the soils at wetland sample points are typical indicators of the reducing conditions of hydric soils. Mottling was observed in both wetland and upland locations, indicating the presence of hydric soils throughout the majority of the Project Area. Additionally, the northern portion of the wetland swale contained saturated soils, and 6 inches of standing water was also present within W-1. Standing water and soils saturated in the upper 12 inches are considered veritable hydrologic indicators of a wetland.

TABLE 1. DELINEATED WATERS OF THE UNITED STATES		
TYPE and DESIGNATION	CLASSIFICATION	LENGTH/SIZE
Stream (S-1)	Ephemeral	383.5 feet
Wetland (W-1)	PSS/PEM	0.22 acres

Summary

One combination PEM/PSS wetland of 0.22 acres was identified just outside of the northwestern Project Area boundary. According to the Ohio Rapid Assessment Method for Wetlands (ORAM), this wetland is considered to be of low quality, with minimal wetland function and integrity; classified within category 1. Category 1 wetlands are less than one acre in size, hydrologically isolated, typically disturbed and comprised of vegetation that is dominated by invasive/exotic species like *Phragmites australis*. The summary worksheet of the ORAM evaluation can be found in Appendix IV. A general isolated wetland permit application is required by the Ohio EPA for impacts of ½ an acre or less to a category 1 isolated wetland. Since Wetland-1 is outside of the Project Area, a permit will not be necessary if the project construction can avoid this area completely. Additionally, the construction of a proposed stormwater detention basin in S-1 would impact approximately 0.01 acres.

The wetland area identified above may be a water of the United States under the jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act. Since no Project impacts are anticipated at W-1, a Section 404 dredge and fill permit from the Corps would likely NOT be required for Project activities. Since the wetland does not overlap with the Project Area boundaries, Burns & McDonnell recommends that construction of transmission lines, generation substation, and access roads be designed to avoid the wetland extending to the northwest of the Project Area. In this manner the Corps consult may be avoided, as no impacts would be expected to occur.



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December 15, 2008
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If you have any questions regarding this Wetland Delineation Report or would like additional information, please contact me at mskyer@burnsmcd.com or Robert Everard by telephone at (816) 822-3260 or by e-mail at reverard@burnsmcd.com.

Sincerely,

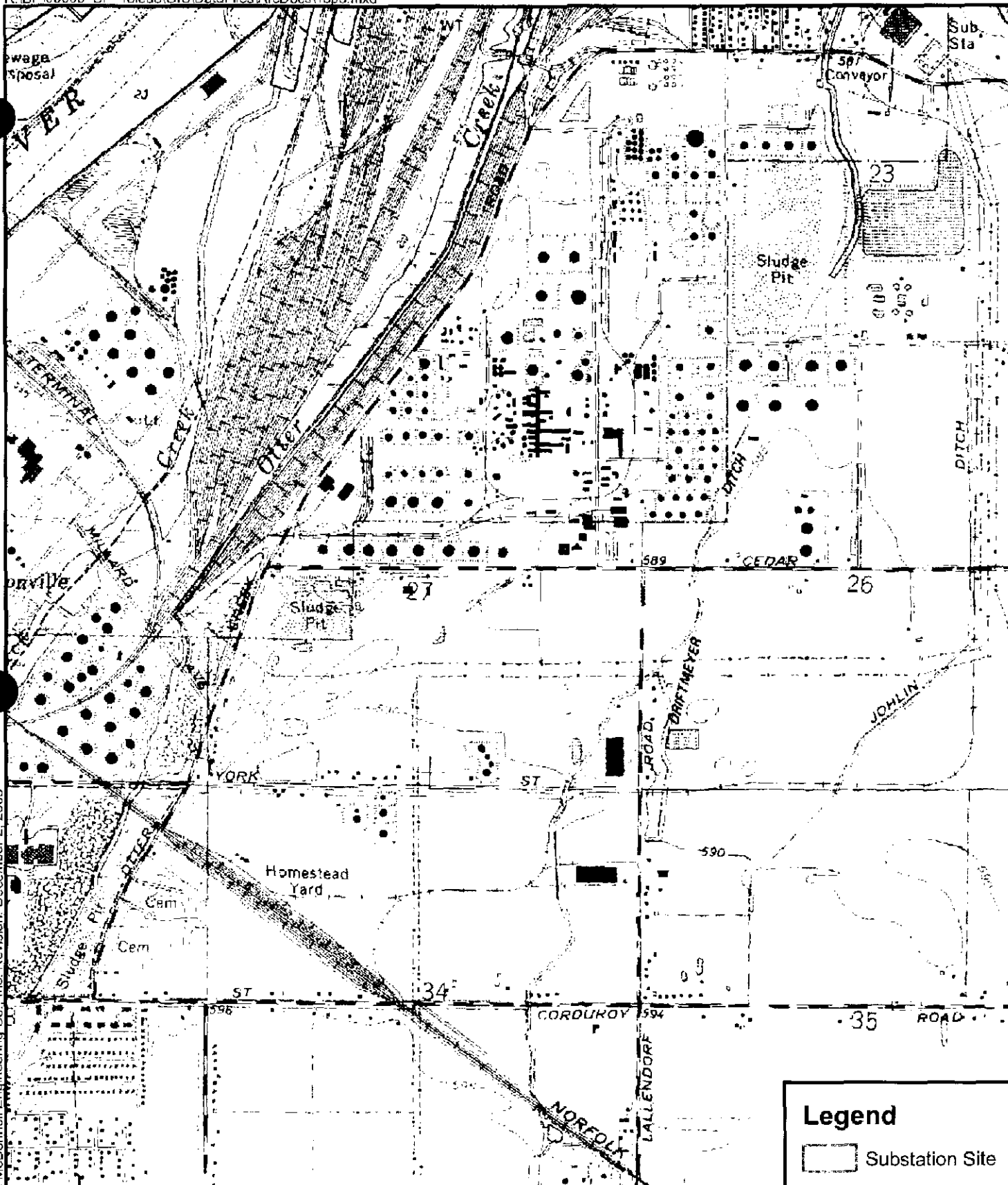
Melissa Skyer
Environmental Scientist, Environmental Studies and Permitting

cc: Robert Everard – Burns & McDonnell

APPENDICES

APPENDIX I

FIGURES



Legend

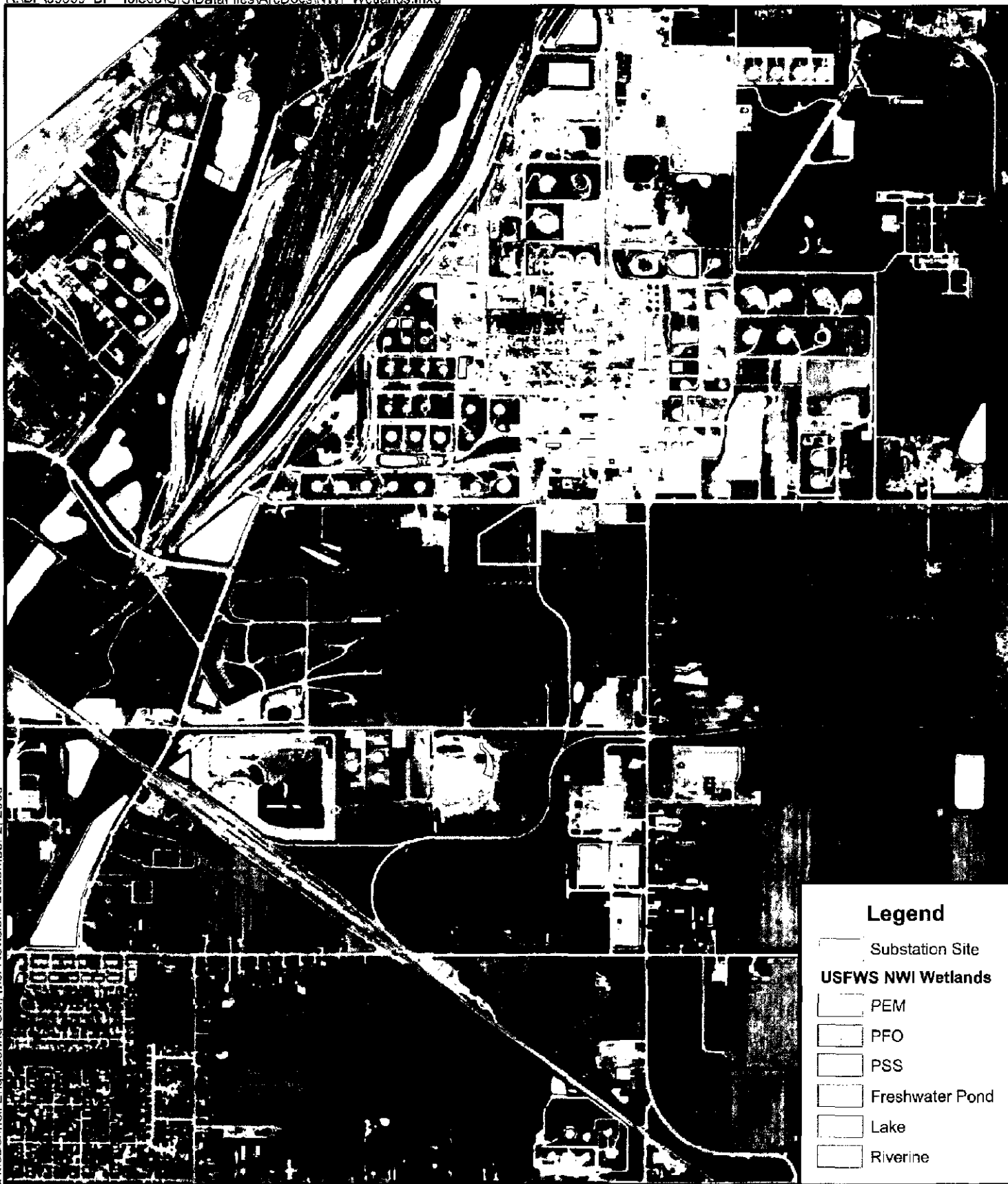
 Substation Site

Source: National Cartography and Geospatial Center










0 250 500 1,000 Meters

Figure 1
BP Husky Substation
USGS Topographic and
Site Location Map
Oregon, Ohio



Legend

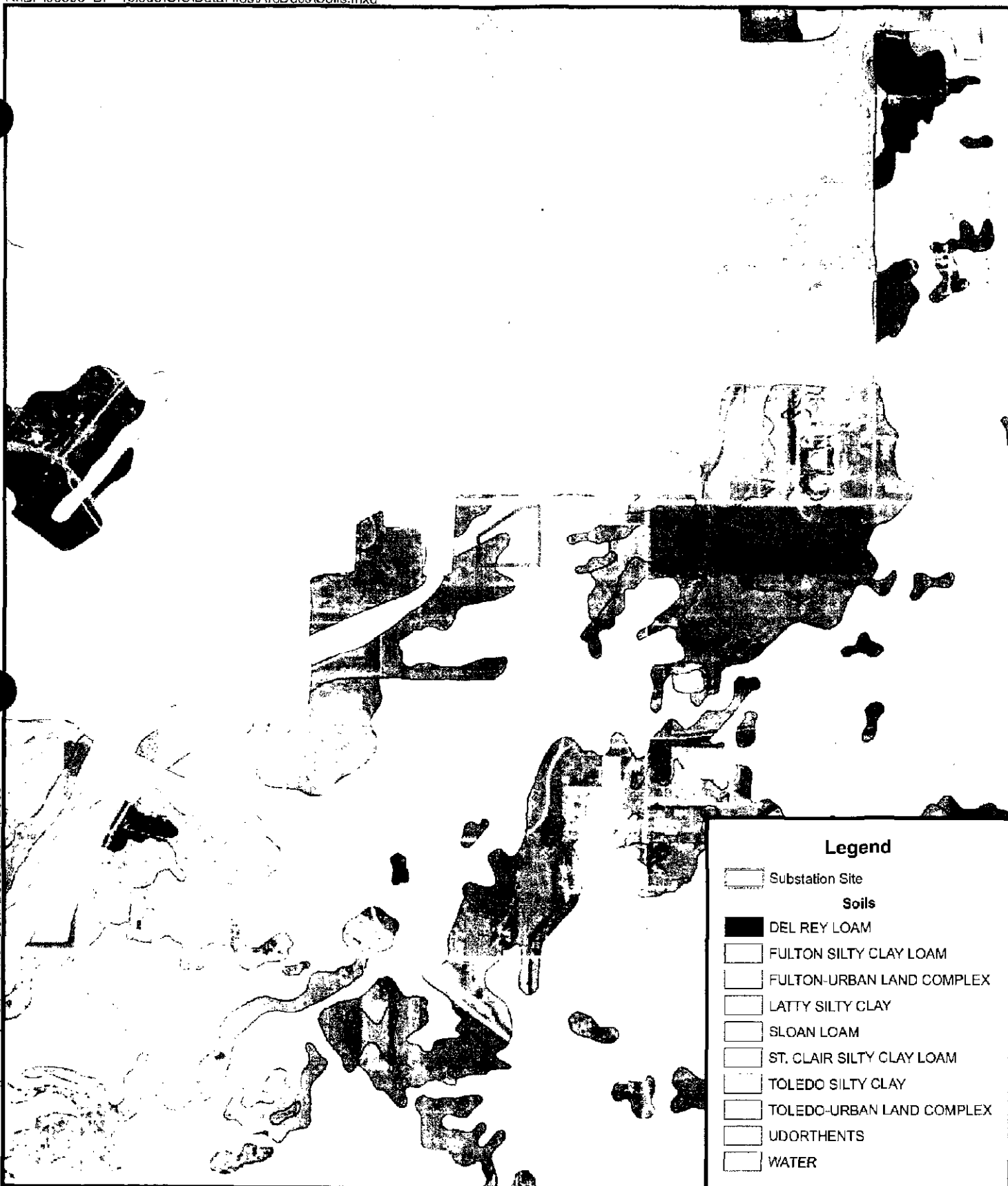
-  Substation Site
- USFWS NWI Wetlands**
-  PEM
-  PFO
-  PSS
-  Freshwater Pond
-  Lake
-  Riverine

Source: USDA/FSA and
USFWS



0 250 500 1,000
Meters

Figure 2
BP Husky Substation
USFWS NWI Map
Oregon, Ohio

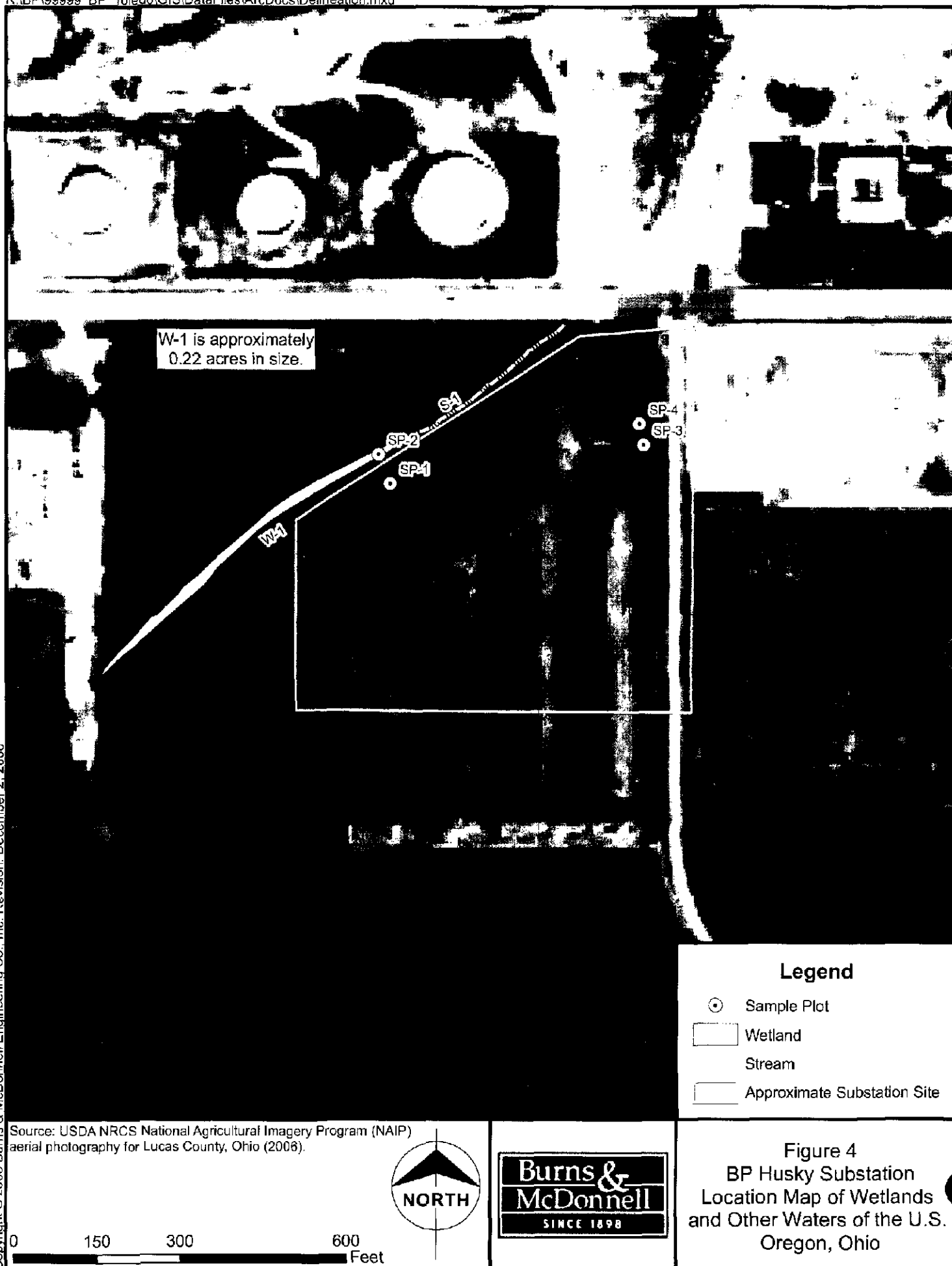


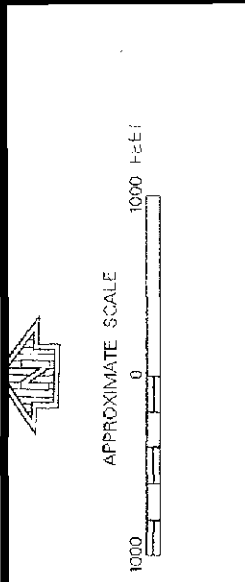
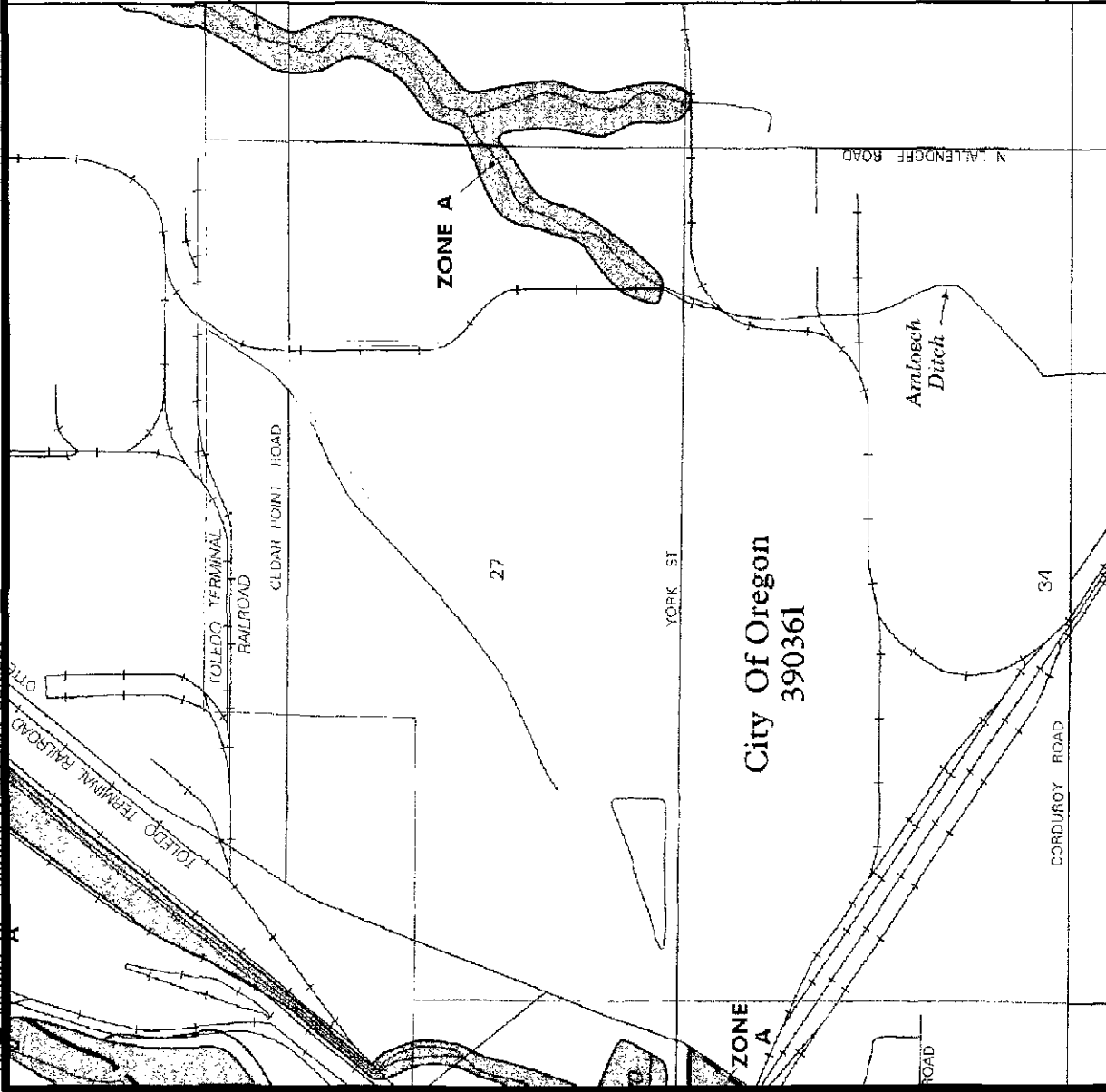
Source: USDA/FSA



0 250 500 1,000 Meters

Figure 3
BP Husky Substation
USDA Soil Survey Map
Oregon, Ohio





NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

LUCAS COUNTY, OHIO

AND INCORPORATED AREAS

PANEL 115 OF 405

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTINUE	NUMBER	PANEL	SUFFIX
COMMUNITY	39095	0015	D
DATE OF MAP	08/07/00		
DATE OF REV	08/07/00		

FEDERAL EMERGENCY MANAGEMENT AGENCY

MAP NUMBER
39095C0115 D

EFFECTIVE DATE:
OCTOBER 6, 2000

THIS IS AN OFFICIAL COPY OF A PORTION OF THE ABOVE REFERENCED FLOOD MAP. IT WAS EXTRACTED USING THE FIRM ONLINE. THIS MAP DOES NOT REFLECT CHANGES OR AMENDMENTS WHICH MAY HAVE BEEN MADE SINCE THE DATE OF THE ORIGINAL FLOOD MAP. FOR THE LATEST PRODUCT INFORMATION ABOUT NATIONAL FLOOD INSURANCE PROGRAM, VISIT US AT [WWW.FEMA.GOV](http://www.fema.gov)

Source: FEMA

Substation Site

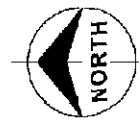
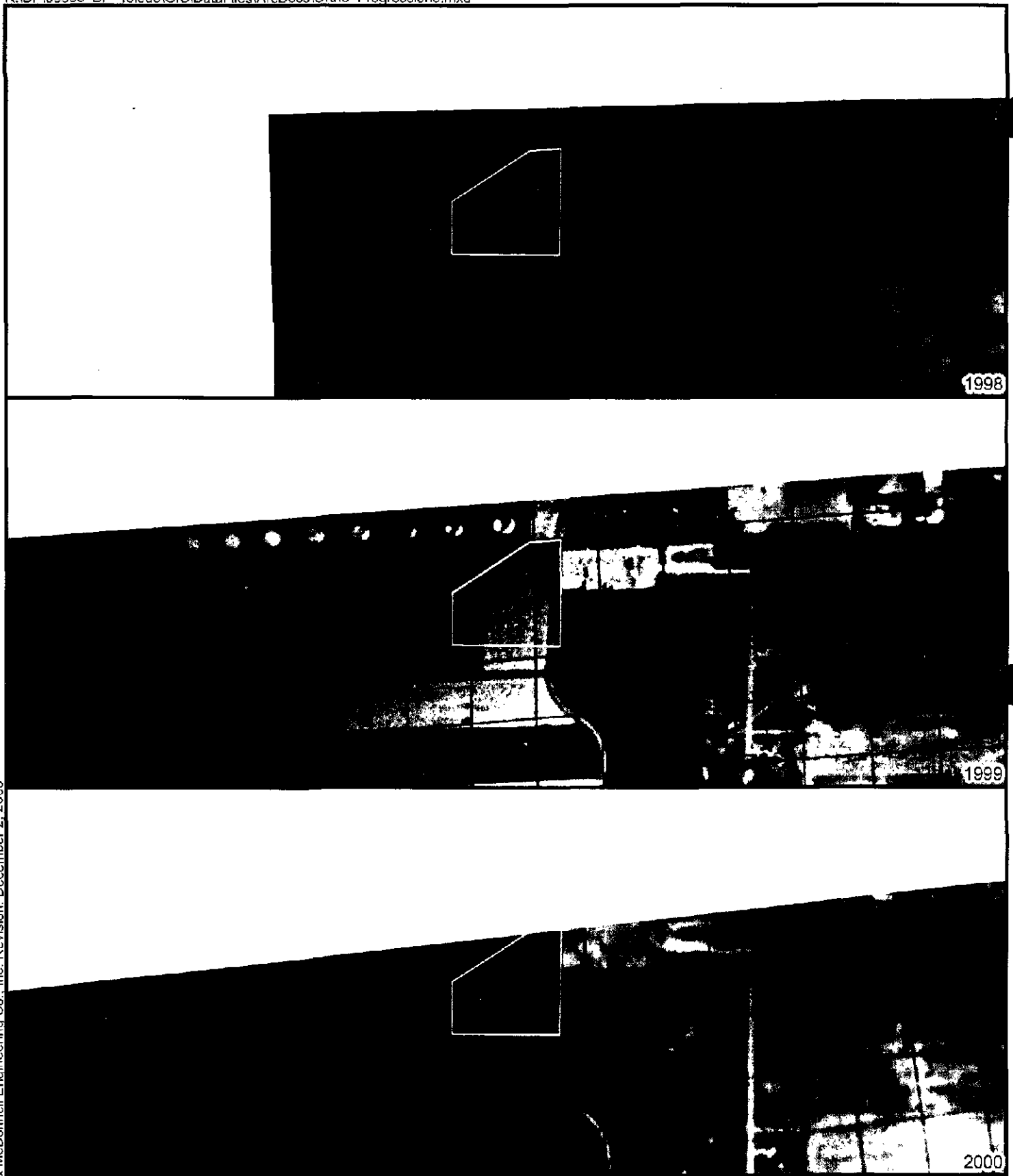


Figure 5

BP Husky Substation
FEMA
Oregon, Ohio



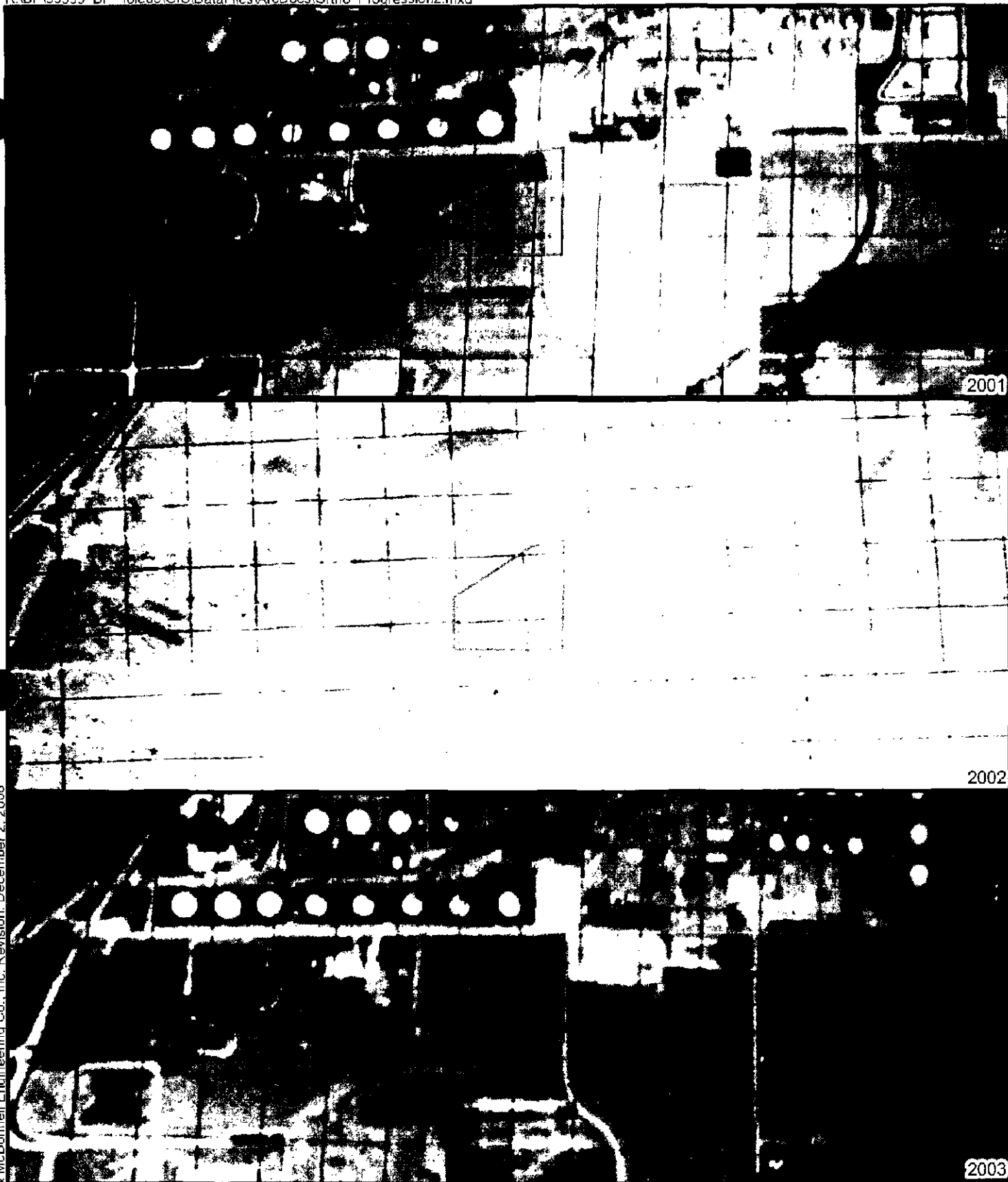
Source: USDA/FSA

 Substation Site



0 150 300 600 Meters

Figure 6a
BP Husky Substation
Ortho Imagery Progression
Lucas county, Ohio



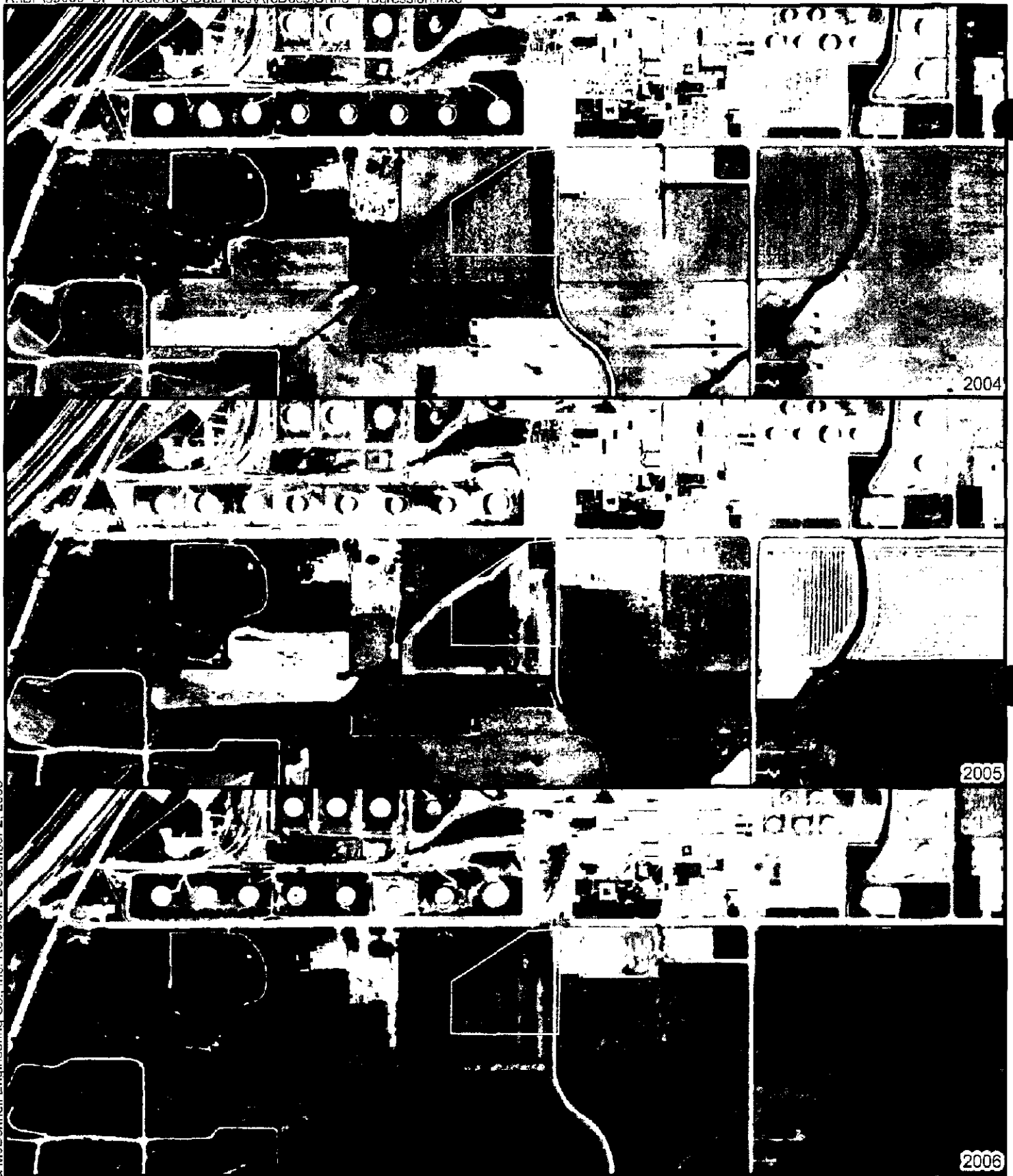
Source: USDA/FSA

Substation Site

0 150 300 600 Meters



Figure 6b
BP Husky Substation
Ortho Imagery Progression
Lucas county, Ohio



Source: USDA/FSA

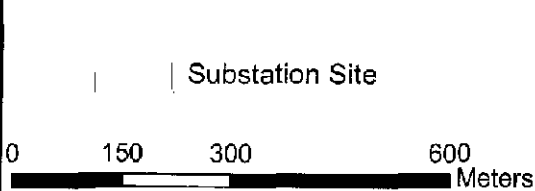


Figure 6c
BP Husky Substation
Ortho Imagery Progression
Lucas county, Ohio

APPENDIX II

ROUTINE DELINEATION FORMS

Data Form
Routine Wetland Determination

Job Number: 48810
Town/Village/City: Oregon, OH
Wetland Data Point: SP-1

Project/Site: Husky Refinery
Applicant/Owner: BP Oil
Investigator: Melissa Skyer and Justin Bailey
[TRUE] Do normal circumstances exist on the site?
[FALSE] Is the site significantly disturbed (Atypical Situation)?
[FALSE] Is the area a potential problem area?

Date: 11/19/2008
County: Lucas
State: Ohio
Community ID: Upland
Station ID: UPL
Plot ID: SP-1

Vegetation

Dominant Species	Common Name/ CofC	% Cover	Indicator
Herbaceous			

% Species that are OBL, FACW, or FAC (except FAC-): 0

Cowardin Classification: Upland

Remarks: No vegetation was present at this sample location. Only crop litter from a recent corn harvest covered the ground surface.

Hydrology

- ☐ Recorded Data (describe in remarks)
☐ Stream, Lake, or Tide Gage
☐ Aerial Photograph
☐ Other (describe in remarks)

Field Observations:

Depth of Surface Water(in.): 0
Depth to Free Water in Pit(in.): >20
Depth to Saturated Soils(in.): >20

Primary Wetland Hydrology Indicators

- ☐ Inundated
☐ Saturated in upper 12 inches
☐ Water marks
☐ Drift lines
☐ Sediment deposits
☐ Drainage patterns in wetlands

Secondary Hydrology Indicators

- ☐ Oxidized root channels
☐ Water-stained leaves
☐ Local soil survey data
☐ FAC-Neutral test
☐ Other (explain in remarks)

Remarks

Soils

Depth (in.)	Hor.	Matrix Color	Mottle / 2nd Mottle Color	Abundance	Contrast	Texture, Structure, etc.
0"-16"	A	10YR 4/1				Silty clay loam
16"-20"	A/B	10YR 5/1	10YR 5/8	15%		Silty clay loam

Hydric Soils Indicators

- ☐ Histosol
☐ Histic Epipedon
☐ Sulfidic Odor
☐ Probable Aquatic Moist Regime
☐ Reducing Conditions
☒ Gleyed or Low-Chroma Colors

- ☐ Concretions
☐ High Organic % in Surface Layer in Sandy Soils
☐ Organic Streaking in Sandy Soils
☐ Listed on Local Hydric Soils List
☒ Listed on National Hydric Soils List
☐ Other (explain in remarks)

Unit Name: Fulton silty clay loam
Drainage Class: Somewhat poorly drained

Taxonomy: Aerlic Epiaqualfs
☒ Field Observations match map

Remarks

Wetland Determination

[FALSE] Hydrophytic Vegetation Present
[TRUE] Hydric Soils Present
[FALSE] Wetland Hydrology Present

[FALSE] This Data Point is a Wetland

Remarks

Data Form
Routine Wetland Determination

Job Number: 48810
Town/Village/City: Oregon, OH
Wetland Data Point: SP-2

Project/Site: **Husky Refinery**
Applicant/Owner: **BP Oil**
Investigator: **Melissa Skyer and Justin Bailey**
[TRUE] Do normal circumstances exist on the site?
[FALSE] Is the site significantly disturbed (Atypical Situation)?
[FALSE] Is the area a potential problem area?

Date: **11/19/2008**
County: **Lucas**
State: **Ohio**
Community ID: **PSS/PEM**
Station ID: **W-1**
Plot ID: **SP-2**

Vegetation

Dominant Species	Common Name/ CofC	% Cover	Indicator
Herbaceous			
X <i>Phragmites australis</i>	Common reed	75	FACW
<i>Typha latifolia</i>	Broad-leaf cattail	10	OBL
<i>Amaranthus retroflexus</i>	Red-root pigweed	5	FACU
<i>Xanthium strumarium</i>	Cocklebur	5	FAC
<i>Symphoricarum lanceolatum</i>	White-panicle aster	5	FACW

% Species that are OBL, FACW, or FAC (except FAC-): **100**

Cowardin Classification: **PSS/PEM**

Remarks This wetland appears to be a combination of a palustrine scrub/shrub and palustrine emergent wetland.

Hydrology

- [] Recorded Data (describe in remarks)
[] Stream, Lake, or Tide Gage
[x] Aerial Photograph
[] Other (describe in remarks)

Field Observations:

Depth of Surface Water(in.): **0**
Depth to Free Water in Pit(in.): **>20**
Depth to Saturated Soils(in.): **8**

Primary Wetland Hydrology Indicators

- [] Inundated
[] Saturated in upper 12 inches
[] Water marks
[] Drift lines
[] Sediment deposits
[x] Drainage patterns in wetlands

Secondary Hydrology Indicators

- [x] Oxidized root channels
[x] Water-stained leaves
[] Local soil survey data
[x] FAC-Neutral test
[] Other (explain in remarks)

Remarks Aerial photographs show a stream adjacent to this wetland and drainage swale patterns were also observed.

Soils

Depth (in.)	Hor.	Matrix Color	Mottle / 2nd Mottle Color	Abundance	Contrast	Texture, Structure, etc.
0"-8"	A	10YR 4/1				Moist silty clay loam
8"-20"	A/B	10YR 4/1	10YR 6/8	50%		Moist silty clay loam

Hydric Soils Indicators

- [] Histosol
[] Histic Epipedon
[] Sulfidic Odor
[] Probable Aquatic Moist Regime
[] Reducing Conditions
[x] Gleyed or Low-Chroma Colors

- [] Concretions
[] High Organic % in Surface Layer in Sandy Soils
[] Organic Streaking in Sandy Soils
[] Listed on Local Hydric Soils List
[x] Listed on National Hydric Soils List
[] Other (explain in remarks)

Unit Name: **Fulton silty clay loam**
Drainage Class: **Somewhat poorly drained**

Taxonomy: **Aeric Epiaqualfs**
[x] Field Observations match map

Remarks

Wetland Determination

[TRUE] Hydrophytic Vegetation Present
[TRUE] Hydric Soils Present
[TRUE] Wetland Hydrology Present

[TRUE] This Data Point is a Wetland

Remarks

Data Form
Routine Wetland Determination

Job Number: 48810
Town/Village/City: Oregon, OH
Wetland Data Point: SP-3

Project/Site: Husky Refinery
Applicant/Owner: BP Oil
Investigator: Melissa Skyer and Justin Bailey
[TRUE] Do normal circumstances exist on the site?
[FALSE] Is the site significantly disturbed (Atypical Situation)?
[FALSE] Is the area a potential problem area?

Date: 11/19/2008
County: Lucas
State: Ohio
Community ID: Upland
Station ID: UPL
Plot ID: SP-3

Vegetation

Dominant Species	Common Name/ CofC	% Cover	Indicator
<u>Herbaceous</u>			
Taraxacum officinale	Dandelion	5	FACU-
Thlaspi arvense	Field pennycress	5	FACU

% Species that are OBL, FACW, or FAC (except FAC-): 0

Cowardin Classification: Upland

Remarks The majority of vegetative groundcover at this location was comprised of crop litter from a recent corn harvest. Minor amounts of Taraxacum and Thlaspi were observed in sparse pockets.

Hydrology

- [] Recorded Data (describe in remarks)
[] Stream, Lake, or Tide Gage
[] Aerial Photograph
[] Other (describe in remarks)

Field Observations:

Depth of Surface Water(in.): 2
Depth to Free Water in Pit(in.): 0
Depth to Saturated Soils(in.): 0

Primary Wetland Hydrology Indicators

- [x] Inundated
[x] Saturated in upper 12 inches
[] Water marks
[] Drift lines
[] Sediment deposits
[] Drainage patterns in wetlands

Secondary Hydrology Indicators

- [] Oxidized root channels
[] Water-stained leaves
[] Local soil survey data
[] FAC-Neutral test
[] Other (explain in remarks)

Remarks Surface water was frozen at the time of survey. Crop slide review does not indicate hydrologic signatures in this area for the past ten years.

Soils

Depth (in.)	Hor.	Matrix Color	Mottle / 2nd Mottle Color	Abundance	Contrast	Texture, Structure, etc.
0"-18"	A	10YR 3/1	7.5YR 4/6	10%		Silty clay loam
18"-20"	A/B	7.5YR 5/1	7.5YR 4/6	30%		Silty clay

Hydric Soils Indicators

- [] Histosol
[] Histic Epipedon
[] Sulfidic Odor
[] Probable Aquatic Moist Regime
[] Reducing Conditions
[x] Gleyed or Low-Chroma Colors

- [] Concretions
[] High Organic % in Surface Layer in Sandy Soils
[] Organic Streaking in Sandy Soils
[] Listed on Local Hydric Soils List
[x] Listed on National Hydric Soils List
[] Other (explain in remarks)

Unit Name: Latty silty clay
Drainage Class: Very poorly drained

Taxonomy: Typic Endoaquepts
[x] Field Observations match map

Remarks

Wetland Determination

[FALSE] Hydrophytic Vegetation Present
[TRUE] Hydric Soils Present
[TRUE] Wetland Hydrology Present

[FALSE] This Data Point is a Wetland

Remarks Since this ponded area has not appeared on the crop slides in the past year or years previous, it is assumed that this area represents a temporary, seasonal drainage repository on the property likely not present during the growing season.

Data Form
Routine Wetland Determination

Job Number: 48810
Town/Village/City: Oregon, OH
Wetland Data Point: SP-4

Project/Site: Husky Refinery
Applicant/Owner: BP Oil
Investigator: Melissa Skyer and Justin Bailey
[TRUE] Do normal circumstances exist on the site?
[FALSE] Is the site significantly disturbed (Atypical Situation)?
[FALSE] Is the area a potential problem area?

Date: 11/19/2008
County: Lucas
State: Ohio
Community ID: Upland
Station ID: UPL
Plot ID: SP-4

Vegetation

Dominant Species	Common Name/ CofC	% Cover	Indicator
<u>Herbaceous</u>			
Daucus carota	Queen Anne's lace	10	UPL
Erechtides hieracifolia	American burnweed	5	FACU
X Poa pratensis	Kentucky bluegrass	50	FACU
Solidago canadensis	Canada goldenrod	5	FACU
X Schedonorus phoenix	Tall fescue	30	FACU

% Species that are OBL, FACW, or FAC (except FAC-): 0

Cowardin Classification: Upland

Remarks

Hydrology

- [] Recorded Data (describe in remarks)
[] Stream, Lake, or Tide Gage
[] Aerial Photograph
[] Other (describe in remarks)

Field Observations:

Depth of Surface Water(in.): 0
Depth to Free Water in Pit(in.): >18
Depth to Saturated Soils(in.): >18

Primary Wetland Hydrology Indicators

- [] Inundated
[] Saturated in upper 12 inches
[] Water marks
[] Drift lines
[] Sediment deposits
[] Drainage patterns in wetlands

Secondary Hydrology Indicators

- [] Oxidized root channels
[] Water-stained leaves
[] Local soil survey data
[] FAC-Neutral test
[] Other (explain in remarks)

Remarks

Soils

Depth (in.)	Hor.	Matrix Color	Mottle / 2nd Mottle Color	Abundance	Contrast	Texture, Structure, etc. Silty clay
0"-18"		10YR 3/1				

Hydric Soils Indicators

- [] Histosol
[] Histic Epipedon
[] Sulfidic Odor
[] Probable Aquatic Moist Regime
[] Reducing Conditions
[] Gleyed or Low-Chroma Colors

- [] Concretions
[] High Organic % in Surface Layer in Sandy Soils
[] Organic Streaking in Sandy Soils
[x] Listed on Local Hydric Soils List
[] Listed on National Hydric Soils List
[] Other (explain in remarks)

Unit Name: Latty silty clay
Drainage Class: Very poorly drained

Taxonomy: Typic Endoaquepts
[X] Field Observations match map

Remarks

Wetland Determination

[FALSE] Hydrophytic Vegetation Present
[TRUE] Hydric Soils Present
[FALSE] Wetland Hydrology Present

[FALSE] This Data Point is a Wetland

Remarks

APPENDIX III

SITE PHOTOGRAPHS



Photograph 1: General site photograph, view southwest.



Photograph 2: General site photograph, view north toward Cedar Point road.



Photograph 3: General site photograph, view west.



Photograph 4: General site photograph, view east toward railroad tracks.



Photograph 5: View northwest of SP-1; an upland sample point.



Photograph 6: View west of SP-2; a wetland sample point.



Photograph 7: View south of SP-3; an ice-covered upland sample point.



Photograph 8: View northwest of SP-4; an upland sample point.



Photograph 9: View west along the stream bed of S-1.



Photograph 10: View east at the terminus of the stream bed of S-1.



Photograph 11: View south of PSS/PEM combination wetland (W-1).



Photograph 12: View south of PSS/PEM combination wetland (W-1).

APPENDIX IV

OHIO RAPID ASSESSMENT METHOD (ORAM) SUMMARY

ORAM Summary Worksheet

BP-Husky
Oregon, OH10
NOV/DEC. 2008

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO <input type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
Quantitative Rating	Question 9a. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
	Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	2	
	Metric 3. Hydrology	13	
	Metric 4. Habitat	11.5	
Metric 5. Special Wetland Communities	-10		
Metric 6. Plant communities, interspersed, microtopography	1		
TOTAL SCORE Consult most recent score calibration report at http://www.epa.state.oh.us/dsw/401/401.htm to determine the wetland's category based on its quantitative score		18.5	Category based on score breakpoints

Category 1 (0-29.9)

Complete Wetland Categorization Worksheet

Wetland Categorization Worksheet

Choices	Circle one	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO Is quantitative rating score less than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9c, 11	YES Wetland should be evaluated for possible Category 3 status	NO Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM. A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3
------------	------------	------------	------------

End of Ohio Rapid Assessment Method for Wetlands.

APPENDIX D – Permit Matrix

Item No.	Status	Permit/Requirement	Regulatory Agency	When Required	Application Requirements	Expected Agency Review Time	Responsible Entity	Comments
1	in progress	Section 404-Clean Water Act Permit (Nationwide Permit/Individual Permit) 33 USC 26 33 CFR 320-330	United States Army Corps of Engineers (ACOE) Buffalo District 1776 Niagara Street Buffalo, NY 14207	Before the discharge of dredged or fill materials and/or the placement of structures which individually or cumulatively result in direct or indirect impacts to 0.1 acres or more of wetlands; 0.5 acres or more may require an individual permit	<ul style="list-style-type: none"> Detailed drawings Purpose statement and description of overall project Delineation of wetland areas when present Information on existing environmental, expected impacts and alternatives 	5 to 18 months depending on permit type issued	B&MCD	Based on current design a permit will not be required by the Corp
2	in progress	Endangered Species Act (ESA) - Federal Threatened & Endangered Species Consultation 16 USC 1531-1544	U.S. Fish and Wildlife Service (FWS) Reynoldsburg Ecological Services Field Office 6950 American Parkway, Suite H Reynoldsburg, OH 43106-4127 Phone: 614-469-6923	When an activity may affect federally-listed threatened and endangered species and critical habitats or when a Section 404 permit is required	<ul style="list-style-type: none"> Project information to request species information Detailed biological assessment of potential impacts 	Typically 30 to 45 days for initial consultation; additional 20 to 45 days for report review and determination	B&MCD	Need approval from BP to submit request letter to Fish and Wildlife Service
3		Federal Aviation Administration (FAA) Notification 14 CFR 77.13	FAA - Great Lakes Regional Office Air Traffic Division, ACD-520 2500 East Devon Avenue Des Plaines, IL 60018 Phone: 847-294-7568	Must notify the FAA if structures will exceed 200 feet in height or if the structures are located within the distance to legal radio from the nearest point of the nearest FAA designated airport runway	<ul style="list-style-type: none"> Quadrangle map Project details Heights and elevations Completion of Form 7460-1 	30 to 45 days		Will not be required the nearest airport is over 2 miles away and the tallest structure is only 92 feet in height
Ohio State Permits								
4	in progress	Ohio Power Siting Board (OPSB) Requirements Sec 4906.01 to 4906.15 ORC Sec 4906.97 to 4906.99 ORC	OPSB 180 East Broad Street Columbus, OH 43215 Phone: 866-270-6772	Before the construction of single or multiple electric or electrical transmission facilities of 125 kilovolts or greater	<ul style="list-style-type: none"> Required filing information will vary according to the project and the type of filing Preferred and alternate site/route proposals Public meeting Full application 	typically 10 to 18 months	BP/B&MCD	Application preparation still in progress as of June 10 2009. B&MCD is updating the application with the new requirements issued in late January.
5	in progress	401 Water Quality Certification (WQC) Sec 611.30 ORC	Ohio EPA Division of Surface Waters Randy Bortnick 122 South Front Street PO Box 1049 Columbus, OH 43216-1049 Phone: 614-644-2013	For projects that will result in the discharge of dredge or fill material into waters of the United States	<ul style="list-style-type: none"> ACOE Jurisdictional Determination Drawings for facility Project description Wetland delineation report Information on existing environment, expected impacts and alternatives analysis Mitigation proposal 	60 to 180 days	B&MCD	Will not be required because a Section 404 permit is not required.
6	NA	Isolated Wetland Permit Sec 3745.113 ORC Sec 6111.02 ORC Sec 6111.022(D) ORC Sec 6111.027 ORC	Ohio EPA Division of Surface Waters Randy Bortnick 122 South Front Street PO Box 1049 Columbus, OH 43216-1049 Phone: 614-644-2001	Activities that involve the filling of an isolated wetland	<ul style="list-style-type: none"> ACOE Jurisdictional Determination Project design plans and photos Wetland delineation Ohio Rapid Assessment Method 5.0 wetland categorization form Mitigation proposal 	30 to 180 days	B&MCD	Will not be required because isolated wetlands will not be impacted.
7		Section 403 National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Permit & Storm Water Pollution Prevention Plan (SWPPP) 40 CFR 122.26 40 CFR 122.30-122.37	Ohio EPA Division of Surface Waters 122 South Front Street PO Box 1049 Columbus, OH 43216-1049 Phone: 614-644-2001	Before any construction activity that disturbs one or more acres of land	<ul style="list-style-type: none"> Notice of Intent (NOI) Location map SWPPP May need additional county storm water approval 	NOI must be submitted at least 21 days before any ground disturbing activities commence	Programmer	Needs to be developed prior to construction.
8	in progress	State Threatened & Endangered Species Consultation	Ohio Department of Natural Resources (DNR) Division of Wildlife 2045 Morse Road, Bldg. G Columbus, OH 43229-6693 Phone: 600-WILDLIFE	If threatened, endangered or rare species and their habitats could be impacted by a proposed project	<ul style="list-style-type: none"> Data request to the Heritage Database Program On-site assessment 	50 to 90 days	B&MCD	Need approval from BP to submit request letter to DNR
9	in progress	Section 106 - National Historic Preservation Act Compliance 36 CFR 800	Ohio Historic Preservation Office Resource Protection and Review Mark Epstein, Department Head 567 East Hudson Street Columbus, OH 43211-1000 Phone: 614-298-2000	Before a discretionary activity takes place to determine whether it will affect historic properties	<ul style="list-style-type: none"> Project Summary form Project description Name historic properties affected Photos and map 	60 to 90 days	B&MCD	Will not be required, because Federal action is not part of this project and the Section 404 Permit is not required. Because of this B&MCD has conducted an on-site survey.

Item No.	Status	Permit/Clearance	Regulatory Agency	When Required	Application Requirements	Expected Activity Review Time	Responsible Entity	Comments
10	NA	Permit-to-Install (PTI) Chapter 3745-42 OAC	Ohio EPA Division of Surface Waters 122 South Front Street PO Box 1049 Columbus, OH 43216-1049 Phone: 614-644-2001	To construct a wastewater collection, conveyance, storage, treatment or disposal facility	* Administrative information * Project description, plans, drawings, and reports	2 to 6 months	BP/BA&M/d	Will not be required if no underground oil water separators are being installed
11	In progress	ODOT Air Traffic Obstruction Permit 5501.1 to 5501.10 OAC	ODOT Office of Aviation John Milling 2829 West Dublin-Granville Road Columbus, OH 43225-2786 Phone: 614-387-2346	Prior to the start of any construction on or near airports in Ohio that are open to the public, prior to obstructing air traffic for both runways and heliports	Duplicate of the FAA filing fulfills the state permit application requirements	30 to 45 days		Will not be required because no airports are within 2 miles. The tallest on-site structure is 92 feet in height
City of Oregon Permits								
12		Exception Allowed (Zoning)	Building and Zoning Inspection Dept. 5330 Seaman Road Oregon, Ohio 43616 Phone: 419-698-7071 Fax: 419-698-7150	An exemption to zoning may be allowed to develop a facility that is covered by existing zoning classification or if it is a public utility facility	Application	30 days	BP/BA&M/d	Will likely be required because height restriction for C-4 zoned area is 60 ft.
13		Plan Review and Building Permit (foundations)	Building and Zoning Inspection Dept. 5330 Seaman Road Oregon, Ohio 43616 Phone: 419-698-7071 Fax: 419-698-7150	Building permits will be required for each building/structure, including foundations	* Application * Pertinent engineering drawings	30 days	BP/BA&M/d	A meeting will be conducted with the City to determine permit applicability to this Project.
14		Site Plan Approval Permit	Building and Zoning Inspection Dept. 5330 Seaman Road Oregon, Ohio 43616 Phone: 419-698-7071 Fax: 419-698-7150	Site plan approval permits will also be required for each building/structure, including foundations	* Application * Pertinent engineering drawings	30 days	Peggamoyer	A meeting will be conducted with the City to determine permit applicability to this Project.
15		Sidewalk, Driveway, and Curb Cut Permit	Building and Zoning Inspection Dept. 5330 Seaman Road Oregon, Ohio 43616 Phone: 419-698-7071 Fax: 419-698-7150	A city permit will be required to construct a driveway, cut a curb, or use City right-of-way	* Application * Pertinent engineering drawings	30 days	Peggamoyer	A meeting will be conducted with the City to determine permit applicability to this Project.
16		Site Drainage Permit	Building and Zoning Inspection Dept. 5330 Seaman Road Oregon, Ohio 43616 Phone: 419-698-7071 Fax: 419-698-7150	A site drainage plan will need to be reviewed and approved by the City of Oregon before Project construction can commence	* Application * Pertinent engineering drawings	30 days	Peggamoyer	A meeting will be conducted with the City to determine permit applicability to this Project.
17		Noise Regulation Compliance	Building and Zoning Inspection Dept. 5330 Seaman Road Oregon, Ohio 43616 Phone: 419-698-7071 Fax: 419-698-7150	May have to demonstrate compliance with local noise standards	May require a noise study to demonstrate compliance	varies	BP/BA&M/d	A meeting will be conducted with the City to determine permit applicability to this Project.

APPENDIX E – Property Deeds

Order No: 027983731

COMMITMENT FOR TITLE INSURANCE

Issued by

Chicago Title Insurance Company

328 NORTH ERIE STREET

TOLEDO, OHIO 43604

Ph: (419) 241-8195 Fax: (419) 241-9302

CHICAGO TITLE INSURANCE COMPANY, a Nebraska corporation ("Company"), for a valuable consideration, commits to issue its policy or policies of title insurance, as identified in Schedule A, in favor of the Proposed Insured named in Schedule A, as owner or mortgagee of the estate or interest in the land described or referred to in Schedule A, upon payment of the premiums and charges and compliance with the Requirements; all subject to the provisions of Schedules A and B and to the Conditions of this Commitment.

This Commitment shall be effective only when the identity of the Proposed Insured and the amount of the policy or policies committed for have been inserted in Schedule A by the Company.

All liability and obligation under this Commitment shall cease and terminate 90 days after the Effective Date or when the policy or policies committed for shall issue, whichever first occurs, provided that the failure to issue the policy or policies is not the fault of the Company.

The Company will provide a sample of the policy form upon request.

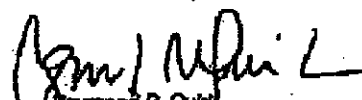
IN WITNESS WHEREOF, CHICAGO TITLE INSURANCE COMPANY has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A.

Issued by:

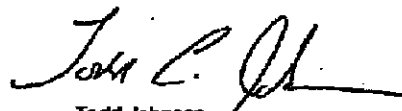
CHICAGO TITLE
INSURANCE COMPANY
Toledo, Ohio

CHICAGO TITLE INSURANCE COMPANY

By:


Raymond R. Quint
President

By:


Todd Johnson
Secretary

Countersigned


Authorized Signatory

Issued By:

CHICAGO TITLE INSURANCE COMPANY

Schedule

Order No:

27983731

1. **Effective Date:** DECEMBER 17, 2007 at 7:00 AM

2. **Policy or Policies to be issued:**

a. **OWNER'S POLICY 1:**

\$(TO BE DETERMINED)

Proposed Insured:

BP PRODUCTS NORTH AMERICA, INC. A MARYLAND CORPORATION

OWNER'S POLICY 2:

\$(TO BE DETERMINED)

Proposed Insured:

N/A

b. **LOAN POLICY 1:**

Proposed Insured:

Borrower: BP PRODUCTS NORTH AMERICA, INC. A MARYLAND CORPORATION

LOAN POLICY 2:

Proposed Insured:

Borrower:

3. **The estate or interest in the land described or referred to in this Commitment is:**

FEE SIMPLE

4. **Title to the estate(s) or interest(s) shown in the land at Item 3 above is at the Effective Date vested in:**

BP PRODUCTS NORTH AMERICA, INC. A MARYLAND CORPORATION

(INSTRUMENT NUMBER 20060310-0015267)

Issued By:

CHICAGO TITLE INSURANCE COMPANY

Schedule A (continued)

Order No:

27983731

5. The land referred to in this Commitment is described as follows:

THE EAST 10 ACRES OF THE WEST 1/2 OF THAT PART OF LOT 2 IN SECTION 27, TOWNSHIP 9 SOUTH, RANGE 6 EAST, LYING SOUTH OF CEDAR POINT ROAD (SO CALLED) SITUATED IN THE CITY OF OREGON, LUCAS COUNTY, OHIO, EXCEPTING THEREFROM THE SOUTH 400 FEET THEREOF; AND ALSO LESS AND EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PARCEL:

THAT PARCEL OF THE EAST 10.00 ACRES OF THE WEST 1/2 OF ORIGINAL LOT 2, SITUATED IN THE CITY OF OREGON, COUNTY OF LUCAS, STATE OF OHIO, AND IN FRACTIONAL SECTION 27, TOWN 9 SOUTH, RANGE 8 EAST, AND LYING SOUTH OF THE CENTER LINE OF CEDAR POINT ROAD AND BEING BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WEST LINE OF SAID EAST 10.00 ACRES 50.00 FEET RIGHT OF SECTION 70 + 38.92 ON THE CENTER LINE OF RIGHT OF WAY OF RELOCATED MILLARD AVENUE; THENCE NORTH 01° 00' 10" WEST, ALONG THE WEST LINE OF SAID EAST 10.00 ACRES, A DISTANCE OF 434.28 FEET TO THE NORTHWEST CORNER OF SAID EAST 10.00 ACRES AND BEING A POINT AT STATION 172 + 03.97 ON THE CENTER LINE OF RIGHT OF WAY OF CEDAR POINT ROAD; THENCE NORTH 88° 44' 54" EAST, ALONG THE NORTH LINE OF SAID EAST 10.00 ACRES (BEING ALSO THE CENTER LINE OF RIGHT OF WAY OF CEDAR POINT ROAD), A DISTANCE OF 330.99 FEET TO THE NORTHEAST CORNER OF SAID EAST 10.00 ACRES AND BEING A POINT AT STATION 175 + 34.96 ON AFORESAID CENTER LINE OF AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 01° 00' 10" EAST, ALONG THE EAST LINE OF SAID WEST 1/2, A DISTANCE OF 159.42 FEET TO A POINT ON A CURVE 50.00 FEET RIGHT OF STATION 74 + 93.12 ON AFORESAID CENTER LINE OF RELOCATED MILLARD AVENUE; THENCE SOUTHWESTERLY, ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 991.74 FEET, A DELTA ANGLE OF 22° 40' 06", THE CHORD OF WHICH BEARS SOUTH 50° 14' 36" WEST FOR A CHORD DISTANCE OF 389.81 FEET TO A POINT OF TANGENCY 50.00 FEET RIGHT OF STATION 70 + 80.97; THENCE SOUTH 38° 54' 33" WEST, TANGENT TO THE LAST DESCRIBED CURVE, A DISTANCE OF 42.05 FEET TO THE POINT OF BEGINNING. CONTAINING 2.103 ACRES OF LAND, MORE OR LESS, OF WHICH THE PUBLIC ROAD OCCUPIES 0.228 ACRES.

PROPERTY ADDRESS: 3844 CEDAR POINT RD., OREGON, OH 43616

Issued By:

CHICAGO TITLE INSURANCE COMPANY

Schedule B - Section

Order No: 27983731

**SCHEDULE B - SECTION I
REQUIREMENTS**

The following are the requirements to be complied with:

A. Instrument(s) creating the estate or interest to be insured must be approved, executed and/or filed for record, to wit:

- A 1. PROPERLY COMPLETE AND SUBMIT TO OUR OFFICE AN OWNER'S AFFIDAVIT AND GAP INDEMNITY IN THE FORMAT PREVIOUSLY ACCEPTABLE TO THE COMPANY.
- B 2. SUBMIT TO OUR OFFICE AN ALTA SURVEY CERTIFIED TO CHICAGO TITLE INSURANCE COMPANY.
- C 3. SUBMIT TO OUR OFFICE A CORPORATE RESOLUTION OF BP PRODUCTS NORTH AMERICA, INC. A MARYLAND CORPORATION STATING THE FOLLOWING:
 - a. THE CONTEMPLATED TRANSACTION HAS BEEN AUTHORIZED BY THE BOARD OF DIRECTORS AND SHAREHOLDERS, IF NECESSARY.
 - b. THE CORPORATION IS CURRENTLY IN GOOD STANDING WITH THE OHIO SECRETARY OF STATE, OR THE SECRETARY OF STATE OF THE CORPORATION'S STATE OF INCORPORATION, IF DIFFERENT.
 - c. THE NAMES OF THE OFFICERS OF THE CORPORATION WHO ARE AUTHORIZED TO SIGN DEEDS, MORTGAGES AND ALL OTHER DOCUMENTS NECESSARY TO COMPLETE THE CONTEMPLATED TRANSACTION.
- D 4. MORTGAGE DEED FROM BP PRODUCTS NORTH AMERICA, INC. A MARYLAND CORPORATION, BY ITS DULY AUTHORIZED OFFICERS, TO THE LENDER.
- E 5. OBTAIN APPROVAL FOR THE USE OF THE LEGAL DESCRIPTION IN SCHEDULE A BY THE COUNTY ENGINEER AND AUDITOR PURSUANT TO ORC 319.203. WE CALL YOUR ATTENTION TO THE FACT THAT A BOUNDARY SURVEY MAY BE REQUIRED TO OBTAIN SAID APPROVAL. THIS REQUIREMENT MUST BE COMPLETED BEFORE THE CONTEMPLATED TRANSACTION IS CLOSED.

*** CONTINUED ***

B. Payment of the full consideration to, or for the account of, the grantors or mortgagors.

Payment of all taxes, charges, assessments, levied and assessed against subject premises, which are due and payable.

D. Satisfactory evidence should be had that improvements and/or repairs or alterations thereto are completed; that contractor, subcontractors, labor and materialmen are all paid.

Issued By:

CHICAGO TITLE INSURANCE COMPANY

Schedule B - Section I (continued)

Order No:

27983731

- F 6. ATTACH APPROVED LEGAL DESCRIPTION WITH ENGINEER'S STAMP ON IT TO ANY DOCUMENTS TO BE RECORDED.
- G 7. SUCH OTHER TERMS AND CONDITIONS AS MAY BE REQUIRED AFTER OUR RECEIPT OF FULL INFORMATION CONCERNING THE CONTEMPLATED TRANSACTION AND/OR AS MAY BE REQUIRED AFTER REVIEW BY OUR UNDERWRITER.

Issued By:

CHICAGO TITLE INSURANCE COMPANY

Schedule B - Section II

Order No: 27983731

**SCHEDULE B - SECTION II
EXCEPTIONS**

Schedule B of the policy or policies to be issued will contain exceptions to the following matters unless the same are disposed of to the satisfaction of the Company:

- A. DEFECTS, LIENS, ENCUMBRANCES, ADVERSE CLAIMS OR OTHER MATTERS, IF ANY, CREATED, FIRST APPEARING IN THE PUBLIC RECORDS OR ATTACHING SUBSEQUENT TO THE EFFECTIVE DATE BUT PRIOR TO THE DATE THE PROPOSED INSURED ACQUIRES FOR VALUE OF RECORD THE ESTATE OR INTEREST OR MORTGAGE THEREON COVERED BY THIS COMMITMENT.
 - B. RIGHTS OR CLAIMS OF PARTIES IN POSSESSION NOT SHOWN BY THE PUBLIC RECORDS.
 - C. ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION, OR ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND.
 - D. EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORDS.
 - E. ANY LIEN, OR RIGHT TO A LIEN, FOR SERVICES, LABOR, OR MATERIAL HERETOFORE OR HEREAFTER FURNISHED, IMPOSED BY LAW AND NOT SHOWN BY THE PUBLIC RECORDS.
 - F. TAXES OR SPECIAL ASSESSMENTS WHICH ARE NOT SHOWN AS EXISTING LIENS BY THE PUBLIC RECORDS.
-
- 1. EASEMENT TO THE TOLEDO EDISON COMPANY, OF RECORD IN DEED VOLUME 1487, PAGE 521, RECORDER'S OFFICE, LUCAS COUNTY, OHIO.
 - 2. EASEMENT TO THE SUN PIPE LINE COMPANY, OF RECORD IN DEED MICROFICHE NO. 77-572-C11, RECORDER'S OFFICE, LUCAS COUNTY, OHIO.
 - 3. WE DO NOT AFFIRMATIVELY INSURE THE QUANTITY OF ACREAGE SET FORTH IN THE DESCRIPTION CONTAINED IN SCHEDULE "A", HEREOF.
 - 4. THE TRANSACTION FOR WHICH THIS COMMITMENT WAS PREPARED WILL REQUIRE THAT THE LEGAL DESCRIPTION IN SCHEDULE A HEREOF BE APPROVED FOR CONVEYANCING BY THE COUNTY ENGINEER AND AUDITOR PURSUANT TO ORC 319.203. THIS APPROVAL HAS NOT YET BEEN OBTAINED. THE CONTEMPLATED TRANSACTION SHOULD NOT BE CLOSED UNTIL SAID LEGAL DESCRIPTION IS APPROVED. WE CALL YOUR ATTENTION TO THE FACT THAT A BOUNDARY SURVEY MAY BE NEEDED TO OBTAIN SAID APPROVAL.

*** CONTINUED ***

Issued By:

CHICAGO TITLE INSURANCE COMPANY

Schedule B - Section II (continued)

Order No:

27983731

- N 5. THE CAPTION PREMISES ARE SUBJECT TO UNRECORDED LEASES, IF ANY. EXCEPTION IS
TAKEN IN THIS TITLE COMMITMENT AND POLICY TO BE ISSUED TO ALL TERMS AND
CONDITIONS CONTAINED IN SAID LEASES, TO THE TENANCY RIGHTS OF PERSONS IN
POSSESSION OF ALL OR A PART OF THE LAND AND TO THE RIGHTS OF OTHERS CLAIMING
BY, THROUGH OR UNDER SAID LESSEE'S INTEREST.
- O 6. RIGHTS OF OTHERS IN AND TO THE USE OF ANY CREEKS, DRAINS AND/OR DITCHES
LOCATED OVER, ACROSS, IN OR UNDER THE PREMISES IN QUESTION AND RIGHTS TO ENTER
UPON THE SAID PREMISES TO MAINTAIN THE SAME.
- P 7. UNPAID SEWER AND/OR WATER CHARGES, IF ANY.
- Q 8. TAXES AS TO PARCEL NUMBER 44-06601, (VALUATIONS OF LAND ONLY \$2,630.00), FOR
THE YEAR 2007, IN THE AMOUNT OF \$11.96, OF WHICH THE FIRST HALF IN THE AMOUNT
OF \$5.98, ARE DUE AND PAYABLE; TAXES FOR THE LAST HALF IN THE AMOUNT OF \$5.98,
ARE A LIEN, BUT ARE NOT YET DUE AND PAYABLE.

SAID PREMISES ARE LIABLE FOR THE FOLLOWING ONE TIME ASSESSMENT:
AREA CHARGE FOR ACCOMODATION TAP IN THE AMOUNT OF \$976.02

- R 9. THE FOREGOING TAX INFORMATION MAY BE SUBJECT TO THE PROVISIONS OF SECTION
5713.34, OHIO REVISED CODE, IN THE EVENT THE SUBJECT PREMISES ARE NOT DEVOTED
EXCLUSIVELY TO AGRICULTURAL USE. THIS PROPERTY IS SUBJECT TO A REDUCED TAX
VALUATION FOR PROPERTY DEVOTED EXCLUSIVELY TO AGRICULTURAL USE. SECTIONS
5713.30 THROUGH 5713.99 OF THE OHIO REVISED CODE PROVIDE FOR A RECOUPMENT OF
TAX SAVINGS FOR THE FOUR (4) YEARS IMMEDIATELY PRECEDING A CONVERSION, OR
CHANGE, IN EXCLUSIVE AGRICULTURAL USE. FOR FURTHER INFORMATION, CONTACT THE
APPROPRIATE COUNTY TREASURER, COUNTY AUDITOR OR TAX COMMISSIONER.

- S SPECIAL TAXES AND ASSESSMENTS OF ANY KIND, IF ANY. (NOTE: THERE ARE NO
SPECIAL ASSESSMENTS SHOWN ON THE TREASURER'S DUPLICATE.)

ADDITIONS AND ABATEMENTS, IF ANY, WHICH MAY HEREAFTER BE MADE BY LEGALLY
CONSTITUTED AUTHORITIES ON ACCOUNT OF ERRORS, OMISSIONS OR CHANGES IN THE
VALUATION.

- T 10. THE ACTUAL VALUE OF THE ESTATE OR INTEREST TO BE INSURED MUST BE DISCLOSED TO
THE COMPANY, AND SUBJECT TO APPROVAL BY THE COMPANY, ENTERED AS THE AMOUNT OF
THE POLICY TO BE ISSUED. UNTIL THE AMOUNT OF THE POLICY TO BE ISSUED SHALL BE
DETERMINED, AND ENTERED AS AFORESAID, IT IS AGREED THAT AS BETWEEN THE
COMPANY, THE APPLICANT FOR THIS COMMITMENT, AND EVERY PERSON RELYING ON THIS
COMMITMENT, THE COMPANY CANNOT BE REQUIRED TO APPROVE ANY SUCH EVALUATION IN
EXCESS OF \$100,000.00 AND THE TOTAL LIABILITY OF THE COMPANY ON ACCOUNT OF
THIS COMMITMENT SHALL NOT EXCEED SAID AMOUNT.

Issued By:

CHICAGO TITLE INSURANCE COMPANY

Conditions

Order No: 27983731

CONDITIONS

1. The term mortgage, when used herein, shall include deed of trust, trust deed, or other security instrument.
2. If the proposed Insured has or acquired actual knowledge of any defect, lien, encumbrance, adverse claim or other matter affecting the estate or interest or mortgage thereon covered by this Commitment other than those shown in Schedule B hereof, and shall fail to disclose such knowledge to the Company in writing, the Company shall be relieved from liability for any loss or damage resulting from any act of reliance hereon to the extent the Company is prejudiced by failure to so disclose such knowledge. If the proposed Insured shall disclose such knowledge to the Company, or if the company otherwise acquires actual knowledge of any such defect, lien, encumbrance, adverse claim or other matter, the Company at its option may amend Schedule B of this Commitment accordingly, but such amendment shall not relieve the Company from liability previously incurred pursuant to paragraph 3 or these Conditions.
3. Liability of the Company under this Commitment shall be only to the named proposed Insured and such parties included under the definition of Insured in the form of policy or policies committed for and only for actual loss incurred in reliance hereon in undertaking in good faith (a) to comply with the requirements hereof, or (b) to eliminate exceptions shown in Schedule B, or (c) to acquire or create the estate or interest or mortgage thereon covered by this Commitment. In no event shall such liability exceed the amount stated in Schedule A for the policy or policies committed for and such liability is subject to the insuring provisions and Conditions and the Exclusions from Coverage of the form of policy or policies committed for in favor of the proposed Insured which are hereby incorporated by reference and are made a part of this Commitment except as expressly modified herein.
4. This Commitment is a contract to issue one or more title insurance policies and is not an abstract of title or a report of the condition of title. Any action or actions or rights of action that the proposed Insured may have or may bring against the Company arising out of the status of the title to the estate or interest or the status of the mortgage thereon covered by this Commitment must be based on and are subject to the provisions of this Commitment.
5. *The policy to be issued contains an arbitration clause. All arbitrable matters when the Amount of Insurance is \$2,000,000 or less shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. You may review a copy of the arbitration rules at <<http://www.alta.org/>>.*

Fidelity National Financial Group of Companies' Privacy Statement
July 1, 2001

We recognize and respect the privacy expectations of today's consumers and the requirements of applicable federal and state privacy laws. We believe that making you aware of how we use your non-public personal information ("Personal Information"), and to whom it is disclosed, will form the basis for a relationship of trust between us and the public we serve. This Privacy Statement provides that explanation. We reserve the right to change this Privacy Statement from time to time consistent with applicable privacy laws.

In the course of our business, we may collect Personal Information about you from the following sources:

- From applications or other forms we receive from you or your authorized representative;
- From your transactions with, or from the services being performed by, us, our affiliates, or others;
- From our internet web sites;
- From the public records maintained by governmental entities that we either obtain directly from those entities, or from our affiliates or others; and
- From consumer or other reporting agencies.

Our Policies Regarding the Protection of the Confidentiality and Security of Your Personal Information

We maintain physical, electronic and procedural safeguards to protect your Personal Information from unauthorized access or intrusion. We limit access to the Personal Information only to those employees who need such access in connection with providing products or services to you or for other legitimate business purposes.

Our Policies and Practices Regarding the Sharing of Your Personal Information

We may share your Personal Information with our affiliates, such as insurance companies, agents, and other real estate settlement service providers. We may also disclose your Personal Information:

- to agents, brokers or representatives to provide you with services you have requested;
- to third-party contractors or service providers who provide services or perform marketing or other functions on our behalf; and
- to others with whom we enter into joint marketing agreements for products or services that we believe you may find of interest.

In addition, we will disclose your Personal Information when you direct or give us permission, when we are required by law to do so, or when we suspect fraudulent or criminal activities. We also may disclose your Personal Information when otherwise permitted by applicable privacy laws such as, for example, when disclosure is needed to enforce our rights arising out of any agreement, transaction or relationship with you.

One of the important responsibilities of some of our affiliated companies is to record documents in the public domain. Such documents may contain your Personal Information.

Right to Access Your Personal Information and Ability To Correct Errors Or Request Changes Or Deletion

Certain states afford you the right to access your Personal Information and, under certain circumstances, to find out to whom your Personal Information has been disclosed. Also, certain states afford you the right to request correction, amendment or deletion of your Personal Information. We reserve the right, where permitted by law, to charge a reasonable fee to cover the costs incurred in responding to such requests.

All requests must be made in writing to the following address:

Privacy Compliance Officer
Fidelity National Financial, Inc.
601 Riverside Drive
Jacksonville, FL 32204

Multiple Products or Services

If we provide you with more than one financial product or service, you may receive more than one privacy notice

3/10/2006
TRANSFERRED BY: JBY \$1.00
IN COMPLIANCE WITH SEC. 319.202 R.C.
LARRY A. KACZALA, AUDITOR
LUCAS COUNTY, OHIO
FEE: \$0.00 EC X MR. T. X
PARCEL: 44-08603 COUNT: 2
TRANS. #: 06-101730

After Recording Mail To:



20060310-0015267

Pages: 3 Fee: \$30.00
03/10/2006 04:22:26 PM

T20060317763

Brita Lopez
Lucas County Recorder DEED

FIDUCIARY DEED
(Statutory Form)
Rev. Code. Sec. 5302.09

Alan Schumaker, Trustee of the Robert W. Schumaker Trust, by the power conferred by the Robert W. Schumaker Trust and every other power, for valuable consideration paid, grants, with fiduciary covenants, to BP Products North America Inc., a Maryland corporation, whose tax mailing address is P.O. Box 1548, Warrenville, IL 60555, all of Grantor's interest in and to the following real property:

See Exhibit A attached hereto and made a part hereof by reference.

Subject to: Legal highways, governmental ordinances, zoning ordinances, easements, reservations, agreements, conditions and restrictions of record and taxes and assessments due and payable after delivery of this deed.

Prior instrument reference: Lucas County Deed Record: 90-428C05.

Executed this 2nd day of March, 2006.

Alan Schumaker, Trustee
Alan Schumaker, Trustee

STATE OF OHIO

COUNTY OF LUCAS

} ss:

The foregoing instrument was acknowledged before me this 2nd day of March, 2006, by Alan Schumaker, Trustee of the Robert W. Schumaker Trust.

(SEAL)



MARK H. BOSS
Notary Public - State of Ohio
Commission has no expiration
Section 147.03 R.C.

Mark H. Boss
Notary Public

My Commission Expires _____

This Instrument Was Prepared By:
Mark H. Boss, Attorney at law
EASTMAN & SMITH LTD.
One SeaGate, 24th Floor
P. O. Box 10032
Toledo, Ohio 43699-0032
HHOME\MIH\Boss\Schumaker, Robert & Loma\RSchumaker.fid 44-06601.doc

SEE EN CHICAGO TITLE INSURANCE
1 CASCADE PLAZA
SUITE 100
AKRON, OHIO 44308

CHICAGO TITLE INSURANCE CO.
ORDER NO. 25430371 KEO

Exhibit A

PARCEL I:

SITUATED IN THE COUNTY OF LUCAS, STATE OF OHIO, AND BOUNDED AND DESCRIBED AS FOLLOWS:

THE EAST 1/2 OF LOT NUMBER 2 IN SECTION 27, TOWN 9 SOUTH, RANGE 8 EAST, IN THE CITY OF OREGON, LUCAS COUNTY, OHIO, LYING SOUTH OF CEDAR POINT ROAD (SO CALLED) RUNNING EAST AND WEST THROUGH SAID SECTION, EXCEPT THE SOUTH 400 FEET THEREOF (CONTAINING APPROXIMATELY 13.6 ACRES);

AND ALSO LESS AND EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PARCEL:

SITUATED IN THE CITY OF OREGON, COUNTY OF LUCAS, STATE OF OHIO, AND IN SECTION 27, TOWN 9 SOUTH, RANGE 8 EAST, AND BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WEST LINE OF SAID EAST 1/2, THAT IS 50.00 FEET RIGHT OF STATION 74 + 93.12 ON THE CENTER LINE OF RIGHT OF WAY OF RELOCATED MILLARD AVENUE; THENCE NORTH 01°00'10" WEST, ALONG THE WEST LINE OF SAID EAST 1/2, A DISTANCE OF 159.42 FEET TO A POINT AT STATION 175 + 34.96 ON THE CENTER LINE OF RIGHT OF WAY OF CEDAR POINT ROAD; THENCE NORTH 88°44'54" EAST, ALONG THE CENTER LINE OF RIGHT OF WAY OF CEDAR POINT ROAD, A DISTANCE OF 661.73 FEET TO ITS INTERSECTION WITH THE EAST LINE OF SAID ORIGINAL LOT 2 AND BEING A POINT AT STATION 181 + 96.69 ON AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 01°02'23" EAST, ALONG THE EAST LINE OF SAID ORIGINAL LOT 2, A DISTANCE OF 30.00 FEET TO ITS INTERSECTION WITH THE SOUTH RIGHT OF WAY LINE OF CEDAR POINT ROAD AND BEING A POINT 30 FEET RIGHT OF STATION 181 + 96.58 ON AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 88°44'54" WEST, ALONG THE SOUTH RIGHT OF WAY LINE OF CEDAR POINT ROAD, A DISTANCE OF 156.58 FEET TO A POINT 30.00 FEET RIGHT OF STATION 180 + 40.00 ON AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 55°03'30" WEST, A DISTANCE OF 36.06 FEET TO A POINT 50.00 FEET RIGHT OF STATION 180 + 10.00 ON AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 88°44'54" WEST, A DISTANCE OF 22.86 FEET TO A POINT OF CURVE 50.00 FEET RIGHT OF STATION 79 + 87.14 ON AFORESAID CENTER LINE OF RELOCATED MILLARD AVENUE; THENCE SOUTHWESTERLY, ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 991.74 FEET, A DELTA ANGLE OF 27°10'15", THE CHORD OF WHICH BEARS SOUTH 75°09'46" WEST FOR A CHORD DISTANCE OF 465.91 FEET TO THE POINT OF BEGINNING. CONTAINING 1.051 ACRES OF LAND MORE OR LESS, OF WHICH THE PRESENT ROAD OCCUPIES 0.456 ACRES.

PARCEL II:

THE EAST 10 ACRES OF THE WEST 1/2 OF THAT PART OF LOT 2 IN SECTION 27, TOWNSHIP 9 SOUTH, RANGE 6 EAST, LYING SOUTH OF CEDAR POINT ROAD (SO-CALLED) SITUATED IN THE CITY OF OREGON, LUCAS COUNTY, OHIO, EXCEPTING THEREFROM THE SOUTH 400 FEET THEREOF;

AND ALSO LESS AND EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PARCEL: THAT PARCEL OF THE EAST 10.00 ACRES OF THE WEST 1/2 OF ORIGINAL LOT 2, SITUATED IN THE CITY OF OREGON, COUNTY OF LUCAS, STATE OF OHIO, AND IN FRACTIONAL SECTION 27, TOWN 9 SOUTH, RANGE 8 EAST, AND LYING SOUTH OF THE CENTER LINE OF CEDAR POINT ROAD AND BEING BOUNDED AND DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE WEST LINE OF SAID EAST 10.00 ACRES 50.00 FEET RIGHT OF SECTION 70+38.92 ON THE CENTER LINE OF RIGHT OF WAY OF RELOCATED MILLARD AVENUE; THENCE NORTH 01°00'10" WEST, ALONG THE WEST LINE OF SAID EAST 10.00 ACRES, A DISTANCE OF 434.28 FEET TO THE NORTHWEST CORNER OF SAID EAST 10.00 ACRES AND BEING A POINT AT STATION 172+03.97 ON THE CENTER LINE OF RIGHT OF WAY OF CEDAR POINT ROAD; THENCE NORTH 88°44'54" EAST, ALONG THE NORTH LINE OF SAID EAST 10.00 ACRES (BEING ALSO THE CENTER LINE OF RIGHT OF WAY OF CEDAR POINT ROAD), A DISTANCE OF 330.99 FEET TO THE NORTHEAST CORNER OF SAID EAST 10.00 ACRES AND BEING A POINT AT STATION 175+34.96 ON AFORESAID CENTER LINE OF AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 01°00'10" EAST, ALONG THE EAST LINE OF SAID WEST 1/2, A DISTANCE OF 159.42 FEET TO A POINT ON A CURVE 50.00 FEET RIGHT OF STATION 74+93.12 ON AFORESAID CENTER LINE OF RELOCATED MILLARD AVENUE; THENCE SOUTHWESTERLY, ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 991.74 FEET, A DELTA ANGLE OF 22°40'06", THE CHORD OF WHICH BEARS SOUTH 50°14'36" WEST FOR A CHORD DISTANCE OF 389.81 FEET TO A POINT OF TANGENCY 50.00 FEET RIGHT OF STATION 70+80.97; THENCE SOUTH 38°54'33" WEST, TANGENT TO THE LAST DESCRIBED CURVE, A DISTANCE OF 42.05 FEET TO THE POINT OF BEGINNING. CONTAINING 2.103 ACRES OF LAND, MORE OR LESS, OF WHICH THE PUBLIC ROAD OCCUPIES 0.228 ACRES.

44-06541

20060310-0015266
Pages: 2 Fee: \$28.00
03/10/2006 04:32:26 PM
T20060317783
Anita Lopez
Lucas County Recorder DEED

After Recording Mail To:

3102006
TRANSFERRED BY: SW \$060
IN COMPLIANCE WITH SEC. 319.02 R.C.
LARRY A. KACZALA, AUDITOR
LUCAS COUNTY, OHIO

GENERAL WARRANTY DEED
(Statutory Form)
Rev. Code Sec. 5302.05

FEE: \$0.00 EX: K BULK
PARCEL: 4408241 COUNT: 1
TRANS. #: 06-101730

Alan R. Schumaker, married, of Lucas County, State of Ohio, for valuable consideration paid, grants with general warranty covenants to BP Products North America Inc., a Maryland corporation, whose tax mailing address is P.O. Box 1548, Warrenville, IL 60555, all of Grantor's interest in and to the following described real property:

See Exhibit A attached hereto and made a part hereof by reference.

Subject to: Legal highways, governmental ordinances, zoning ordinances; easements, reservations, agreements, conditions and restrictions of record and taxes and assessments due and payable after delivery of this deed.

Judy Schumaker, spouse of Grantor, releases all right of dower therein.

Prior instrument reference: Lucas County Deed Record 03-0066A04.

Executed this 2nd day of March, 2006.

SEE ENV.

CHICAGO TITLE INSURANCE
1 CASCADE PLAZA
SUITE 100
AKRON, OHIO 44308

Alan R. Schumaker
Alan R. Schumaker

Judy Schumaker
Judy Schumaker

STATE OF OHIO)
) ss:
COUNTY OF LUCAS)

The foregoing instrument was acknowledged before me this 2nd day of March, 2006, by Alan R. Schumaker and Judy Schumaker, husband and wife.



MARK H. BOSS
Notary Public - State of Ohio
Commission has no expiration date
Section 147.03 R.C.

Mark H. Boss
Notary Public
My Commission Expires: _____

This instrument was prepared by:
Mark H. Boss, Attorney at law
EASTMAN & SMITH LTD.
One SeaGate, 24th Floor
P. O. Box 10032
Toledo, Ohio 43699-0032

K:\HOME\MHB\Boss\Schumaker, Robert & Lema\Alan.gws\4406541.doc

CHICAGO TITLE INSURANCE CO.
ORDER NO. 254 30371 LCO

Exhibit A

PARCEL 1:

SITUATED IN THE COUNTY OF LUCAS, STATE OF OHIO, AND BOUNDED AND DESCRIBED AS FOLLOWS:

THE EAST 1/2 OF LOT NUMBER 2 IN SECTION 27, TOWN 9 SOUTH, RANGE 8 EAST, IN THE CITY OF OREGON, LUCAS COUNTY, OHIO, LYING SOUTH OF CEDAR POINT ROAD (SO CALLED) RUNNING EAST AND WEST THROUGH SAID SECTION, EXCEPT THE SOUTH 400 FEET THEREOF (CONTAINING APPROXIMATELY 13.6 ACRES);

AND ALSO LESS AND EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PARCEL:

SITUATED IN THE CITY OF OREGON, COUNTY OF LUCAS, STATE OF OHIO, AND IN SECTION 27, TOWN 9 SOUTH, RANGE 8 EAST, AND BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WEST LINE OF SAID EAST 1/2, THAT IS 50.00 FEET RIGHT OF STATION 74 + 93.12 ON THE CENTER LINE OF RIGHT OF WAY OF RELOCATED MILLARD AVENUE; THENCE NORTH 01°00'10" WEST, ALONG THE WEST LINE OF SAID EAST 1/2, A DISTANCE OF 159.42 FEET TO A POINT AT STATION 175 + 34.96 ON THE CENTER LINE OF RIGHT OF WAY OF CEDAR POINT ROAD; THENCE NORTH 88°44'54" EAST, ALONG THE CENTER LINE OF RIGHT OF WAY OF CEDAR POINT ROAD, A DISTANCE OF 661.73 FEET TO ITS INTERSECTION WITH THE EAST LINE OF SAID ORIGINAL LOT 2 AND BEING A POINT AT STATION 181 + 96.69 ON AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 01°02'23" EAST, ALONG THE EAST LINE OF SAID ORIGINAL LOT 2, A DISTANCE OF 30.00 FEET TO ITS INTERSECTION WITH THE SOUTH RIGHT OF WAY LINE OF CEDAR POINT ROAD AND BEING A POINT 30 FEET RIGHT OF STATION 181 + 96.58 ON AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 88°44'54" WEST, ALONG THE SOUTH RIGHT OF WAY LINE OF CEDAR POINT ROAD, A DISTANCE OF 156.58 FEET TO A POINT 30.00 FEET RIGHT OF STATION 180 + 40.00 ON AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 55°03'30" WEST, A DISTANCE OF 36.06 FEET TO A POINT 50.00 FEET RIGHT OF STATION 180 + 10.00 ON AFORESAID CENTER LINE OF CEDAR POINT ROAD; THENCE SOUTH 88°44'54" WEST, A DISTANCE OF 22.86 FEET TO A POINT OF CURVE 50.00 FEET RIGHT OF STATION 79 + 87.14 ON AFORESAID CENTER LINE OF RELOCATED MILLARD AVENUE; THENCE SOUTHWESTERLY, ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 991.74 FEET, A DELTA ANGLE OF 27°10'15", THE CHORD OF WHICH BEARS SOUTH 75°09'46" WEST FOR A CHORD DISTANCE OF 463.91 FEET TO THE POINT OF BEGINNING. CONTAINING 1.051 ACRES OF LAND MORE OR LESS, OF WHICH THE PRESENT ROAD OCCUPIES 0.456 ACRES.

3/10/2006
TRANSFERRED BY: dhw \$1.00
IN COMPLIANCE WITH SEC. 319.202 R.C.
LARRY A. KACZALA, AUDITOR
LUCAS COUNTY, OHIO
FEE: 80.00 DC: X MULT: X
PARCEL: 1A-08003 COUNT: 2
TRANS. #: 08-101730

After Recording Mail To:

20060310-0015267
Pages: 2 Fee: \$35.00
03/10/2006 04:32:25 PM
T20060317703
Anita Lopez
Lucas County Recorder DEED

FIDUCIARY DEED
(Statutory Form)
Rev. Code. Sec. 5302.09

Alan Schumaker, Trustee of the Robert W. Schumaker Trust, by the power conferred by the Robert W. Schumaker Trust and every other power, for valuable consideration paid, grants, with fiduciary covenants, to BP Products North America Inc., a Maryland corporation, whose tax mailing address is P.O. Box 1548, Warrenville, IL 60555, all of Grantor's interest in and to the following real property:

See Exhibit A attached hereto and made a part hereof by reference.

Subject to: Legal highways, governmental ordinances, zoning ordinances, easements, reservations, agreements, conditions and restrictions of record and taxes and assessments due and payable after delivery of this deed.

Prior instrument reference: Lucas County Deed Record: 90-428C05.

Executed this 2nd day of March, 2006.

Alan Schumaker, Trustee
Alan Schumaker, Trustee

STATE OF OHIO)
COUNTY OF LUCAS) ss:

The foregoing instrument was acknowledged before me this 2nd day of March, 2006, by Alan Schumaker, Trustee of the Robert W. Schumaker Trust.

(SEAL)  MARK H. BOSS
Notary Public - State of Ohio
Commission has no expiration
Section 147.03 R.C.

Mark H. Boss
Notary Public
My Commission Expires _____

This Instrument Was Prepared By:
Mark H. Boss, Attorney at Law
EASTMAN & SMITH LTD.
One SeaGate, 24th Floor
P. O. Box 10032
Toledo, Ohio 43699-6032
H:\HOMEMTHBoss\Schumaker, Robert & Loma\RL.Schumaker.Ed44-06601.doc

SEE EN CHICAGO TITLE INSURANCE
1 CASCADE PLAZA
SUITE 100
AKRON, OHIO 44308

CHICAGO TITLE INSURANCE CO.
ORDER NO. 25430371 KEO

Exhibit A

PARCEL 1:

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1214A TE-6
4-8-40

71686 RECEIVED and RECORDED
EASEMENT MAR 17 1953 *Bernard J. Cullen*
6 & 8 DECEMBER, 1954 COUNTY, OHIO

ALAST 1953

IN CONSIDERATION OF THE SUM OF ONE DOLLAR, PAID TO ME/US BY THE TOLEDO EDISON COMPANY OF TOLEDO, OHIO, AND FOR OTHER GOOD AND VALUABLE CONSIDERATIONS, RECEIPT OF WHICH IS HEREBY ACKNOWLEDGED, I/US, John H. Schumacher, Robert W. Schumacher, HEREBY GRANT AND CONVEY INTO THE SAID THE TOLEDO EDISON COMPANY, ITS SUCCESSORS AND ASSIGNS DURING CORPORATE LIFE, THE RIGHT AND EASEMENT TO CONSTRUCT, RELOCATE, OPERATE AND MAINTAIN, AT THIS TIME OR AT SUCH TIME OR TIMES IN THE FUTURE AS THE COMPANY DESIRES, A LINE OR LINES FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRIC ENERGY FOR ANY AND ALL PURPOSES FOR WHICH ELECTRIC ENERGY IS NOW OR MAY HEREAFTER BE USED, WITH ALL NECESSARY POLES, RINGS, CABLES, GUY WIRES, STUBS, JUNCTIONS, FITTINGS AND APPLIANCES IN, THROUGH, OVER, UNDER AND UPON THE FOLLOWING DESCRIBED ROADS OR PUBLIC HIGHWAYS IN OTSEGO TOWNSHIP, LAUREL COUNTY, OHIO, NAMED: THE ROAD AND PUBLIC HIGHWAYS, AS NOW CONSTRUCTED OR AS SAME MAY BE CONSTRUCTED, BY WIDENING OR IMPROVING IN THE FUTURE, INCLUDED IN OR UPON WHICH ANY PART OF THE FOLLOWING DESCRIBED REAL ESTATE ABUTS OR ADJOINS, SAID REAL ESTATE BEING PART OF SECTION 21, TOWN 9 South, RANGE 8 East, MORE FULLY DESCRIBED AS FOLLOWS, TO-WIT:

Being the east half (1/2) of the west half (1/2) of the 2 in Section 27, part lying south of Cedar Point Road.

SAID ROADS AND PUBLIC HIGHWAYS BEING: Cedar Point Road

ALSO THE RIGHT AND EASEMENT TO OVERPASS 5 FEET OF ANY PART OF THE ABOVE DESCRIBED LAND, ADJOINING AND/OR ABUTTING UPON THE AFORESAID ROADS AND PUBLIC HIGHWAYS, AS NOW CONSTRUCTED OR AS SAME MAY BE CONSTRUCTED, BY WIDENING OR IMPROVING IN THE FUTURE.

TOGETHER WITH THE RIGHT TO TRIM OR REMOVE ALL UNDERGROWTH, TREES OR OTHER OBSTRUCTIONS ALONG SAID LINE OR LINES, WHENEVER OR WHEREVER, IN THE JUDGMENT OF THE TOLEDO EDISON COMPANY SUCH TRIMMING OR REMOVAL MAY BE NECESSARY IN ORDER TO PROPERLY CONSTRUCT, OPERATE OR MAINTAIN SAID LINE OR LINES, CLEAR AND FREE FROM OBSTRUCTIONS.

IN WITNESS WHEREOF, I/US HAVE HEREUNTO SET MY/OUR HAND THIS 15th DAY OF March, 1953.

ACKNOWLEDGED BY EACH GRANTOR IN THE PRESENCE OF:

Ralph L. Martin

John H. Schumacher

STATE OF OHIO

COUNTY OF Laurel

BEFORE ME, A NOTARY PUBLIC, IN AND FOR SAID COUNTY, PERSONALLY APPEARED THE ABOVE NAMED Robert W. Schumacher and John H. Schumacher WHO ACKNOWLEDGED THAT they DID SIGN THE FOREGOING INSTRUMENT, AND THAT THE SAME IS their FREE ACT AND DEED.

IN WITNESS WHEREOF, I HAVE HEREUNTO SUBSCRIBED MY NAME THIS 15th DAY OF March, 1953.



RALPH L. MARTIN
Notary Public, Laurel County, Ohio
My Commission Expires Dec 15

Ralph L. Martin

The undersigned, who are the owners of the land hereinafter described, do hereby acknowledge that they have conveyed unto the said City of Oregon, its successors and assigns, a right-of-way and easement to lay, install, operate, renew, alter, improve, protect, repair and remove a pipe line and all necessary equipment and appurtenances thereon, over, upon, under and across the following lands of the Grantor shown in

Section 27 Township 8 Range 9
Lucas County, State of Ohio more fully described as follows:

The East one-half (½) of the West one-half (½) of that part of original lot number two (2) in the East one-half (½) of Fractional Section twenty-seven (27), Town nine (9) South, Range eight (8) East in the City of Oregon lying South of Cedar Point Road (so-called) excepting therefrom the South four hundred (400) feet thereof.
Subject to legal highways.

and bounded by lands now or late of:

Cedar Point Road	on the	North
Mathilda Schumaker	on the	East
Toledo Edison	on the	South
Colander Associates	on the	West

and also, insofar as Grantor has the right to do so, upon, along or under the roads, streets, highways, rights-of-way and appurtenances, adjoining or adjacent to said lands, together with the right of ingress and egress to and from said right-of-way and easement, such right-of-way and easement to be along such route as may be selected by Grantee.

The grant of the said right-of-way and easement shall not exclude Grantor from enjoying and using said lands as heretofore used in any way that does not interfere with the valid use of the right-of-way and easement herein granted for the purposes aforesaid, and Grantee shall pay any damages which may arise to crops, trees, fences and buildings on said lands from the exercise of any of the rights herein conferred. It is further agreed that Grantee, in the use of the right-of-way and easement herein granted, may at any time lay, maintain, operate, renew, alter, improve, protect, repair and remove additional pipe lines and all necessary equipment and appurtenances thereto as it may desire alongside the first pipe line laid, upon the payment, for each additional pipe line to be laid, of the same amount paid for the right-of-way and easement herein granted, and the payment of any damages which may arise to crops, trees, fences and buildings on said lands from the exercise of such rights conferred upon Grantee. The rights herein granted may be assigned or transferred by the Grantee, its successors or assigns, in whole or in part.

This agreement shall be binding upon and ensure to the benefit of the heirs, executors, administrators, successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed this 27th day of JULY, A.D. 19 77

Signed, sealed and delivered in the presence of:

GRANTOR:

Mathilda M. Schumaker
Randy W. Schumaker

x Robert M. Schumaker (son)
x [Signature]

INCORPORATED

STATE OF *Ill.*
COUNTY OF *Adams*

On *22nd* day of *July*, personally appeared *Richard T. Sargent*,
known to me to be the person(s) described in and who executed the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed, and that he signed, sealed and delivered the same as his voluntary act and deed for the uses and purposes therein expressed.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Title of Office

My Commission Expires:

RICHARD T. SARGENT

Attorney at Law

Notary Public - State of Ill.

My Commission has no expiration date.

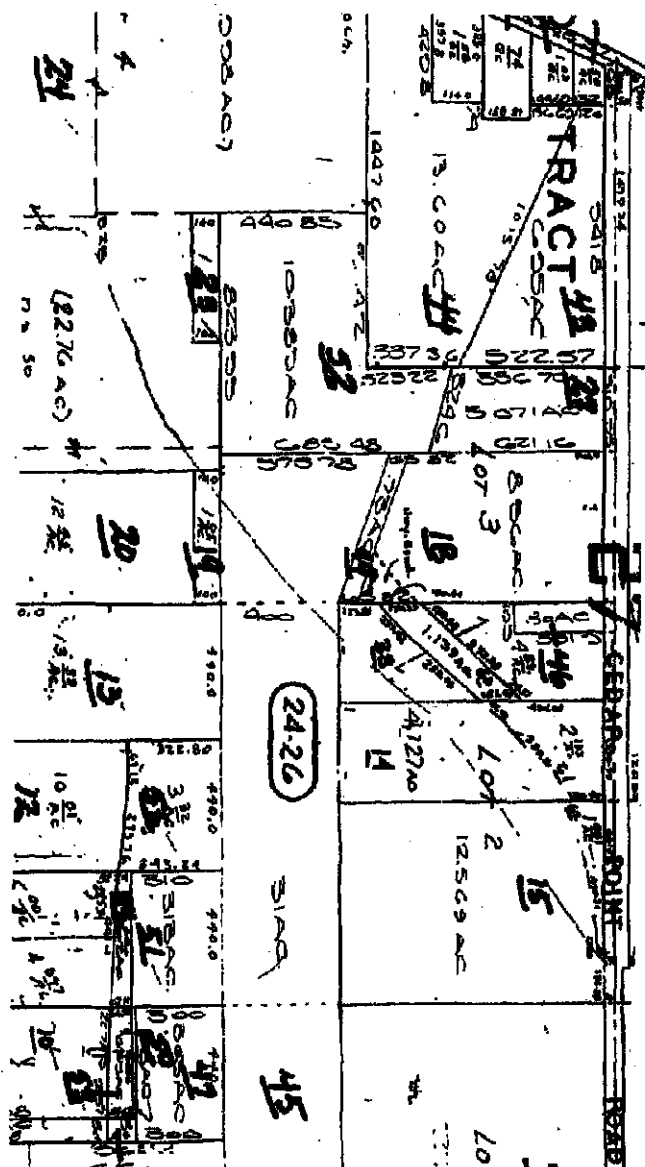
Section 147.05 C. R. C.

RECORDED & INDEXED

SEP 7 1977

CLERK

CLERK OF COURTS



APPENDIX F –Cultural Resources Survey

DRAFT
CULTURAL RESOURCES SURVEY
OF PROPOSED BP HUSKY REFINERY
138/69kV SUBSTATION IN
LUCAS COUNTY, OHIO

2009

**Burns &
McDonnell**

DRAFT

CULTURAL RESOURCES SURVEY

OF PROPOSED BP HUSKY TOLEDO REFINERY

138/69 kV SUBSTATION IN

LUCAS COUNTY, OHIO

Prepared for

BP Products North America, Inc.
Toledo Refinery
4001 Cedar Point Road
Oregon, Ohio 43616

Prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

Principal Investigator

Mark A. Latham

Project Number

51202

July 2009

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ABSTRACT

Burns and McDonnell Engineering Company, Inc. (Burns & McDonnell) conducted archaeological investigations at the approximately 13 acre parcel proposed for a substation construction project area (Project). The investigations were to provide BP documentation for submittal to the lead federal agency in compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended), if necessary. One historic archaeological site and one recently razed house site were identified and recorded during the survey of the Project area. The archaeological site was a historic artifact scatter located in a cultivated field. The recently razed house site was a twentieth century residence found in a grassy lawn area in the northeast corner of the Project area. It is the opinion of the investigator that the site is not eligible for inclusion in the National Register of Historic Places (NRHP) and that the razed house site is too recent to be considered an archaeological resource. All work was conducted in consideration of the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716-44742) and the *Secretary's Standards for Identification* (48 FR 44720-44723), and the *Archaeology Guidelines* (1994) established by the Ohio Historic Preservation Office.

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1.0:
INTRODUCTION

1.0 INTRODUCTION

This report describes the results of the Phase I cultural resources survey of the Preferred project site of approximately 13 acres in northeastern Lucas County, Ohio (Figure 1-1). An alternative project site was located just east of the Preferred project site, within the same section. A preliminary background review of the Preferred and alternative sites were conducted in 2007 (URS 2007) and again prior to the investigation reported in this document. Burns and McDonnell Engineering Company, Inc. (Burns & McDonnell) conducted the archaeological investigations of the Preferred site to provide BP Products North America, Inc. (BP) documentation for submittal to the lead federal agency in compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended) if necessary.

1.1 DESCRIPTION OF THE STUDY AREA

The proposed Project is the construction of a new 138/69-kilovolt (kV) substation to provide electrical power and improve the reliability and stability of the power needs of the BP Husky Toledo Refinery (Refinery). In addition to the substation, the Project would include an access road between the fenced substation and Cedar Point Road and a storm water detention pond. Boundaries of the study area included Cedar Point Road to the north, a railroad spur to the east, and private property lines to the south and west. Most of the approximately 13 acre Project area was cultivated field (corn stubble) with a tree and brush lined drainage ditch and a grassy area (former yard) in the northeast corner. Nine acres of the study area will be selected for the proposed Project (Figure 1-2).

1.2 OBJECTIVES OF INVESTIGATION

The primary objective of the archaeological investigation was to systematically survey the proposed Project area to identify existing cultural resources or evidence of the potential for discovering additional cultural resources. All work was conducted to professional standards and guidelines in consideration of the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*, 48 FR 44716-44742 and in accordance with the *Secretary's Standard for Identification* (48 FR 44720-44723), and in accordance with the *Archaeology Guidelines* of the Ohio Historic Preservation Office (1994).

1.3 PERSONNEL

The archival investigation took place at the Ohio Historic Preservation Office, Columbus, Ohio on November 11, 2008, and was performed by Kiersten Latham.



★ General Project Location

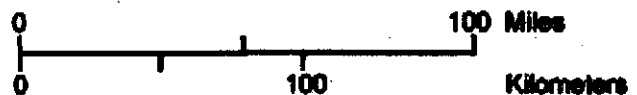
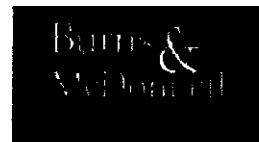
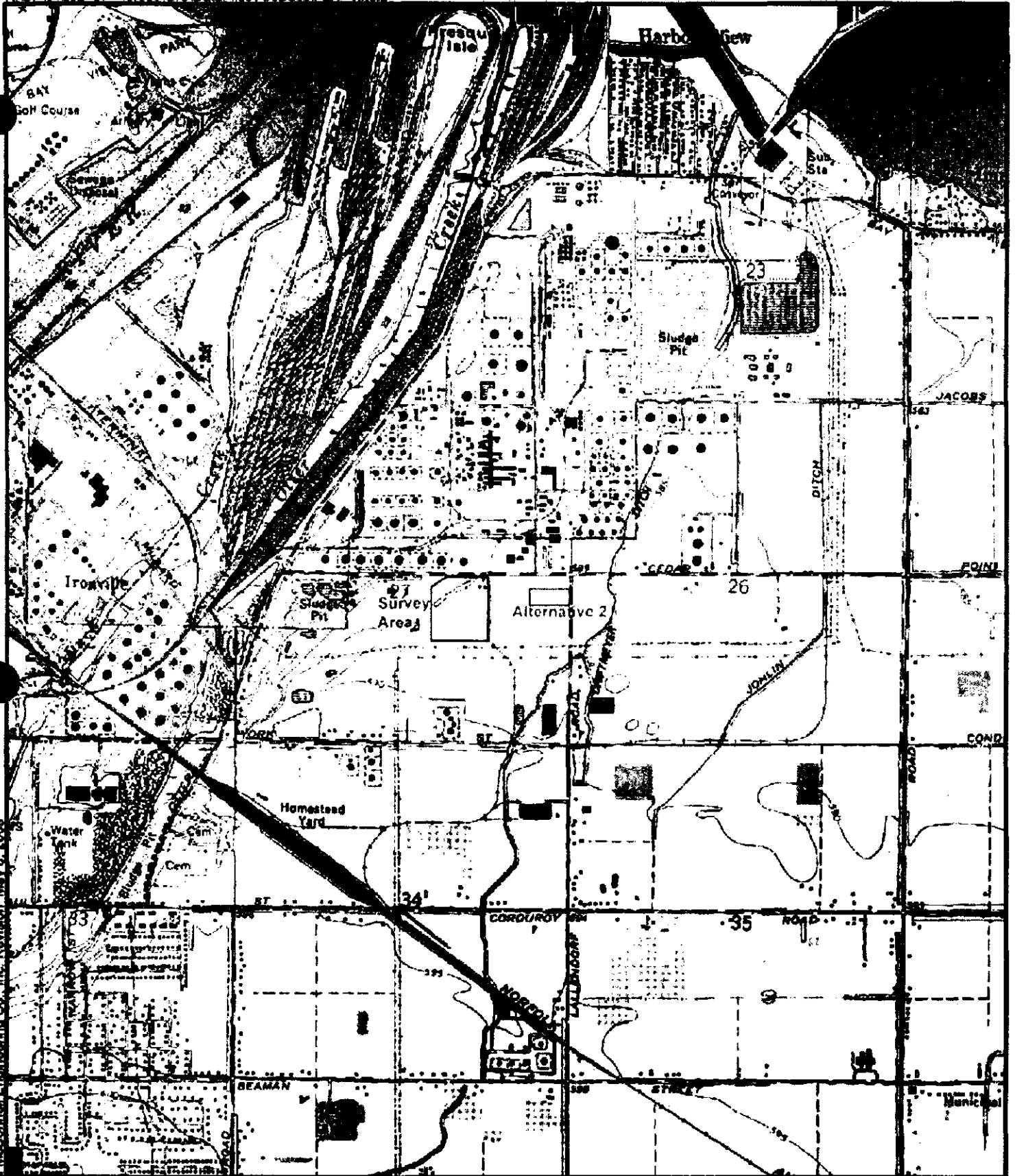


Figure 1-1
General Project Location,
Lucas County, Ohio
 (Rand McNally & Company 1982)





Source: USGS Topo Quad:
Oregon, OH/MI, 1965, photorevised 1990
Scale: 1:24,000

- = Survey Area
- = Alternative 2

0 1,000 2,000 4,000 Feet



Figure 1-2
Project Area Surveyed
and Alternative Site 2
BP Husky Toledo Refinery
138/69-kV Substation Project
Oregon, Ohio

The field visit was conducted on May 7, 2009; and field investigations were performed on May 12, 2009 by Mark A. Latham from Burns & McDonnell. Mark A. Latham served as principal investigator and report author. Dr. Kiersten F. Latham and Susan M. Houghton developed the report graphics and Ms. Houghton assisted in the historic artifact analysis and formatted the report.

1.4 REPORT FORMAT

This report is consistent with the Burns & McDonnell standard report format that can be slightly modified to match the requirements of the Ohio Historic Preservation Office (1994). Chapter 2 provides an overview of the regional and local environmental context for the Project. Chapter 3 establishes the cultural context by providing an overview of the regional prehistory and history of the Project area and of the previous cultural resource investigations conducted in the locality. Chapter 4 provides the research design and methods guiding the current investigations and presents the research objectives. Chapter 5 includes a discussion of previous investigations around the Project area and supplies a brief summary of the site potential within the study area. Chapter 6 includes the results of the current archaeological investigations and offers a preliminary assessment of the NHRP status of the cultural resources identified and the recommendations of the investigators. A summary of the site recommendations are presented in Chapter 7. The references cited are consistent with the Editorial Policy, Information for Authors, and Style Guide for *American Antiquity*.

2.0:
ENVIRONMENTAL SETTING

2.0 ENVIRONMENTAL SETTING

The Project is located in northeastern Lucas County, in north central Ohio. This area, east of the Maumee River and south of Lake Erie, has been traditionally called the Black Swamp. Historically, the Project area changed from the Black Swamp to agricultural fields and was later occupied by industrial facilities.

2.1 PHYSIOGRAPHY

The Project area was within an old glacial lakebed and glaciated plains. Along the edges of Lake Erie was the glacial lakebed (including the Project area), while the glacial till plains were developed during the last stages of Pleistocene and are found inland from the lake. The glacial lakebed, including the Project area, has low elevations and is level aside from the numerous drainages flowing into the Maumee River.

2.2 GEOLOGY

The glacial lakebed is underlain by a series of sediments sloping to the northeast. Bed rock is 60 to 120 feet below the current ground surface (Stone et al. 1980).

2.3 SOILS

The Project area contains two soil types. The soil associations that occur within the sites were identified using the USDA *Soil Survey of Lucas County, Ohio* (Soil Survey Staff 2009; Stone et al. 1980). Fulton silty clay loam series soils occur in the southwestern third of the Project Area. Latty silty clay series soils comprises the remaining two thirds; both are considered hydric soils. The Fulton silty clay loam soil series consists of very deep, somewhat poorly drained, and slow to moderately permeable soils formed from glaciolacustrine deposits. These soils are often found on lake plain landforms. The Latty silty clay soil series consists of very deep, very poorly drained, and slowly permeable soils formed from clayey glaciolacustrine deposits. The Latty series of soils are often found on lake plains and drainage ways.

2.4 DRAINAGE SYSTEM

The drainage system of the Project area was the Maumee River and Lake Erie (Figures 2-1 and 2-2). Historically the Project area was located within the Black Swamp; a densely wooded lowland remnant of a glacial lake. As the area became settled by Euroamericans in the early 1800s the swamp was eventually drained (Kaatz 1952, 1953; Mollenkopf 2000).

PHYSIOGRAPHIC REGIONS OF OHIO

by C. Scott Brockman

Derived from Ohio ecoregions mapping project funded by U.S. Forest Service

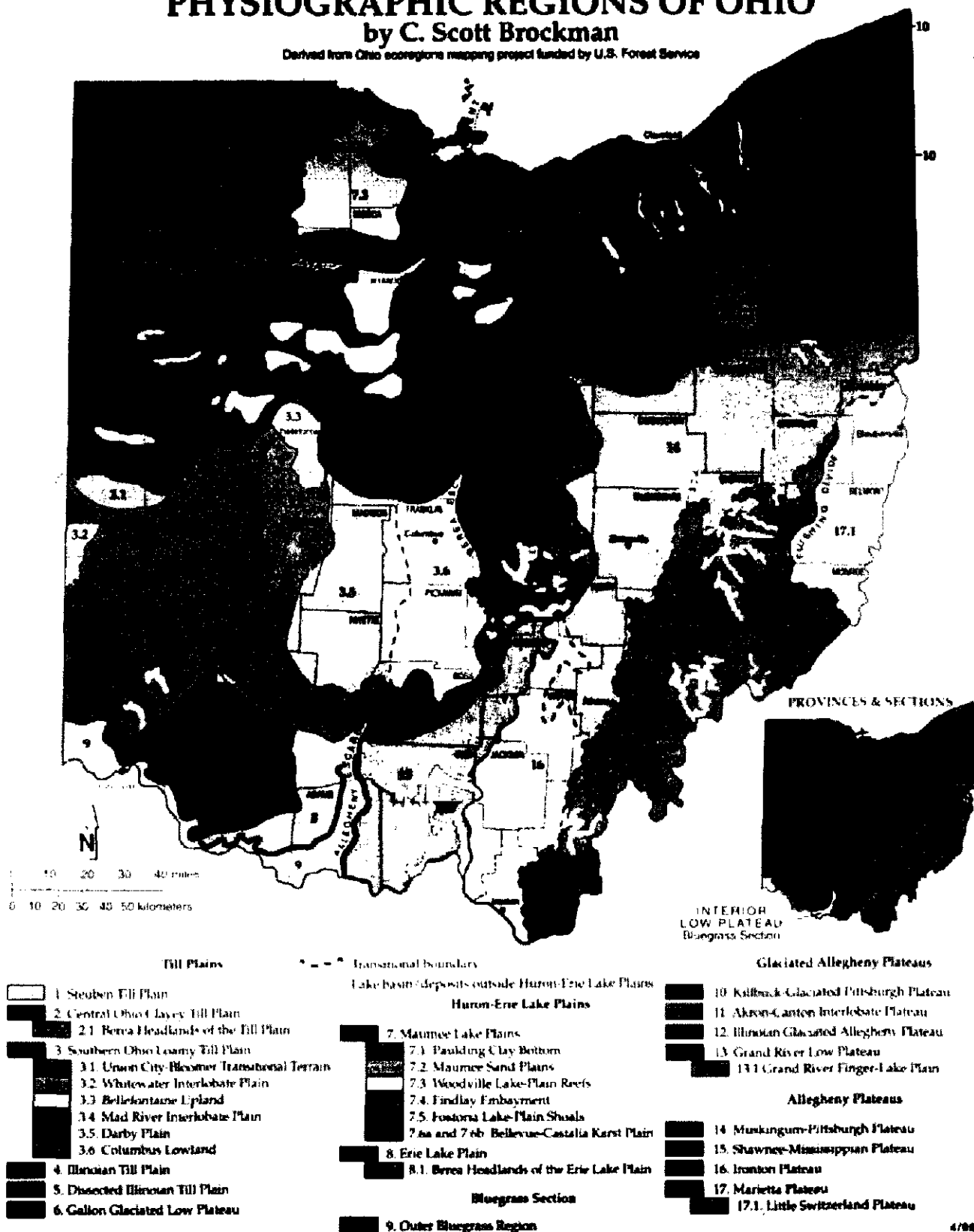


Figure 2-1
Physiographic Map of Ohio

(Brockman nd)



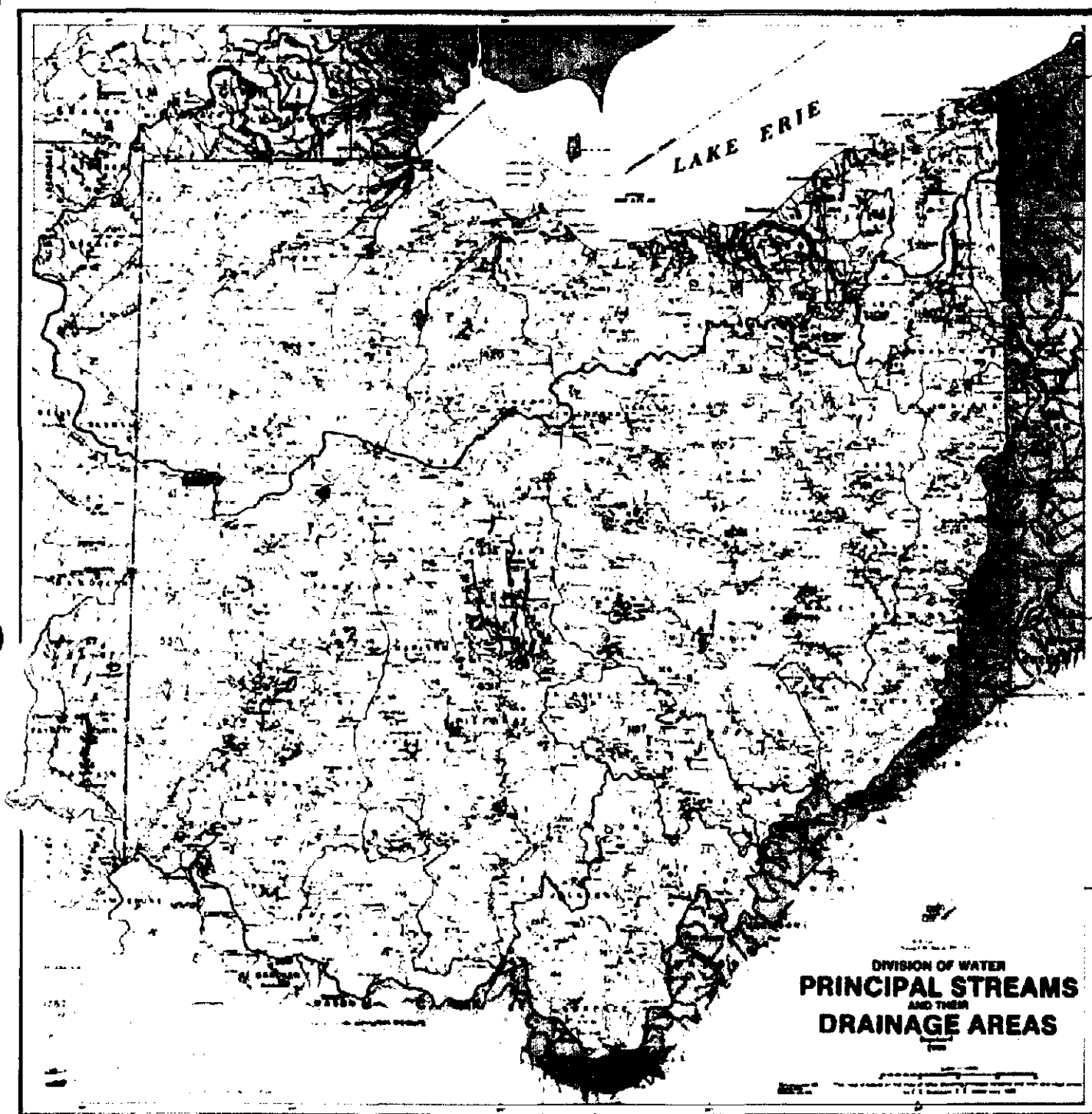
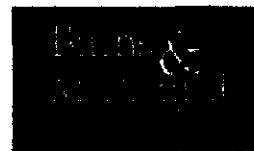


Figure 2-2
Watershed Map of Ohio
 (Division of Water 1999)



2.5 FLORA

At the height of the Laurentide glacial stage, tundra developed at the ice margin for the breadth of the continent. Temperatures that averaged -6°C (21°F) at the glacier margins produced permanently frozen subsoil impenetrable by tree roots. Even though the ground surface thawed with the warmth of the sun forests did not regenerate as older trees died. Thus, tundra replaced the forests. Sedges and shrubs were the most common tundra plants in the Great Lakes region (Bonnicksen 2000:18).

As the ice receded northward, white spruce advanced into the tundra. Typically, as glaciers wasted further the spruce forest was replaced by a plant community dominated by tamarack, aspen, and birch. Hardwoods such as elms, oaks, maples, hornbeam, and ironwood succeeded the tamarack-aspen-birch woods as deglaciation continued. With warmer temperatures, hardwoods such as elms, oaks, maples, hornbeam, and ironwood invaded areas formerly dominated by conifers. Hardwood forests became more eclectic as alder, black spruce, and black ash migrated into the hardwood forests.

This northward movement of tundra replaced by spruce replaced by tamarack displaced by hardwoods reversed as ice readvanced in the Great Lakes region. After 14,000 before present (BP) the spruce forest migrated south and shifted position in response to glacial advances and retreats for the next 2,500 years. By the beginning of the Holocene the spruce forest had migrated north of the Lake Michigan basin (Bonnicksen 2000:38).

Unlike pioneer species such as spruce and jack pine, balsam fir--a "settler" species--became established in existing forests and invaded the margin of the spruce forest throughout much of the eastern United States. Balsam fir moved into New England and the lower Great Lakes between 12,000 and 11,000 BP and continued advancing into the spruce forest as the northern migration of the conifer forests continued (Bonnicksen 2000:40). In only a few centuries jack pine became well established in areas of former spruce forest; as climate ameliorated, a jackpine forest developed between the hardwoods and spruce across northern Ohio, northern Indiana, and northern Illinois at about 10,000 BP. Although never a dominant species, jackpine infiltrated the hardwood forest and slowly white pine moved into the region as well. Pines retreated as the climate warmed and by 8000 BP prairies advanced eastward toward northern Indiana (Bonnicksen 2000: 42). Balsam fir, jack pine, hemlock, and beech all moved into Indiana from the Appalachian Mountains. The migration of hemlock and beech was slower, however, as these species did not reach the lower Lake Michigan basin until the Holocene. Hemlock occurs in the area by about 7000 BP and although beech arrived in southern Michigan by 8000 BP, beech spread southward into Indiana much later. Beech may have been well established on the islands in Lake Michigan that developed during low water stages. The trajectory of beech migration differed from many other trees in

that the route may have been to the northwest into Michigan from the Appalachians, then westward to Wisconsin via the Lake Michigan islands and then southward into Indiana (Bonnicksen 2000: 44). Beech appears to spread into areas as the climate warms. However, many early Holocene pollen profiles show a rise in beech contemporary to an increase in spruce pollen (Overpeck et al. 1985). This may be interpreted as a warmer climate more favorable to beech that shifts rapidly to a colder regime to which spruce is adapted. The beech-spruce association does not occur in the composition of nineteenth and twentieth century forests and well illustrates the differences in the characteristics of modern forests compared to the dynamic nature of prehistoric plant communities.

As hardwood species advanced northward into the lower Great Lakes region, grasslands spread eastward, crossing the Mississippi River. The prairie expanded and contracted in much the same manner as the hardwood and spruce forests advances and retreated. Beginning about 6000 BP the prairie surged rapidly eastward and by 3000 BP (1050 BC) northwestern Indiana had become a grassland (Webb et al. 1983:147). This feature, known as the Prairie Peninsula, may have receded somewhat during the cooler, moister Little Ice Age of the late prehistoric period. However, remnants of the Prairie Peninsula can still be traced eastward along the Grand and Little Calumet rivers into Porter County and to the upper reach of the Kankakee River in La Porte County. Prairie Peninsula outliers extend into Berrien and Cass counties, Michigan (Transeau 1935). By 5,100 BP (3150 BC) the forests of eastern North American above latitude 40° N resemble the composition of modern communities that occur in the region (Overpeck et al. 1985:103).

2.6 FAUNA

A variety of terrestrial species would have been present in and around the Project area from prehistoric through early historic times. Many of these species were important food resources for the prehistoric groups, historic Native Americans, and early European travelers and settlers in the region. Some of the mammals native to the area include elk, white-tailed deer, black bear, bobcat, gray fox, raccoon, cottontail rabbit, gray squirrel, fox squirrel, striped skunk, swamp rabbit, and many small rodents and shrews.

The most common game birds are waterfowl, turkey, bobwhite quail, and mourning dove. Along flood plains and swamps birds such as ibises, cormorants, herons, egrets, and kingfishers can be found. A large number and variety of song birds can also be found in the area. The herpetofauna include turtles and snakes.

2.7 CLIMATE

Due to a number of factors the climate of northern Ohio is quite diverse, although in general the winters are cold and the summers warm to hot. Precipitation is fairly consistent throughout the year with a slight increase during the summer. Winter precipitation is generally in the form of snow (Stone et al. 1980).

3.0: CULTURAL OVERVIEW

3.0 CULTURAL OVERVIEW

The Project area is found within a glacial lakebed developed during the late Pleistocene and the local cultural sequence appears to be limited to the period from the Woodland cultures to modern times. Therefore, the following cultural sequence is primarily focused on the later portions of the prehistoric period to the present day. Archaeologists generally divide the prehistoric cultural sequence of the Great Lakes into two pre-ceramic periods and one ceramic period.

3.1 PALEOINDIAN

Based on the current data, most archaeologists identify the Paleoindian period as the earliest stage of human occupation in the Midwest and Great Lakes. Sites assigned to this period are best known by the presence of particular styles of projectile points, with the most recognized being the fluted varieties. By the end of the Paleoindian period, the environment had changed dramatically. The withdrawal of the Wisconsin ice shield caused the gradual shift in the distribution of floral communities across the landscape. At the beginning of the Paleoindian period, the vegetation in the Project area was dominated by mixed boreal-deciduous forests. At the end of the period, this vegetation community had retreated to the north and was replaced by prairie. The dynamics of the environment were also reflected in the cultural adaptations of the Paleoindian peoples. These dynamic adaptations have been documented in technological and social changes in the various phases of the Paleoindian period. Little evidence of Paleoindian occupation has been found in the area.

3.2 ARCHAIC PERIOD

The Archaic period has been arbitrarily divided into the typical three subdivisions found in the Midwest; Early Archaic (8000 to 6000 B.C. the Middle Archaic (6000 to 3000 B.C.) and the Late Archaic (3000 to 1000 B.C.). These time periods have been tied to projectile point types from sites found in the southeast or other sites not closely tied to the southwest shore of Lake Erie and therefore may not be reliable. During the Archaic period the vast wetland called the Black Swamp was established from the western Lake Erie coast to eastern Indiana (Stothers et al. 2001).

The Early Archaic in the Midwest is generally viewed as a continuation of the lifestyle traditions established during the late Paleoindian period. As the climate continued to shift, a broader range of ecological niches were exploited. The Early Archaic is not well defined in the Project locality, as most of the sites are likely submerged by the waters of the Great Lakes. The lake levels were much lower than during the present age and it is postulated that most of the sites dating to the Early Archaic in the region

were located along the lake shore and are currently submerged under the modern lake waters (Monaghan and Lovis 2005).

The environment continued to shift throughout the Middle Archaic, resulting in continued changes in vegetation. This is supported by the increased exploitation of prairie species, indicated by studies in the Illinois River valley and southern Indiana (Munson 1980). The climate continued to become drier, causing forests to concentrate in the bottomlands and stream valleys while grasses spread across the uplands. Based on these observations, it appears that areas of seasonal exploitation became more pronounced.

Late Archaic occupations are marked by further expansion of the tool kits. Groundstone tools that became common during this period include three-quarter grooved axes, bannerstones, plummets, hammerstones, pestles, and manos. The increased number of pestles and manos is thought to be a reflection of the increased exploitation of wild seeds and nuts. Lithic tools of the Late Archaic consist of notched points, triangular bifaces, manos, grinding basins, double bitted axes, scrapers, perforators, drills, and knives (Chapman 1975).

Population increased dramatically during the Late Archaic period. Most archaeologists attribute this population boom to the end of the hypsithermal, resulting in a milder climate. This period is marked by what Caldwell (1958) refers to as "primary forest efficiency". The forests spread and more varieties of plants, including nut bearing trees, were found throughout the region. The prehistoric peoples adapted to this climatic and vegetation change quickly.

3.3 WOODLAND PERIOD

The Woodland period is characterized by a trend toward increased sedentism, intensified horticultural activity, expanding regional exchange networks, and the elaboration of ceremonial activities and mortuary practices (Griffin 1967). The origin of these trends can be traced to the Late Archaic, but the elaboration of cultural elements became the hallmark of the time. These developmental trends form the basis for distinguishing the Early, Middle, and Late Woodland substages. Regional variations in the timing and extent to which these traditions were expressed, however, make this tripartite subdivision difficult to employ in certain areas.

Unlike the Late Archaic settlement system, the Early Woodland occupations in the Midwest are typified by relatively small, short duration camps situated adjacent to specific environmental locales. This suggests that small social groups using seasonally occupied, specialized extraction camps were exploiting resources within defined territories (Emerson and Fortier 1986; Roper 1979:114-131; Seeman 1986:576).

Ceramic manufacture is generally associated with the development of the Early Woodland; the timing of its appearance seems to vary spatially across the landscape. For instance, in the upper Ohio River valley, thick-walled, coarse-tempered ware first appears around 1000 B.C.; in the lower Ohio River valley in Indiana, dates suggest pottery did not appear until around 500 B.C. (Seeman 1986:564). In the Western Prairie region, Early Woodland pottery does not appear until around 700 B.C. (Tiffany 1986:167).

During the Early Woodland stage, a ceremonial mortuary complex known as the Adena Culture developed centered on the central Ohio River valley. The Adena culture involved the construction of burial mounds, many of which were accumulative and attained great size, such as the Grave Creek mound in Ohio which measures 21 m high by 90 m in diameter (Seeman 1986:574).

In the Midwest, the Middle Woodland period is characterized by widespread acceptance of pottery and mound building with the appearance of more permanent villages. This period is also associated with the Hopewellian Interaction Sphere, which is marked by specific design motifs on pottery vessels, "elite" burial mounds, and the exchange of exotic materials (Caldwell and Hall 1964). The Hopewellian Interaction Sphere connected distant Middle Woodland groups by a highly developed socio-religious organization (Struever 1964). Large regional centers, which exhibit groups of conical shaped burial mounds, were the focal points for Hopewellian activities during this period.

House patterns or structural remains are almost non-existent in the Great Lakes region prior to the first millennium AD. An Early Woodland house in northern Ohio that was radiocarbon dated to 200 BC was probably occupied only on a seasonal basis. At some time between 150 BC and AD 450, elaboration in ceramic decoration and mound building heralds in a strongly influenced Hopewell culture in northern Indiana and the adjacent portion of southwestern Michigan. The Middle Woodland occupations during the Goodall Phase may have been influenced by Hopewell groups in Illinois, if not the result of a direct migration into northern Indiana from the west (Yerkes 1988:324).

Even though mound building continued after the Hopewell decline, mortuary practices were less elaborate and the grave goods were derived from less exotic sources. Locally made ceramics became somewhat mundane in decorative treatment as well. Post Hopewell or Late Woodland communities were more scattered and overall house size seems to have decreased. Rather than reflecting cultural decline, these characteristics may indicate greater diversification as population increased in the initial Late Woodland period after AD 450. Within a century, sedentary villages with an emphasis on corn production developed throughout much of the Midwestern United States in the lower Great Lakes region (Yerkes 1988:328).

The beginning of the Late Woodland period around AD 400 was marked by a reduction in interregional trade, a decrease in the complexity of ceremonial/mortuary practices, and a reduction in the elaborateness of ceramic decoration. Settlement patterns of Late Woodland cultures appear to have been more relaxed than those from the Middle Woodland time period. Base camps were now not only found in bluff-base and river bottomland locations such as instances in the American Bottom and Illinois River Valley, but in the valleys of smaller streams and uplands. Hunting and gathering was generally the basis of the economy and was supplemented by horticulture. Around AD 750 to 850 corn, in addition to squash and beans, became an important cultigen. Continuity with the preceding Middle Woodland period is reflected in a subsistence base that involved the utilization of terrestrial and riverine species, nuts, and cultivated plants. Settlements tended to be small and located in a variety of ecological zones (Conner 1985).

3.4 MISSISSIPPIAN

Mississippian phases were identified based primarily on ceramic attributes that are transitional from Late Woodland into Mississippian types as well as the development of crushed mussel shell as temper. The Emergent Mississippian period is defined by the shift from maize as a garden crop to a storable commodity and the concomitant societal changes associated with that shift (Kelly et al. 1984), possibly the result of the symbolism it gained as presented in the Scared Maize Model (Byers 2006). Viewed as permanent agrarian communities, Emergent Mississippian sites range in size from 0.1 to 10 hectares and contain faunal and floral assemblages that, although they indicate an emphasis on maize, are quite diversified and particularly reliant upon fish as a source of protein.

Mississippian societies appear to have been organized by rank or chiefdoms. Settlement patterns were characterized by large regional population centers surrounded by a radiating network of agricultural and special purpose sites. Large ceremonial centers contained flat-topped temple mounds, plazas, and fortifications (Cole et al. 1951; Fowler 1974; Milner et al. 1984; Muller 1978, 1986).

3.5 PROTOHISTORIC

The protohistoric described as the period during which European derived trade items appear in the assemblage of native groups and prior to actual contact between the two groups (Parker 1907, Stothers 2000, Trigger 1985). In the southwestern Lake Erie area the prothistoric period has been dated between AD 1550 and 1643. Seven sites in the area are known to date to the prehistoric period. These sites have been classified as the Indian Hills phase and include villages and one ossuary (burial site). The village sites were located along terraces and bluffs of the Maumee River and its tributaries. After this nearly 100 year period, the Indian Hills people appear to have moved south into the Ohio River valley to be more

involved in the trade network (Stothers 2000). Little is known about these Algonquian and Iroquoian speaking people (Stothers and Schneider 2005; Stothers and Tucker 2006).

3.6 CONTACT PERIOD

When Euroamericans increased their presence in the area southwest of Lake Erie during the late seventeenth century they recorded the presence of the Ottawa. The Ottawa were not native to the area but forced into the area as a result of the Iroquois Wars of the mid-seventeenth century. The Ottawa would later relocate to the upper Great Lakes (Stothers and Tucker 2006).

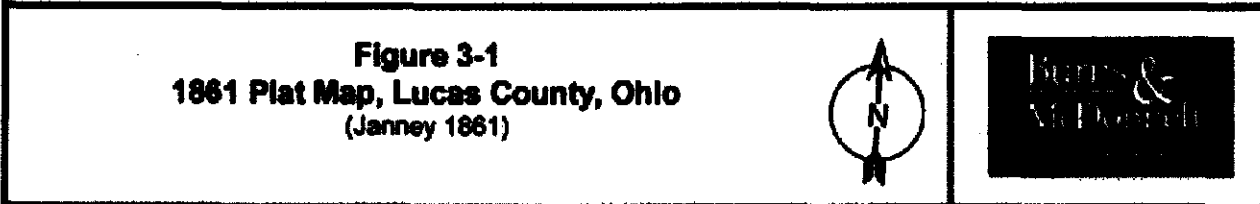
3.7 HISTORIC PERIOD

Even though Ohio was granted statehood in 1803, Oregon Township, which includes the Project area, was not formed until 1838. Most of the township, including the Project area, was within the Black Swamp, within which few people resided until it was drained. Throughout the early 1800s the swamp was a major obstacle for the Euroamerican settlers. After 1840 efforts began to drain the swamp, as most tillable land east of the Mississippi was already homesteaded. At first these efforts were uncoordinated and led to numerous conflicts between neighbors. With the need for land and the 1850s cholera outbreak, a systematic approach was desired by the residents of the area and state representatives. In 1859 the first of several Ohio "ditch laws" were passed. With county officials given the right to enter and even seize private property to construct drainage ditches, the swamp was eventually drained (Kaatz 1952, 1953; Mollenkopf 2000). With the draining of the swamp much of northwest Ohio, including the Project area, was cleared and became farmland. Farmsteads and other agriculturally related sites became common throughout the area.

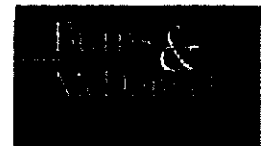
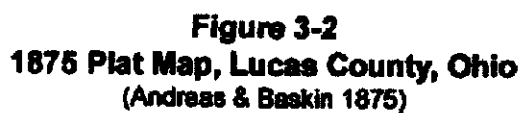
The most prominent features of the current landscape around the Project area are the massive petroleum tanks of the British Petroleum (BP) refinery just across the street to the north. This BP plant and other industrial facilities make up a long, rich history of industry along the east side of the Maumee River. The industry development dates back to the early 1800s when rail lines passed through the area, connecting the inland resource suppliers with the barge traffic of the Great Lakes.

A review of the historic maps shows no historic homes or other development. The 1861 plat map shows that many tracts of land were owned by "Com. Bank", including the Project area (Janney 1861) (Figure 3-1). No houses were depicted in or around the Project area.

The 1875 historic plat map shows that the Project area was owned by John H. Schumacher, who also owned a strip of land along the north side of Cedar Point Road (Figure 3-2) (Andreas & Baskin 1875).



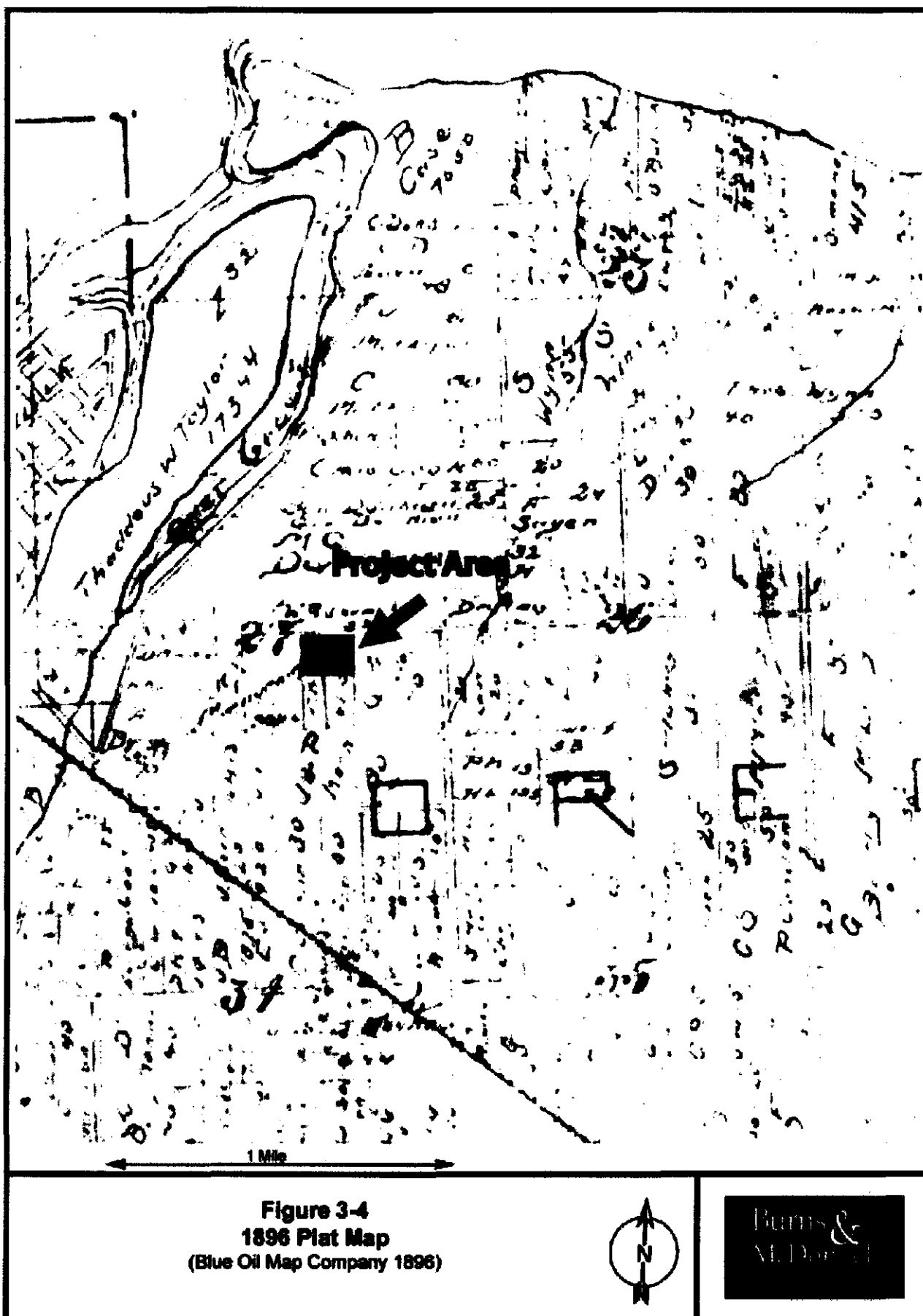
TOWNS 9 & 10-SOUTH.
RANGE 5 EAST.



The Schumacher house is depicted within the strip of land north of Cedar Point Road, northwest of the Project area (Figure 3-2).

The Schumacher family still owned the property in 1888 and 1896 (Figures 3-3 and 3-4). However, the 1888 and 1896 maps do not depict houses and therefore have limited usefulness in the study of historic occupation of the area (Judson 1888, Blue Oil Map Company 1896).

By 1899, oil wells were depicted throughout the area (USGS 1899). Some of these well features appear to be within the Project area (Figure 3-5). The online history of Oregon Township states that the BP plant, located across Cedar Point Road from the Project area, was established around 1900 (City of Oregon 2009). The oil wells depicted on the 1899 map led to later development of an oil refinery.



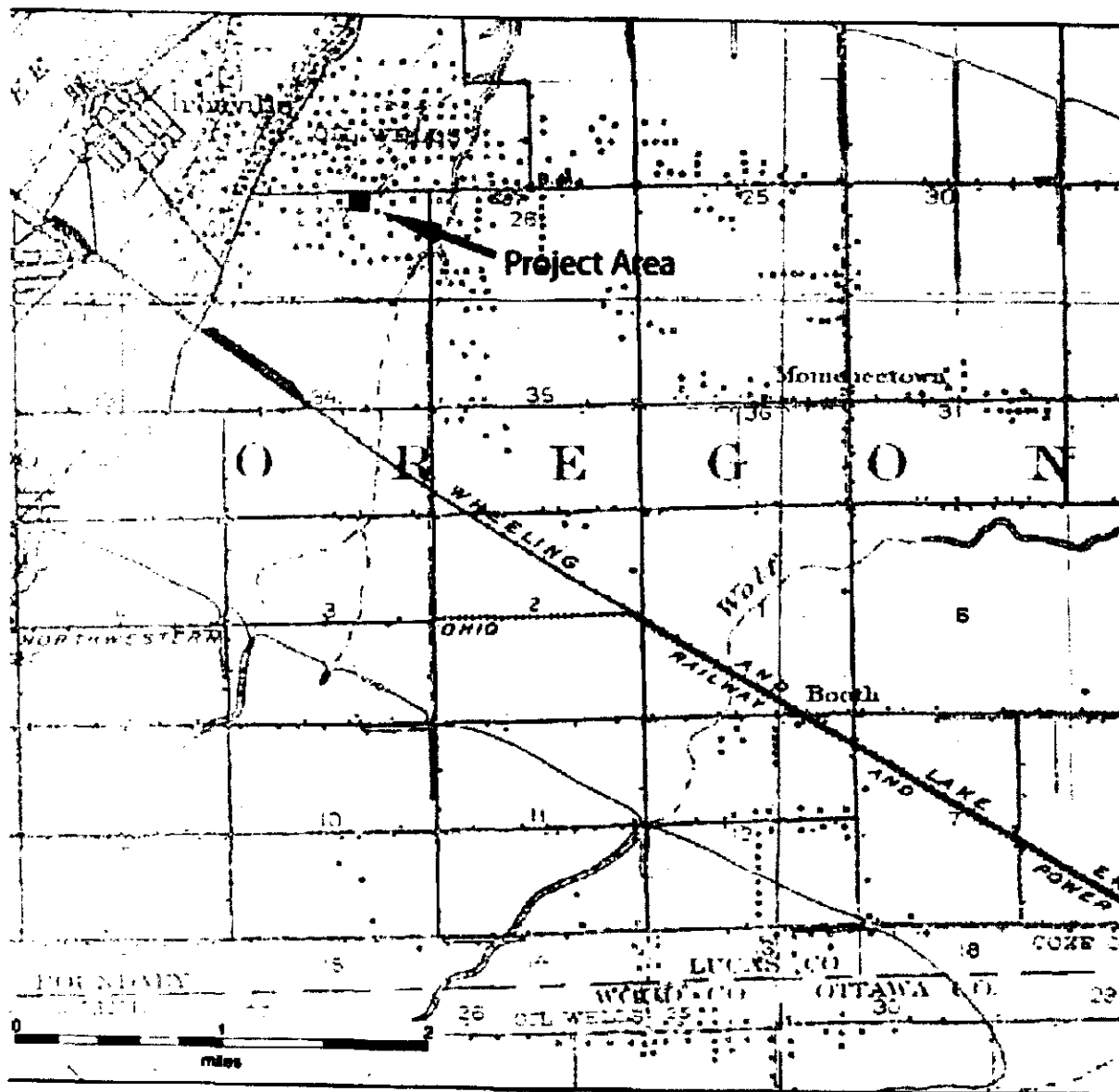


Figure 3-5
USGS 15 Minute Maumee Bay Topographic Map
 (USGS 1899)

