

Case No. 16-2443-EL-BGN

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



Submitted by:

Guernsey Power Station, LLC

March 2017





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March 16, 2017

Via Hand Delivery

Ms. Barcy McNeal
Administration/Docketing
Ohio Power Siting Board
180 East Broad Street, 11th Floor
Columbus, Ohio 43215-3793

Re: Guernsey Power Station, LLC
Case No. 16-2443-EL-BGN

Dear Ms. McNeal:

Enclosed for filing in the above-referenced case is a copy of the Application of Guernsey Power Station, LLC for a Certificate of Environmental Compatibility and Public Need for an electric generating facility, Guernsey Power Station, in Valley Township, Guernsey County, Ohio. In addition, we have provided Staff of the Ohio Power Siting Board ("Board") ten disks and five hard copies of the Application. Pursuant to Ohio Administrative Code Rule 4906-2-04(A)(3), the Applicant makes the following declarations:

Name of Applicant:	Guernsey Power Station, LLC whose authorized representative is Michael King 6229 White Alder Court Avon, IN 46123
Name/Location of Proposed Facility:	Guernsey Power Station, LLC Valley Township, Guernsey County, Ohio
Authorized Representative Technical:	Mary King Guernsey Power Station, LLC 6229 White Alder Court Avon, IN 46123 Telephone: 317-447-4513 E:mail: mary@apexpowergroup.com

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Since the preapplication notification letter was filed, there have been no revisions that appear in the application.

Notarized Statement:

See Attached Affidavit of Michael King,
on behalf of Guernsey Power Station, LLC

Sincerely on behalf of
GUERNSEY POWER STATION, LLC



Sally W. Bloomfield

Enclosure

**BEFORE
THE OHIO POWER SITING BOARD**

In the Matter of the Application of **Guernsey**)
Power Station, LLC for a Certificate of)
Environmental Compatibility and Public Need) Case No. 16-2443-EL-BGN
for an Electric Generating Facility in Guernsey)
County, Ohio)

AFFIDAVIT OF MICHAEL KING

STATE OF OHIO :
 : ss.
COUNTY OF FRANKLIN :

I, Michael King, being duly sworn and cautioned, state that I am over 18 years of age and competent to testify to the matters stated in this affidavit and further state the following based upon my personal knowledge:

1. I am an Authorized Representative of Guernsey Power Station, LLC ("GPS"). Guernsey Power Station, LLC ("GPS") is being jointly developed by Apex Power Group, LLC ("Apex") and Caithness Energy, L.L.C. ("Caithness"). I am the primary individual in charge of the development of GPS.

2. I have reviewed GPS's Application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need for GPS.

3. To the best of my knowledge, information, and belief, the information and materials contained in the above-referenced Application are true and accurate.

4. To the best of my knowledge, information, and belief, the above-referenced Application is complete.



Michael King

Sworn to before and signed in my presence this 15th day of March 2017.



TERESA E. ORAHOOD
Notary Public, State of Ohio
My Commission Expires December 3, 2020



Notary Public

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Acronyms and Abbreviations

°F	degrees Fahrenheit
%	percent
§	section (when referring to Ohio Administrative Code)
µg/m ³	microgram per cubic meter
ACC	air-cooled condenser
AEP	American Electric Power
amsl	above mean sea level
APE	Area of Potential Effect
Apex	Apex Power Group, LLC
BACT	Best Available Control Technology
bgs	below ground surface
BMP	Best Management Practice
Btu	British thermal unit
Caithness	Caithness Energy, L.L.C.
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
CO ₂	carbon dioxide
CO _{2e}	carbon dioxide equivalent
CSAPR	Cross-State Air Pollution Rule
CTG	combustion turbine generator
dB	decibel
dBA	A-weighted decibel
DLN	dry low nitrogen oxide
DOW	Division of Wildlife
FAA	Federal Aviation Administration
the Facility	Guernsey Power Station, a new 1,650-MW natural gas-fired combined- cycle electric generating facility located in Guernsey County, Ohio
the Facility Site	the approximately 118-acre location proposed for the Guernsey Power Station in Valley Township, Guernsey County
FEMA	Federal Emergency Management Agency
g/hp-hr	grams per horsepower-hour
g/kW-hr	grams per kilowatt-hour
GdD	Gilpin silt loam, 15 to 25 percent slopes
GE	General Electric
GHG	greenhouse gas
GnA	Glenford silt loam, 0 to 3 percent slopes
gpd	gallons per day
GPS	Guernsey Power Station, LLC
H ₂ SO ₄	sulfuric acid mist

HAPS	hazardous air pollutants
HRSG	heat recovery steam generator
I-70	Interstate 70
I-77	Interstate 77
the Interconnection Property	portion of an approximately 135-acre property south of the AEP 765-kV ROW that is the proposed location for the electrical interconnection facilities
ISO	International Organization for Standardization
kV	kilovolt
kW	kilowatt
the Laydown and Parking Area	an approximately 15-acre property on the north side of Seneca Lane that will be used for temporary construction laydown and parking
lb/MMBtu	pounds per million British thermal unit
lb/MW-hr	pounds per megawatt-hour
L_{eq}	equivalent continuous sound level
McA	McGary silt loam, 0 to 3 percent slopes
MeB	Mentor silt loam, 2 to 8 percent slopes
MeC	Mentor silt loam, 8 to 15 percent slopes
MeD	Mentor silt loam 15 to 25 percent slopes
mgd	million gallons per day
ML	monitoring location
MMBtu	million British thermal units
MMcf	million cubic feet
MW	megawatt
MW-hr	megawatt-hour
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NERC	North American Electric Reliability Corporation
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
ng/J	nanograms per Joule
NH ₃	ammonia
NHD	National Hydrography Dataset
NLCD	National Land Cover Database
NO	nitric oxide
No	Nolin silt loam, 0 to 3 percent slopes, frequently flooded
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standard
NSR	New Source Review
O&M	operation and maintenance

O ₂	oxygen
O ₃	ozone
OAC	Ohio Administrative Code
ODA	Ohio Department of Agriculture
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
OPSB	Ohio Power Siting Board
ORAM	Ohio Rapid Assessment Method
OSHA	Occupational Safety and Health Administration
PADEP	Pennsylvania Department of Environmental Protection
Pb	lead
PEM	Palustrine Freshwater Emergent Wetlands
PFO	Palustrine Freshwater Forested Wetlands
PJM	Pennsylvania-New Jersey-Maryland Interconnection
PM	particulate matter
PM ₁₀	particulate matter with a diameter less than or equal to 10 micrometers
PM _{2.5}	particulate matter with a diameter less than or equal to 2.5 micrometers
ppm	parts per million
ppmvdc	parts per million by volume, corrected to 15% oxygen
the Project Area	The 133-acre property consisting of the Guernsey Power Station and temporary work areas
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTI	Permit to Install
PUB	Palustrine Unconsolidated Bottom
REX	Tallgrass Energy Rockies Express
ROW	right-of-way
RPM	Reliability Pricing Model
Sa	Sarahsville silty clay loam, frequently flooded
SCR	selective catalytic reduction
SER	Significant Emission Rate
SIL	Significant Impact Level
SIS	System Impact Study
SO ₂	sulfur dioxide
STG	steam turbine generator
SPT	Standard Penetration Test
the Strategic Plan	Guernsey County Comprehensive Strategic Plan
SU/SD	startup/shutdown
tpy	tons per year
ULSD	ultra-low-sulfur distillate
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VOC	volatile organic compound
WVDEP	West Virginia Department of Environmental Protection
WWTP	wastewater treatment plant
Zs	Zipp silty clay loam, ponded

4906-4-02 Project Summary and Applicant Information

(A) SUMMARY OF THE PROPOSED PROJECT

Guernsey Power Station, LLC (GPS) is proposing to develop, build, and operate Guernsey Power Station (the Facility), a new 1,650-megawatt (MW) natural gas-fired combined-cycle electric generating facility located in Guernsey County, Ohio (Figure 02-1). GPS will use state-of-the-art combined-cycle technology and a dry air cooling system to reduce air emissions and minimize water use. GPS is a limited liability company for the purpose of developing, owning, and operating the Facility. GPS is being jointly developed by Apex Power Group, LLC (Apex) and Caithness Energy, L.L.C. (Caithness).

(1) General Purpose of the Facility

The Facility will help meet energy demand in the region, particularly in light of the recent and planned retirement of existing coal-fueled generating assets located in PJM.¹ Over 30,000 MW have retired since 2003 and almost 7,000 MW are pending retirement by the end of 2020, including several plants in Ohio. The Facility will help meet this need by providing additional base load and peaking capacity via its natural gas-fired, combined-cycle technology.

(2) Facility Description

The Facility is a state-of-the-art combined-cycle natural gas-fired electric generating facility, designed utilizing three 1x1x1 single shaft power train configurations with a total plant nominal net generating capacity of approximately 1,650 MW. The Facility will be located within an approximately 118-acre property (as shown in Figure 02-1) that is located entirely within Valley

¹ PJM is the regional independent transmission organization that coordinates the movement of wholesale electricity in all or parts of 13 states (including Ohio) and the District of Columbia. Its name results from its origin serving Pennsylvania (P), New Jersey (J), and Maryland (M).

Township, Guernsey County, Ohio (the Facility Site). The Facility includes combustion turbine generators (CTGs), heat recovery steam generators (HRSGs), steam turbine generators (STGs), air-cooled condensers (ACC), transformers, a Facility switchyard, and other ancillary equipment. Natural gas will be provided to the Facility via the Tallgrass y Rockies Express (REX) natural gas pipeline that is located in a right-of-way (ROW) on the Facility Site just south of the Facility. Electricity from the Facility will be transmitted to the PJM power grid via an American Electric Power (AEP) 765-kilovolt (kV) electric transmission line that is also located in an ROW on the Facility Site just south of the Facility. The Facility switchyard is included in this Application. Additional electrical interconnection equipment will be located on a separate adjacent parcel south of the existing 765-kV electric transmission line (referred to as the Interconnection Property). The natural gas and electric transmission interconnections, including activities on the Interconnection Property, will be the subject of separate filings with the Ohio Power Siting Board (OPSB), as appropriate.

The Facility Site consists of an approximately 118-acre rectangular-shaped parcel of land. An approximately 15-acre parcel located across Seneca Lane (Route 2360) to the north of the Facility Site (located in Jackson Township) will be used for temporary construction laydown and parking for the Facility (the Laydown and Parking Area). Approximately 9.8 acres within the northwestern corner of the Facility Site will also be used for temporary construction laydown. The Facility Site is located entirely within Guernsey County and Valley Township, west of Interstate 77 (I-77) and north of Clay Pike Road (Route 313); the Laydown and Parking Area is located in Jackson Township, as noted above.

The majority of the Facility Site is used, or was formerly used, for agricultural purposes. Several structures, including two residences accessed via Puritan Street, and one residence on

Seneca Lane, are located within the Facility Site and will be demolished. Additional residences located along Seneca Lane are within 0.25 mile of the Facility Site and will remain in place.

The Facility Site is adjacent to I-77 and approximately 4.5 miles south of Interstate 70 (I-70). Wills Creek, a tributary of the Muskingum River, forms the southern boundary of the Facility Site. The Facility Site is bounded to the west by a privately-owned railroad spur; and to the north by Seneca Lane, although an area to the north of Seneca Lane will be temporarily used for construction laydown and parking.

The Facility Site and Laydown and Parking Area will be generally accessed from I-77 to Clay Pike Road (a two-lane road located south of the Facility Site) to Marietta Road (Route 821) to the eastern end of Seneca Lane. The Facility entrance will be located off of Puritan Street.

(3) Site Suitability

The Facility Site selection process is described in greater detail in Section 4906-4-04 of this Application. As outlined in that section, GPS's market knowledge identified this region of southeastern Ohio as one where the planned shutdown of existing coal-fired capacity has created the need for clean, efficient power generation. Guernsey County and Valley Township were selected based on consideration of a range of key characteristics for a successful project. Upon identification of this Facility Site, additional scrutiny of a range of issues was undertaken prior to initiating the engineering and environmental activities necessary for the preparation of the OPSB Application.

Key characteristics of the proposed Facility Site that makes it suitable for Facility development are outlined in Table 02-1.

TABLE 02-1
FACILITY SITE CHARACTERISTICS – SITE SELECTION

Key Attribute	Facility Site Conditions
Adequate Size	Adequate space for the Facility layout exists within the property, with additional adjacent property available for ancillary equipment and temporary construction laydown and parking.
Compatible Land Characteristics and Use	The Facility Site is located on a relatively flat parcel, formerly and currently used for agricultural purposes that has robust on-site natural gas and electric infrastructure. Major transportation features and other industrial uses are in proximity.
On-Site Natural Gas Interconnection	A REX 42-inch high pressure natural gas pipeline is located at the southern end of the Facility Site.
Natural Gas Supply Alternatives	There is an abundant, local, low-cost supply of natural gas in the region, including Utica and Marcellus shale gas.
On-Site Electrical Interconnection	An AEP 765-kV transmission line corridor is located at the southern end of the Facility Site requiring minimal new electrical infrastructure to transmit electricity to the grid.
Adequate Water Supply and Wastewater Discharge	The Village of Byesville has adequate capacity to supply water and wastewater services such that community water use will not be adversely affected.
Strong Transportation Network	The Facility Site is located in close proximity to major highways (e.g., I-70 and I-77) as well as rail.
Lack of Significant Environmental Constraints	The Facility Site is located in an attainment area with respect to National Ambient Air Quality Standards (NAAQS) for all criteria pollutants; the Facility can be accommodated with limited environmental impact.

(4) Project Schedule

The Facility schedule is based on the submission of this Application in March 2017, the issuance of the OPSB certificate by October 2017, and the commencement of commercial operation by the third quarter of 2020 in order to meet the anticipated demands within the PJM marketplace.

Any delay in the issuance of the OPSB certificate would have a significant negative commercial impact on the Facility's planned year end 2020 operations and would jeopardize the

Facility's ability to meet contractual PJM needs, as well as lowering the availability of capacity in Ohio during wintertime conditions when load demands are high.

GPS intends to bid into PJM's Capacity Auction in May 2018 and subsequent Incremental Auctions for delivery of Facility capacity beginning in October 2020. If development delays occur, including issuance of permits, GPS will be subject to substantial financial penalties by PJM, since PJM would be relying upon capacity not operational by the committed date.

GPS is confident that this schedule is achievable and that the Facility will be producing electricity by October 2020 when the State of Ohio needs new electricity resources. The Facility schedule is provided in Figure 02-2.

(B) ADDITIONAL INFORMATION

(1) Description of Future Plans/Plans for Future Additions

No additional generating units are planned on the Facility Site.

(2) Applicant Information

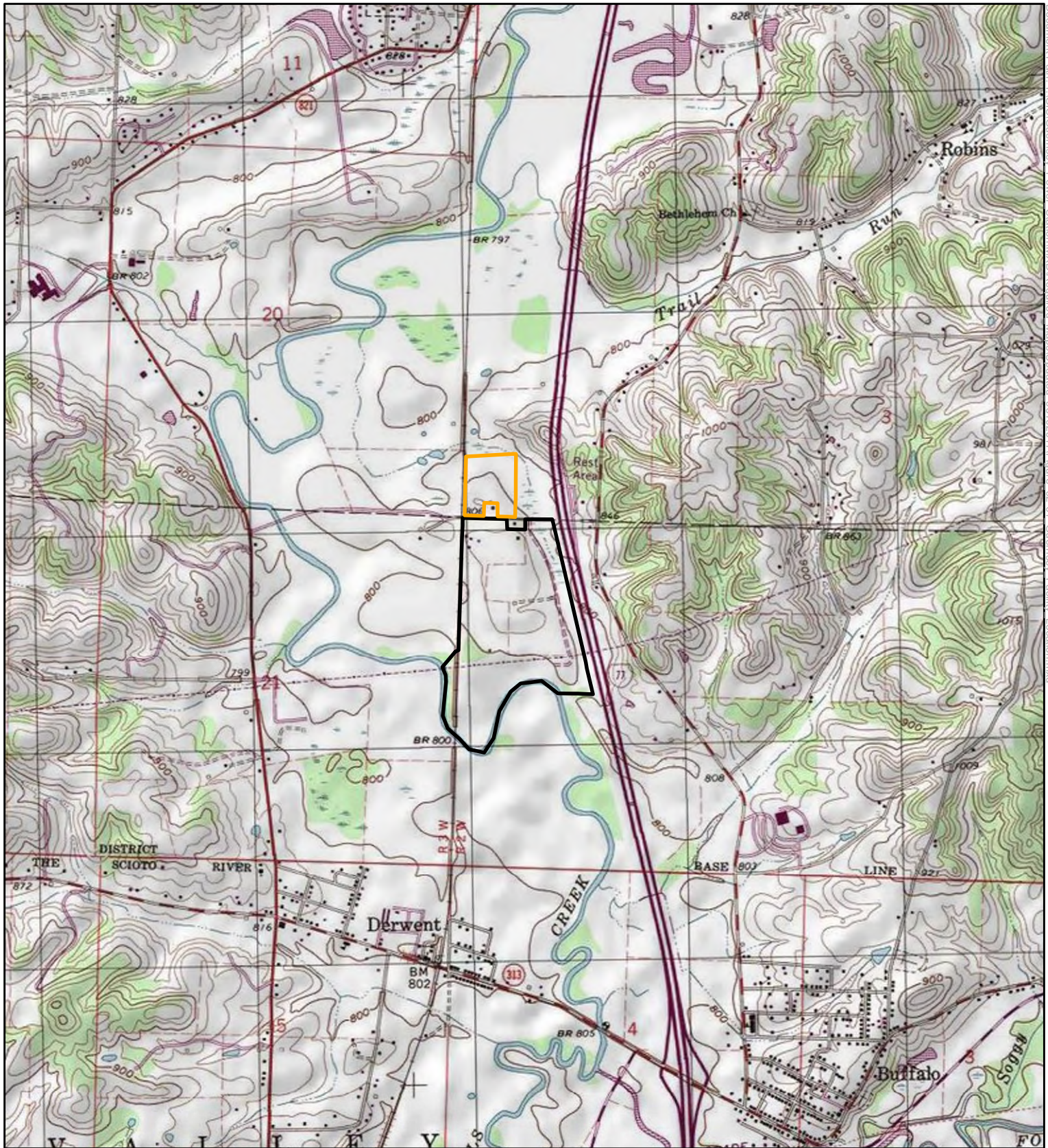
GPS is a limited liability company for the purpose of developing, owning, and operating the Facility. GPS is being jointly developed by Apex Power Group, LLC and Caithness Energy, L.L.C.

Apex is a privately held power generation development company founded in 2007. Apex has successfully completed two major power generation projects: the Pio Pico Energy Center, a 300-MW peaking and load-following plant in San Diego County, California; and the Panoche Energy Center, a 400-MW peaking plant in Fresno County, California. Apex is also developing Neches Station, a quick-start, gas-fired combined-cycle facility capable of producing between 450 to 900 MW, located in Cherokee County, Texas.

Caithness is an independent power producer engaged in the development of power plants including renewable energy and natural gas-fired facilities in the United States. Over the last 40 years, Caithness has successfully developed, operated, and owned interests in more than 42 power projects across the United States. Caithness recently partnered with Moxie Energy LLC to develop the Caithness Moxie Freedom Generating Station in Luzerne County, Pennsylvania, a 1,029-MW natural gas-fired generating facility that is currently under construction and targeted to be on line in mid-2018. Other recent achievements include: development and construction of the Shepherds Flat Wind Farm, an 845-MW wind energy facility located in eastern Oregon; and development and construction of the Caithness Long Island Energy Center, a 350-MW gas-fired facility that has been providing Long Island, New York with reliable power since 2009.

Section 4906-4-02: Figures

- **Figure 02-1: Facility Location**
- **Figure 02-2: Project Schedule**



Legend

Facility Site

Proposed Laydown/Parking

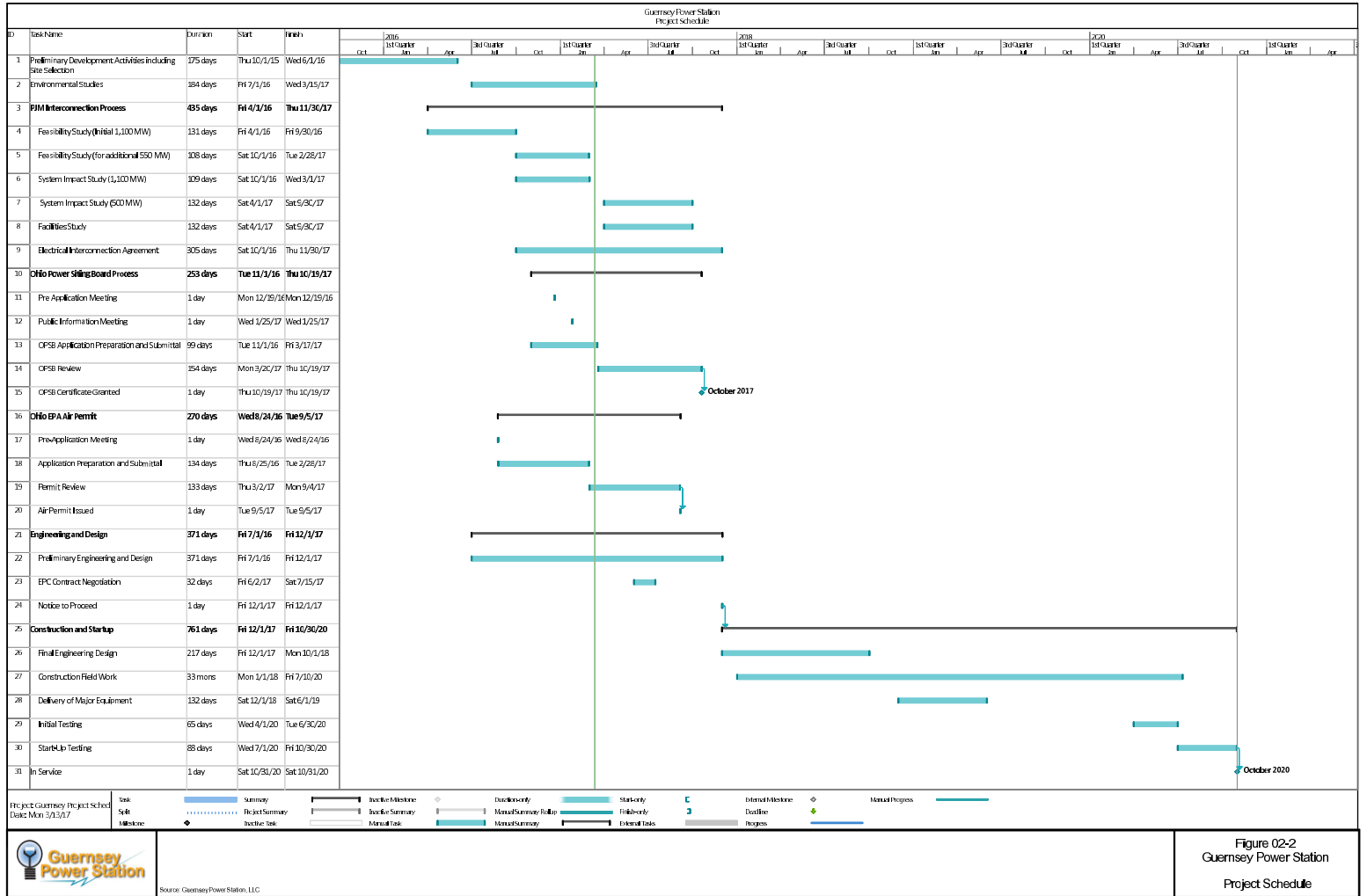
0 500 1,000 2,000 Feet

USGS 7.5 Minute Topographic Quad: Byesville, OH (1975)
 Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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Figure 02-01
Guernsey Power Station

Facility Location

Guernsey County, Ohio



4906-4-03 Project Description and Schedule

(A) DETAILED DESCRIPTION OF THE PROJECT AREA

(1) Project Map

Figures 03-1A and 03-1B identify: the proposed Facility; major population centers and administrative boundaries; major transportation routes and utility corridors; named rivers, streams, and other bodies of water; and major institutions, parks, and recreational areas within a 2-mile radius of the Facility Site and the Laydown and Parking Area.

(2) Project Area

The 118-acre Facility Site and the 15-acre Laydown and Parking Area comprise the 133-acre Project Area. The Facility Site is comprised of several parcels that GPS has optioned to purchase; the Laydown and Parking Area will be leased.

Figure 03-2 depicts the proposed Facility layout overlain within the boundaries of the Facility Site. Additional detail is provided in Figure 03-3, a general arrangement drawing that labels the various Facility components. A computer-generated color rendering of the Facility is included as Figure 03-4.

(B) PROPOSED FACILITY DESCRIPTION

As shown in Figure 03-2, the proposed Facility is situated on the approximately 118-acre Facility Site. The following sections describe key aspects of the proposed Facility.

(1) Project Details

The Facility will utilize combined-cycle gas turbine technology consisting of three separate generating trains in a 1x1x1 configuration. Each power generating train will include: an integrated General Electric (GE) Model 7HA.02 CTG; a supplementary-fired HRSG; a STG; and an ACC. Additional auxiliary equipment to support the Facility will include an auxiliary boiler, two natural gas heaters, two emergency diesel generator engines, and an emergency diesel fire pump engine.

The CTGs, duct burners, auxiliary boiler, and natural gas heaters will be fired solely with natural gas, while the emergency diesel generator engines and emergency fire pump engine will operate on ultra-low-sulfur distillate (ULSD).

(a) Generation Units

The Facility is designed to be a nominal net 1,650-MW electric generating facility and will consist of three GE Model 7HA.02 CTGs, each capable of generating a nominal output of approximately 550 MW and a maximum output of approximately 600 MW. The Facility will be capable of operating up to 8,760 hours per year, although actual hours of operation will be dependent upon energy needs in the region and will incorporate downtime for planned and unplanned maintenance events. Based on power market data for southeastern Ohio, it is anticipated that the Facility will initially operate 85 to 95 percent (%) of the year. Each CTG will exhaust through a dedicated HRSG to generate steam from the waste heat energy in the exhaust gas. Each HRSG will be equipped with supplemental firing via a duct burner. The duct burners will provide additional thermal energy to the HRSG to provide more steam to the STG during periods of increased electricity demand.

Steam generated in each of the three HRSGs will be expanded through a single multi-stage, reheat-condensing STG. The discharge steam from the STG will be directed to an ACC. The ACCs directly condense exhaust steam from each STG by using indirect heat exchange with the ambient air, rather than utilizing water for cooling. Mechanical power produced by the steam turbines will be converted to electric power via the connected generators.

(b) Description of Wind Turbine Equipment

Since the proposed Facility does not include the installation of any wind turbine equipment, this section is not applicable.

(c) Fuel Quantity and Quality

The fuel will be natural gas supplied at an approximate pressure of 1,400 pounds per square inch gauge (psig). The natural gas provider will deliver fuel to a new on-site Facility metering station. A liquids removal, pre-heating system, and metering will be installed as part of the natural gas fuel system. The high efficiency gas turbines will require that the natural gas has a pressure of about 600 psig upon entry to the CTGs. Table 03-1 is a summary of the natural gas characteristics.

**TABLE 03-1
FUEL CHARACTERISTICS**

Characteristics	Natural Gas
Ash (%)	--
Sulfur Content (grains per 100 dry standard cubic feet)	0.5
British thermal unit (Btu) Value (Btu/cubic foot, higher heating value)	1,028

(d) Pollutant Emissions

Construction impacts on air quality will consist of relatively minor emissions from the construction equipment required for site preparation and from fugitive dust emissions. General construction vehicles (both gasoline- and diesel-powered) and other diesel-powered engines will emit insignificant amounts of volatile organic compounds (VOCs), sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen oxides (NO_x), and particulate matter (PM). These emissions are not expected to cause any significant adverse impact on the Facility Site or beyond the Project Area.

Atmospheric dispersion modeling has been performed to predict maximum concentrations for a range of Facility operating conditions and has confirmed that Facility impacts will be below NAAQS for all operating conditions. The model accounts for emission rates; HRSG stack heights of 180 feet; exhaust parameters; meteorological data (wind speed, direction, atmospheric stability, and temperature); and the topography around the Facility Site. The following is a list of the federal criteria pollutants that will be emitted from the Facility: SO₂; PM with a diameter of less than or equal to 10 micrometers (PM₁₀); PM with a diameter of less than or equal to 2.5 micrometers (PM_{2.5}); NO_x; CO; and VOCs. Several non-criteria pollutants will be emitted, including sulfuric acid mist (H₂SO₄), ammonia (NH₃), and formaldehyde.

The emission control technologies proposed for the CTG and duct burner exhaust gases include: dry low nitrogen oxide (DLN) combustors in the CTG; selective catalytic reduction (SCR) to control NO_x emissions; and an oxidation catalyst to control CO and VOC emissions.

DLN combustors will be integrated within each CTG. The DLN combustion control process reduces the formation of NO_x by controlling the flame temperature and oxygen (O₂) concentration at various points within the combustion process. SCR, a post-combustion chemical process, will be installed in each HRSG to treat exhaust gases downstream of the CTGs and duct burners. An oxidation catalyst system will be located within each HRSG to control emissions of CO and VOC. The SCR and oxidation catalyst will be located within the HRSG at the area with the optimum temperature for an efficient reaction. Emissions of SO₂, PM/PM₁₀/PM_{2.5}, and H₂SO₄ will be minimized through use of natural gas as the sole fuel in the CTGs and duct burners.

In addition, NO_x, CO, and NH₃ emissions from the CTGs at the Facility will be continuously tracked using a Continuous Emission Monitoring System (CEMS), and CO₂ emissions will be continuously monitored based on fuel flow measurements. In the unlikely event of control equipment failure, the failure would be immediately detected by the distributed control system and corrective actions would be initiated. It is unlikely that any unforeseen outage of pollution control systems would result in a significant impact before corrective actions could be taken.

(e) Water Volume Requirement

The Facility will use closed cycle ACCs rather than a traditional water-cooled condenser. The Facility will use an average of approximately 147,000 gallons per day (gpd) of water per unit (or approximately 441,000 gpd total) primarily as makeup to the steam cycle process. Figure 03-5A and B provide a water balance diagram showing summer and winter expected usage. While costly compared to wet cooling technologies, ACCs reduce water consumption by as much as 95% (compared to wet-cooling technologies), also minimizing the need for additional water treatment chemicals and significantly reducing wastewater generation.

Water needs of the Facility (including process water, fire protection, and sanitary use) will be met through a contract to supply water from the Village of Byesville. A letter from Byesville indicating its ability to serve the Facility's water and wastewater needs is attached as Appendix A.

Facility wastewater, made up primarily of blowdown water, will average 121,000 gpd per unit (363,000 for the total Facility); details of Facility wastewater generation are also shown in Figures 03-5A and B. Facility wastewater will be discharged to the existing

Village of Byesville Wastewater Treatment Plant (WWTP). If necessary, pre-treatment will occur at the Facility Site prior to discharge in order to meet existing National Pollutant Discharge Elimination System (NPDES) requirements at the WWTP. As noted above, Byesville has confirmed its ability to receive this discharge (Appendix A).

Stormwater flows from the developed Facility Site will be controlled through the use of detention ponds and other features. Preliminary stormwater control features are shown in Appendix B.

(2) Description of Construction Method and Project Components

(a) Generation Equipment

The Facility Site is generally level with elevations ranging from approximately 800 feet to 830 feet above mean sea level (amsl). The Facility Site will be graded prior to the start of construction. Several existing structures that are located on the Facility Site at the end of Puritan Lane and on Seneca Lane will be demolished prior to the start of construction. Approximately 50 acres of the Facility Site will be used for the Facility footprint, with the remaining area used for temporary construction workspace and site buffer. An additional approximately 15 acres will be used for construction laydown and parking across Seneca Lane, north of the Facility Site.

The Facility will include three separate generating trains, each consisting of a CTG with natural gas as the fuel, a HRSG, an STG and an ACC. The CTGs and STGs will be located indoors in a steam turbine building. Other major buildings and structures include the: ACCs; auxiliary boiler building; water treatment building; administration/control building; warehouse building; boiler feed pump building; and other assorted buildings and structures (see Figure 03-3). A rendering of the Facility is provided in Figure 03-4.

Dimensions of the above-identified facilities are provided in Table 03-2.

**TABLE 03-2
STRUCTURE AND BUILDING DIMENSIONS**

Building or Structure	Dimensions (feet)	Stack Height	Diameter
HRSG/Stack 1, 2, 3	150' L x 70' W x 130' H	180 feet	22 feet
Steam Turbine Building	184'L x 140'W x 75'H	--	--
Auxiliary Boiler Building/Stack	85'L x 68'W x 35'H	55 feet	51 inches
Water Treatment Building	150'L x 65'W x 25'H	--	--
Administration/Control Building	100'L x 65'W x 18'H	--	--
Warehouse Building	100'L x 90'W x 23'H	--	--
Boiler Feed Pump Building (#1,2,3)	95'L x 50'W x 25'H	--	--
Medium Voltage Electric Enclosure (#1,2,3)	75'L x 30'W x 20'H	--	--
ACC (#1,2,3)	284'L x 127'W x 128'H	--	--
Fin Fan Cooler (#1,2,3)	60'L x 60'W x 30'H	--	--
Emergency Diesel Generators	30'L x 12'W x 15'H	16 feet	1.33 feet
Fuel Gas Start Up Heaters 1 & 2	--	25 feet	36 inches
Emergency Diesel Fire Pump	--	12 feet	6 inches (horizontal)

(b) Storage Facilities

On-site storage facilities will be provided for water, fuel, and other materials required for Facility operations. Table 03-3 outlines the proposed on-site storage facilities.

**TABLE 03-3
STORAGE FACILITIES**

Facility	Size	Volume
Aqueous NH ₃ Storage Tank	144" diameter x 45'6" H	35,000 gallons
Service Water Tank	80' diameter x 65' H	1.8 million gallons
Demineralized Water Tank	46' diameter x 40' H	600,000 gallons
HRSG Blowdown Tank	9' diameter x 9' H	4,286 gallons
STG Drain Tank	110" diameter x 145" H	7,150 gallons
Water Wash Drain Tank	7' diameter x 21' H	6,000 gallons
Hydrogen Storage Bottles	Trailer - 24' L x 8' W x 9' H	53,623 cubic feet (38 tubes)
Seal Oil Storage Tanks	--	11,250 gallons

Facility	Size	Volume
ULSD Storage Tanks (2 for emergency diesel generators and 1 for emergency fire pump engine)	--	300 gallons (each)

All storage tanks requiring secondary containment will be designed to meet or exceed applicable regulations. Containment systems will be placed in unloading areas, as needed, to catch and contain any released material.

In association with ancillary equipment, as described in Section 4906-4-03(B)(2)(g) of this application, two 300-gallon double containment ULSD storage tanks will be incorporated to fuel the emergency diesel generator engines and one 300-gallon double containment ULSD storage tank will be incorporated for the emergency fire pump engine.

(c) Processing Facilities

No additional processing facilities will be located at the Facility Site.

(d) Water Supply and Discharge

The Facility's water supply will come from the Village of Byesville Water Department to meet all of the Facility's water needs.

Facility wastewater will be discharged to the Village of Byesville WWTP. Facility wastewater will be consistent with WWTP acceptance requirements to allow the WWTP to continue to comply with its existing NPDES permit.

(e) Transmission Facilities

The Facility will interconnect to the AEP 765-kV Kammer-Vassell electric transmission line, located on the Facility Site. The electrical infrastructure, to be located on the Interconnection Property south of the Facility Site, will include an electrical

interconnection, substation, and switchyard, and will be the subject of a separate filing with the OPSB.

GPS will obtain natural gas delivery from the on-site 42-inch diameter REX natural gas pipeline. A new gas metering station to be owned and operated by REX will be located onsite. GPS will construct, own and operate a low pressure fuel gas regulating skid, fuel gas filter/separator, fuel gas heaters, and associated equipment to fuel the CTGs.

(f) On-Site Electric Components

A step-up transformer, switchyard, and switchyard electrical building will be located at the Facility Site. Electricity will be generated at the Facility in units of approximately 23,000 volts (23.0 kV) and each unit will have a generator step-up transformer from 23.0 kV to 230,000 volts (230 kV). The 230-kV lines will merge in the Facility electrical yard and a common electric transmission line will be routed south to the new switching substation south of the Facility Site, where the voltage will be stepped up to 765 kV and transmitted via a 765-kV circuit to the onsite AEP electric transmission line. The 230-kV electric circuit, 230/765-kV substation, switchyard, and 765-kV circuit will be the subject of a separate OPSB filing to be submitted by GPS.

(g) Ancillary Facilities

In addition to the power generation equipment, the Facility will include various ancillary facilities, including: a fire protection system, two stand-by emergency diesel generators, aqueous ammonia storage containing <20% aqueous ammonia solution (either one or two tanks, depending upon final design details), two natural gas heaters, and an auxiliary boiler.

(h) Meteorological Towers

Since the proposed Facility does not include the installation of any meteorological towers, this section is not applicable.

(i) Transportation Facilities

The Facility Site is located in close proximity to a strong transportation network, including major highways (I-70 and I-77). Access during construction and operations will be generally via I-77, with vehicles traveling to the Facility Site via Clay Pike Road, Marietta Road, and Seneca Lane to the new plant entrance at Puritan Street.

(j) Laydown and Parking Areas

An adjacent property is proposed for temporary laydown and parking during Facility construction. This adjacent parcel is the approximately 15-acre Laydown and Parking Area, which is located north of the Facility Site, across Seneca Lane. Approximately 9.8 acres in the northwestern corner of the Facility Site will also be used for laydown and construction parking.

(k) Security

There will be no public access to the proposed Facility. A security fence will be installed around the Facility with card-activated gates and Facility operator access control. All appropriate North American Electric Reliability Corporation (NERC) standards for physical and/or cyber security will be met by the Facility.

(l) Other Installations

No other installations are associated with the Facility.

(3) Description of New Transmission Facilities

(a) Electric Transmission Line

Power leaving the Facility generators will be “stepped up” to 765 kV prior to being conveyed to the PJM power grid. Power will be generated in units of approximately 23.0 kV and each unit has a generator step-up transformer from 23.0 kV to 230 kV. The 230-kV lines will merge in the Facility’s electrical switchyard. Four auto transformers located within the switchyard will boost the power from 230 kV to 765 kV. The transmission line will be routed south to a new 765-kV switching substation located within the Interconnection Property south of the Facility Site.

The off-site electrical components associated with the Facility will be the subject of a separate filing with the OPSB.

(b) Natural Gas Pipelines

The Facility is designed to burn natural gas as its primary fuel to make electricity. Assuming that the Facility is operating at net output of 1,650 MW, it will consume approximately 262,000 million cubic feet (MMcf) per day of natural gas, or an hourly consumption of approximately 11,000 MMcf.

In addition, an approximate gas pressure of about 600 psig is required when delivered to the Facility’s CTGs, consistent with most modern-day efficient CTGs; this is well under the expected delivery pressure of 1,400 psig.

(4) Map of Project Site

Figure 03-2 illustrates the proposed Facility on an aerial photograph overlain with the Facility layout, showing surrounding road names and major features of the proposed Facility.

(C) DETAILED PROJECT SCHEDULE

(1) Schedule

The electrical interconnection planning stages for the Facility began in 2016, with an ultimate goal of being fully functional and operational by third quarter 2020 in order to sell capacity/energy into the grid by October 2020. PJM's Capacity Auction process dictates the timeline as to when capacity should be made available. GPS anticipates participating in the Base Residual Auction for the 2021/2022 Delivery Year which will be held in May 2018, three years prior to the start of the Delivery Year (June 1, 2020 – May 31, 2021). GPS also anticipates participating in one or more of the Incremental Auctions for the 2020/2021 Delivery Year which are held as follows:

- First Incremental Auction: September 2018, 20 months prior to start of the Delivery Year;
- Second Incremental Auction: July 2019, 10 months prior to start of the Delivery Year; and
- Third Incremental Auction: February 2020, 3 months prior to start of the Delivery Year.

With a goal of Facility operation by fall 2020, GPS anticipates having all essential permits approved by fall 2017. Once permits are obtained, financing can be concluded and construction can begin.

Figure 02-2 provides the proposed Facility schedule for major activities and milestones. This schedule is based on the submission of this Application in March 2017, the receipt of the OPSB certificate by October 2017, and placing the Facility into commercial operation by the third quarter of 2020.

(2) Construction Sequence

Initial construction activities will commence following certification by the OPSB, receipt of other environmental permits, and financial close. Site preparation and demolition, grading, Facility Site access, stormwater management, and underground utilities will be completed, followed by equipment foundations.

As equipment foundations are completed, CTGs, tanks, pumps, and electric equipment will be installed. During this same period, electrical cable, piping, and pre-engineered metal buildings will be installed. As the various equipment components are installed, system checkout and testing activities will be performed to ensure the Facility conforms to design specifications. After completing checkout, inspection, and testing activities, the Facility will be started up for operation.

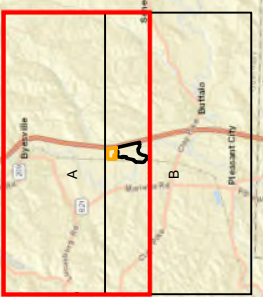
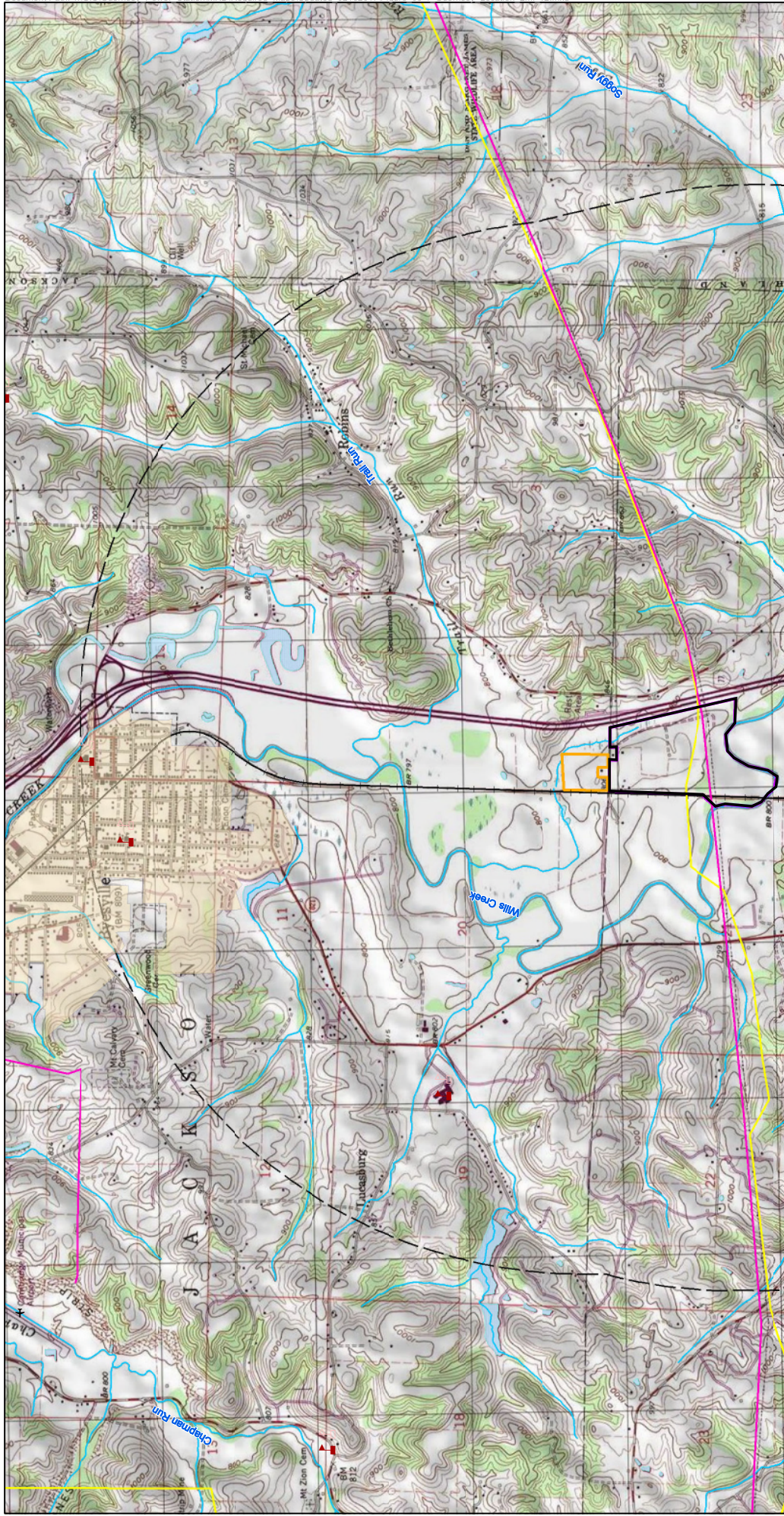
In conjunction with initial startup and testing of the Facility, finish coatings, insulation, paving, and landscaping activities will be completed.

(3) Delays

It is crucial that the proposed in-service date of third quarter 2020 be achieved in order to meet the anticipated load demand. GPS intends to enter the PJM Capacity Auction to be held in May 2018 as well as Incremental Auctions for delivery of power starting in the fall of 2020. Therefore, the OPSB certificate must be issued prior to financial close in the fall of 2017 in order for the Facility to be completed on schedule. A delay in the schedule before the beginning of construction would jeopardize the Facility's ability to meet wintertime demand in 2020-2021, potentially lowering the region's available capacity during winter conditions and resulting in significant performance penalties payable by GPS for not meeting PJM's contractual performance date.

Section 4906-4-03: Figures

- **Figure 03-1A and B: Facility Location within Two Miles**
- **Figure 03-2: Proposed Facility and Vicinity**
- **Figure 03-3: General Arrangement**
- **Figure 03-4: Facility Rendering**
- **Figure 03-5A and B: Water Balance**



Legend

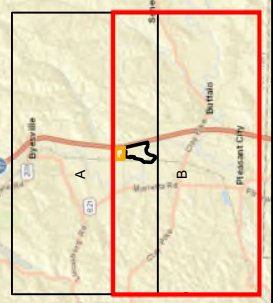
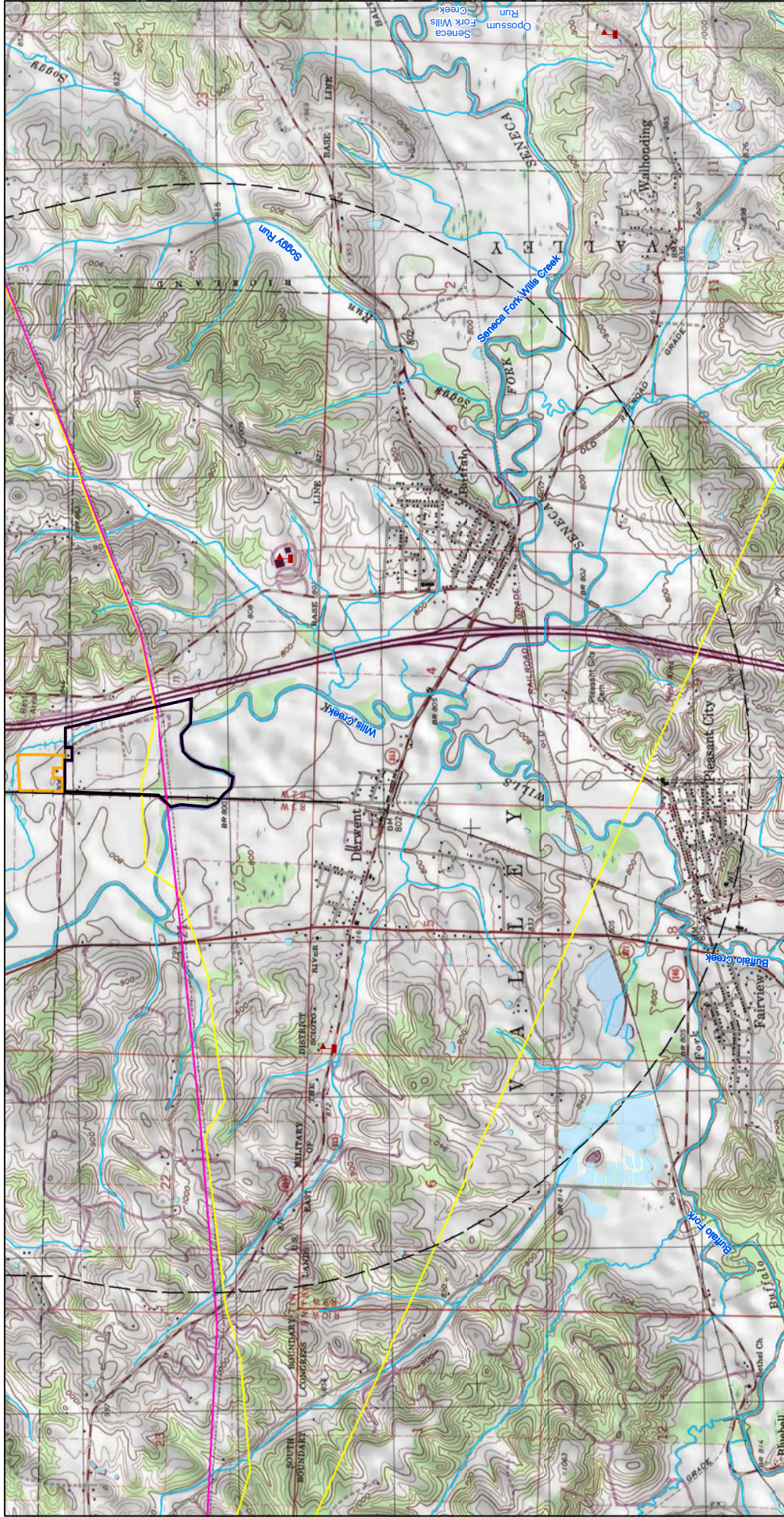
- Facility Site
- Proposed Laydown/Parking
- Schools
- 2-Mile Radius
- Stream/River
- Lake/Pond
- City/Town
- Railroads
- Transmission Line
- Natural Gas Pipeline
- Airport



Figure 03-1 A
Guernsey Power Station
Facility Location within Two Miles

Sources: Streams/Waterbodies - NHD, Railroads/City/Town - Ohio DOT TMS, Transmission/Gas Lines - Adapted from Verityx data, Schools/Airports - Mapourzin, Ohio Points of Interest

Guernsey County, Ohio



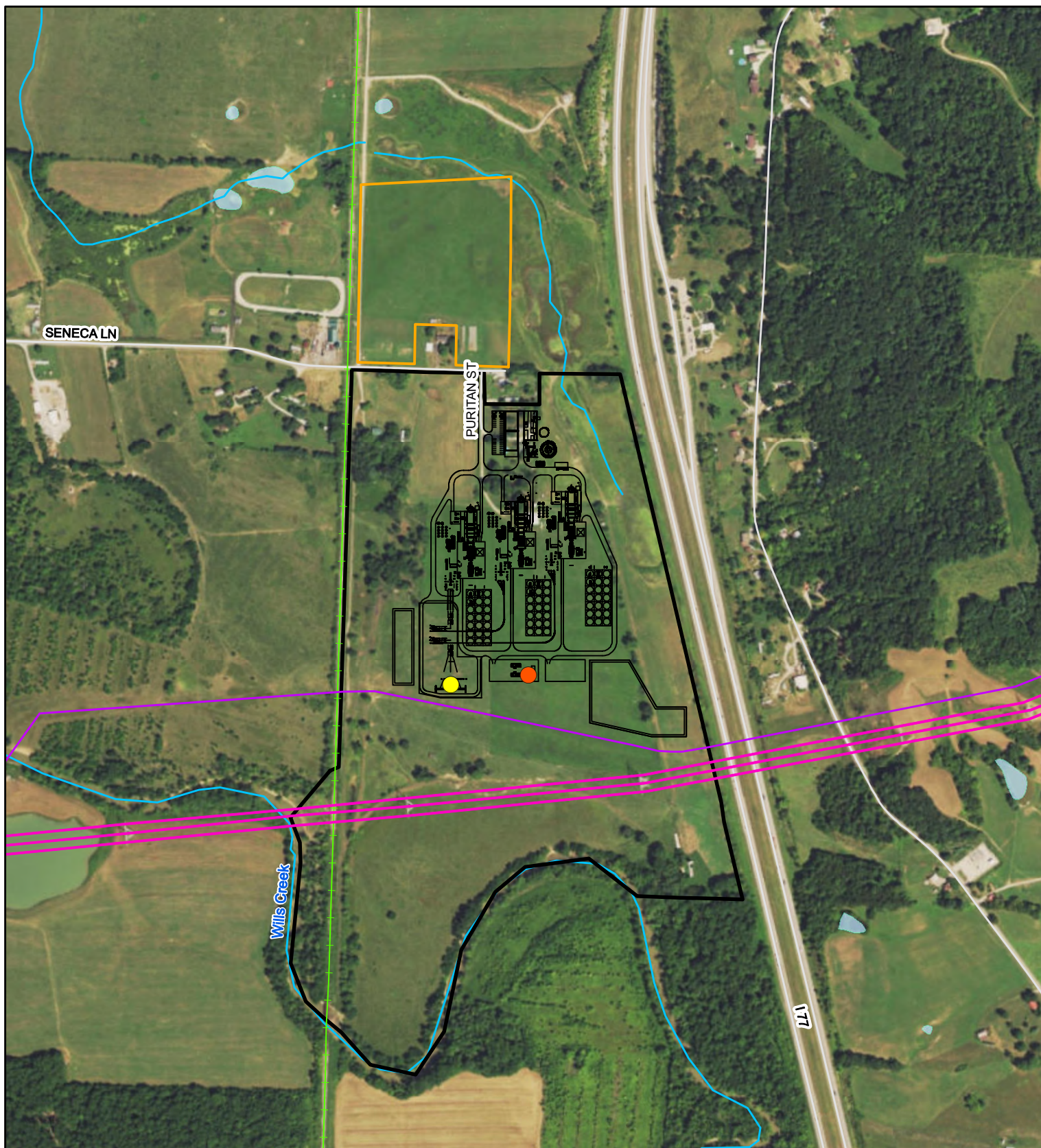
Legend

- Facility Site
- Proposed Laydown/Parking
- Schools
- 2-Mile Radius
- Stream/River
- Lake/Pond
- City/Town
- Railroads
- Transmission Line
- Natural Gas Pipeline
- Airport



Figure 03-1 B
Guernsey Power Station
Facility Location within Two Miles

Sources: Streams/Waterbodies - NHD, Railroads/City/Town - Ohio DOT TMS, Transmission/Gas Lines - Adapted from Vertix data, Schools/Airports - Mapouruzin: Ohio Points of Interest



Legend

- | | | |
|--------------------------|---|--|
| Facility Site | Roads | Point of Interconnection (electrical) |
| Proposed Laydown/Parking | Railroads | Point of Interconnection (natural gas) |
| Facility Site Layout | AEP 765-kV Krammer-Vassel Transmission Line | |
| Stream/River | REX 42-inch Diameter Natural Gas Pipeline | |
| Lake/Pond | | |



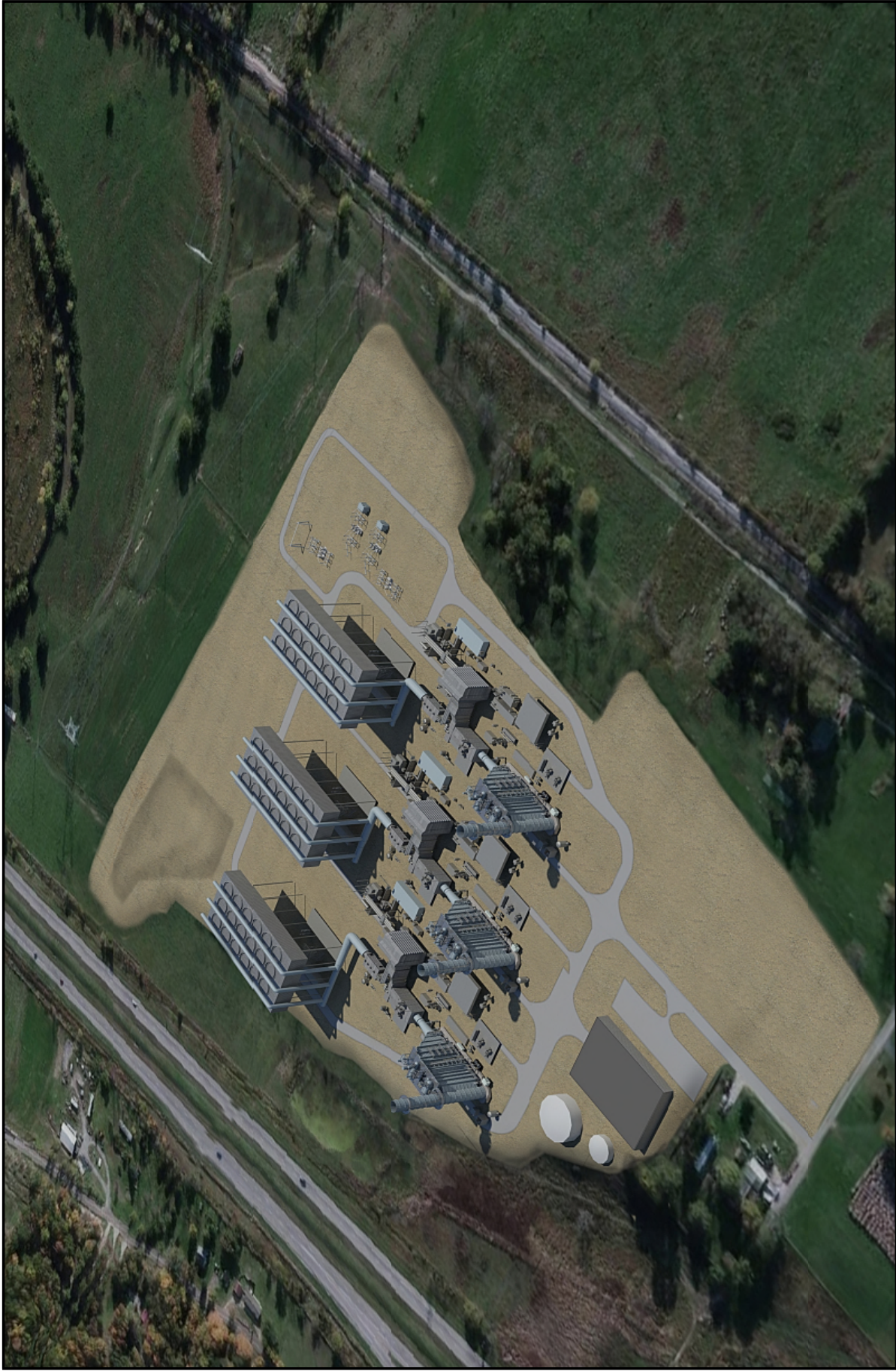
Figure 03-2
Guernsey Power Station

Proposed Facility and Vicinity

Sources: Streams/Waterbodies - NHD, Roads - OGRIP LBRS, Railroads - Ohio DOT TIMS, Transmission/Gas Lines - Adapted from Ventyx data

0 500 1,000 Feet

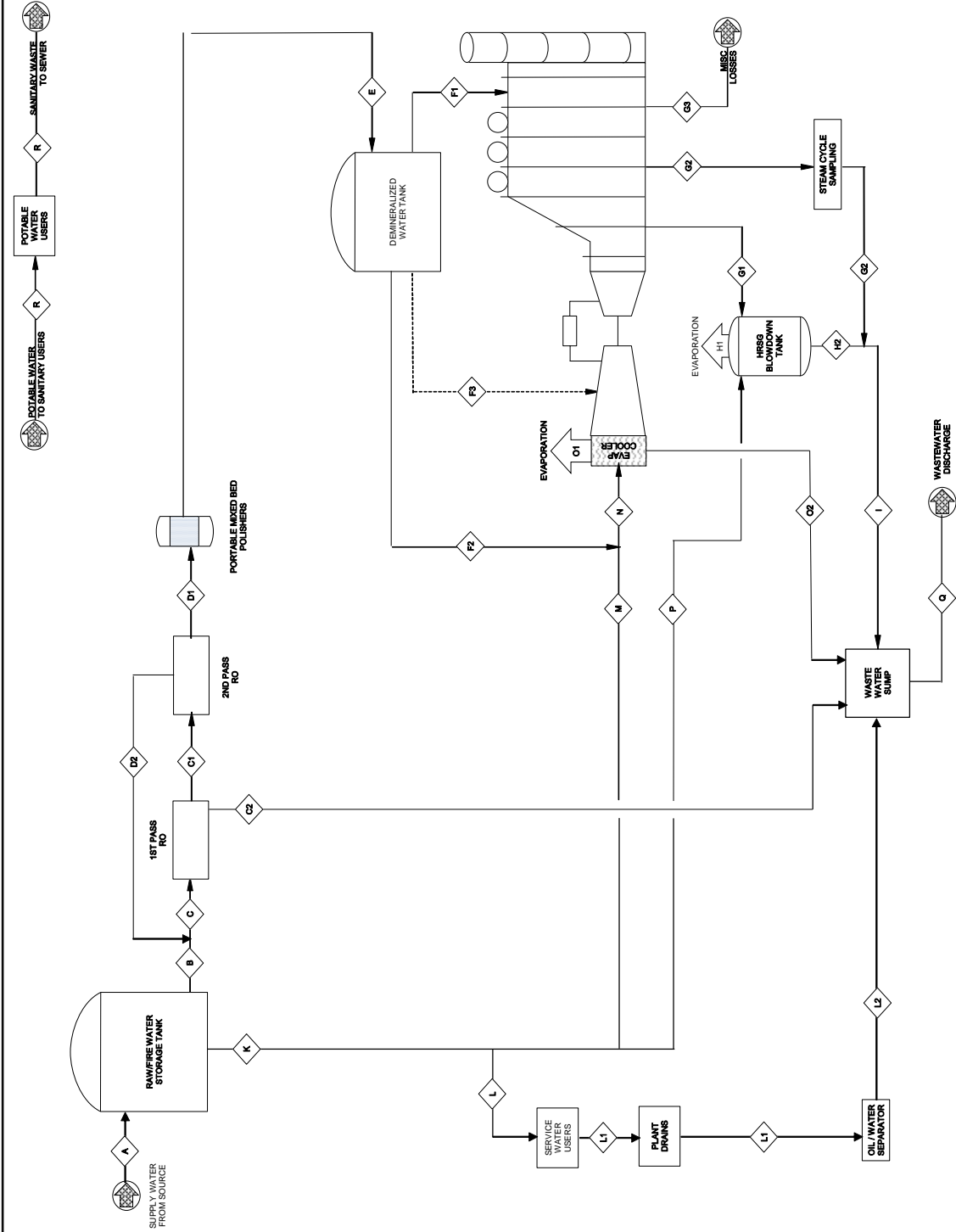
Guernsey County, Ohio



Source: Guernsey Power Station, LLC

Figure 03-4
Guernsey Power Station
Facility Rendering

Guernsey County, Ohio



Source: URS Corporation

- PRELIMINARY -
NOT FOR CONSTRUCTION

Guernsey Power Station, LLC

1 x 1 COMBINED CYCLE



Figure 03-5 A
Guernsey Power Station

Water Balance

Guernsey County, Ohio

ESTIMATED STREAM FLOWRATES

PLANT DESIGN		Case 6	Case 2	Case 4	Case 5	Case 1	Case 3
AMBIENT CONDITIONS		30F/60%RH	59F/60%RH	92F/60%RH	30F/60%RH	59F/60%RH	92F/60%RH
PLANT GROSS OUTPUT (MW)		544.3	531.5	494.8	615.6	602.7	563.8
EVAP COOLER STATUS		OFF	OFF	ON	OFF	OFF	ON
DUCT BURNER STATUS		Unified	Unified	Unified	Fired	Fired	Fired
TYPE OF SOURCE FUEL		Gas	Gas	Gas	Gas	Gas	Gas
QUANTITY OF CTS OPERATING		1	1	1	1	1	1
STREAM	PARAMETER	Case 6	Case 2	Case 4	Case 5	Case 1	Case 3
A	PLANT MAKEUP	82	80	109	102	104	132
B	DEMINERALIZER MAKEUP	41	41	49	51	50	59
C	1ST PASS RO INFLUENT	45	44	53	55	54	64
C1	1ST PASS RO PERMEATE (2ND PASS INFLUENT)	33	33	40	41	41	48
C2	1ST PASS RO REJECT	11	11	13	14	14	16
D1	2ND PASS RO PERMEATE	30	30	36	37	37	43
D2	2ND PASS RO REJECT	3	3	4	4	4	5
E	DEMIN WATER TO STORAGE TANK	30	30	36	37	37	43
F1	HRSG MAKEUP	30	30	30	37	37	37
F2	DEMIN WATER FOR CT WATER WASH	0	0	6	0	0	6
F3	HRSG BLOWDOWN	19	19	19	26	26	26
G1	STEAM CYCLE SAMPLING LOSSES	6	6	6	6	6	6
G2	MISCELLANEOUS STEAM CYCLE LOSSES	5	5	5	5	5	5
G3	HRSG BLOWDOWN TANK EVAPORATION	4	4	4	5	5	5
H1	HRSG BLOWDOWN TANK BLOWDOWN	51	48	50	68	69	69
H2	HRSG BLOWDOWN AND STEAM SAMPLING LOSSES	57	55	56	74	75	75
I	TOTAL SERVICE WATER USAGE	41	39	60	52	54	73
L	PLANT DRAINS	5	5	5	5	5	5
L1	OWS EFFLUENT	5	5	5	5	5	5
L2	SERVICE WATER FOR EVAP COOLER MAKEUP	0	0	19	0	0	19
M	COMBINED EVAP COOLER MAKEUP	0	0	28	0	0	28
N	EVAP COOLER EVAPORATION	0	0	24	0	0	24
O1	HRSG BLOWDOWN TANK QUENCH WATER	36	34	35	47	48	49
P	WASTEWATER DISCHARGE	73	71	76	93	93	98
Q	POTABLE WATER	2	2	2	2	2	2
R							

NOTES

1. MAX INST FLOWS ARE CALCULATED BASED ON THE ASSUMPTIONS OUTLINED IN NOTES AND USED ONLY FOR LINE AND PUMP AND LINE SIZING. THESE FLOWS WILL BE BUFFERED BY TANKAGE AND THE SIZE OF THE SUMP PUMPS WILL DETERMINE DISCHARGE FLOWRATE.

- PRELIMINARY -
NOT FOR CONSTRUCTION

Guernsey Power Station, LLC

1 x 1 COMBINED CYCLE



Figure 03-5B
Guernsey Power Station
Water Balance

Guernsey County, Ohio

ESTIMATED SEASONAL WATER USAGE

Hb Case # Ambient Conditions Plant Gross Output, MW Evap Cooler Status DB Status Qty of CTs Operating	Winter Operations		Fall-Spring Operations		Summer Operations		TOTAL
	6 30F/60% RH 544 OFF Unified 3	5 30F/60% RH 620 OFF Fired 3	2 59F/60%RH 532 OFF Unified 3	1 59F/60%RH 602 OFF Fired 3	4 92F/60% RH 563 ON Unified 3	3 92F/60% RH 563 ON Fired 3	
Operating Hours	1,000	1,000	1,800	1,800	1,000	1,000	7,600
MWh/Period - Predicted	544,000	620,000	597,600	1,083,600	583,000	583,000	4,331,200
MWh/Period - Maximum	595,680	676,900	1,165,080	1,316,380	616,485	616,485	4,991,010
Capacity Factor, %	91.3%	91.3%	82.2%	82.2%	91.3%	91.3%	
Instantaneous Plant Makeup, gpm	247	307	240	312	327	396	
Plant Makeup, gallons/day	5,936	7,372	5,750	7,494	7,847	9,506	
Plant Makeup, gallons/period	14,840.521	18,429.373	25,876.382	33,755.029	19,616.576	23,764.052	138,253,934
Instantaneous Wastewater Discharge, gpm	220	278	214	280	228	293	
Wastewater Discharge, gallons/day	5,276	6,682	5,136	6,729	5,476	7,022	
Wastewater Discharge, gallons/period	13,190,244	16,654,648	23,111,745	30,282,552	13,690,158	17,555,788	114,485,145

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Summary: Application of Guernsey Power Station, LLC Part 1 - Application Text electronically filed by Teresa Orahod on behalf of Sally W. Bloomfield