060220-EC

SEMINOLE ELECTRIC COOPERATIVE, INC.

Petition to Determine Need for

Electric Power Plant

March 2006

Direct Testimony of:

Michael P. Opalinski

Seminole Electric
COOPERATIVE INC.
IN PARTNERSHIP WITH THOSE WE SERVE

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

SEMINOLE ELECTRIC COOPERATIVE, INC.

DIRECT TESTIMONY OF MICHAEL P. OPALINSKI

DOCKET NO. 060220-EC

MARCH 10, 2006

Q. Please state your name, occupation and business address.

A. My Name is Michael P. Opalinski, and I am employed by Seminole Electric Cooperative (Seminole) as Vice President of Technical Services. My business address is 16313 North Dale Mabry Highway, Tampa, Florida 33618.

Q. Please describe your duties and responsibilities.

A. In my position I am responsible for the Fuels and Transmission Services Departments and the Generation Engineering and Environmental Affairs Sections. The Fuels Department is responsible for the purchase and delivery of all fuels for Seminole's electric generating facilities. The Transmission Services Department is responsible for the planning, construction and maintenance of transmission lines and substations. The Generation Engineering Section is responsible for the design and construction of major capital projects at Seminole's operating facilities and new generating projects, including the development of feasibility and economic studies for new self-build projects. The Environmental Affairs Section is responsible for compliance of Seminole's generating and transmission facilities with existing regulatory permits and requirements, site selection of new generating and transmission facilities, and securing necessary permits for all new projects, including the development of permitting feasibility analyses and the preparation and processing of permit applications.

Q. Please describe your educational background and business experience.

A. I graduated with a Bachelor of Science degree in Biology and Chemistry from Florida Southern College in 1970. After receiving my degree, I was employed by the City of Lakeland, Florida Electric and Water Department as a Chemist at the Larsen and McIntosh Power Plants. After serving as an officer in the United States Air Force, I returned to the City of Lakeland in 1974 to develop its environmental compliance program and manage environmental permitting for the McIntosh Unit 3 coal, oil and municipal refuse project.

In 1980, I began my career as the Environmental Manager for Seminole Electric Cooperative and was responsible for permit compliance during the construction and operation of Units 1 and 2 at the Seminole Generating Station (SGS). I was also responsible for site selection and permitting of new generation and transmission projects, which included Seminole's Taylor Project, a 1200 MW coal fired facility that was cancelled in 1983, the 572 MW Payne Creek Generating Station combined cycle unit in Hardee County, the 310 MW Payne Creek Peaking Project currently under construction, and numerous 230 kV transmission projects. Finally, I was responsible for the conversion project to produce wallboard grade synthetic gypsum from the SGS desulfurization waste and the business arrangement with Lafarge Gypsum to construct a wallboard manufacturing facility at the SGS.

In 2002, I was promoted to Director of Environmental and Engineering Services with the added responsibility of managing the Generation Engineering Section. In this position, I oversaw the technical and economic evaluations which led to the construction of the Payne Creek Peaking Project utilizing fast start aero-derivative combustion turbine technology. In 2004, I was promoted to my current position.

Q. Have you testified before this Commission previously?

A. Yes. I testified on behalf of Seminole in Docket No. 880309-EC (Determination of Need for Hardee Power Station Units 1 and 2) and Docket No. 931212-EC (Determination of Need for Hardee Power Station Unit 3).

Q. What is the purpose of your testimony?

A. My testimony addresses the proposed Seminole Generating Station Unit 3 (SGS Unit 3), for which Seminole is seeking a determination of need in this proceeding. Specifically, my testimony will:

- describe the technical evaluation process that led to Seminole's selection of SGS Unit 3, a 750 MW (net) supercritical pulverized coal-fired unit, as its self-build alternative;
- describe the SGS site;
- describe the existing SGS Units 1 and 2;

- present a technical overview of the proposed SGS Unit 3;
- describe the environmental compliance measures planned for SGS Unit 3;
- describe the cost, schedule and economic benefits of SGS-3; and
- describe Seminole's experience in permitting, building and operating power plants.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring the following exhibits:

- Exhibit MPO-1 – Site Location Map – Putnam County
- Exhibit MPO-2 – Site Arrangement with SGS Unit 3
- Exhibit MPO-3 – SGS Unit 3 Project Capital Cost Components

Q. Are you sponsoring any portions of the Need Study document?

A. Yes. I sponsor Sections IV.A, IV.B, IV.D, IV.F, IV.G, IV.I and IV.J and co-sponsor Section IV.C of the Need Study.

I. TECHNICAL EVALUATION PROCESS

Q. How did Seminole determine what would be the most appropriate self-build generating alternative?

A. Seminole commissioned Burns & McDonnell, a consulting engineering firm with extensive experience in both evaluating and managing the construction of coal-fired power plants, to conduct a feasibility study to identify the best suited self-build alternatives for Seminole and the cost of those alternatives. Seminole requested that

Burns & McDonnell evaluate the site and water supply requirements, capital costs, operating and maintenance costs, performance, and schedule for a pulverized coal unit (sub-critical or super-critical steam cycle) or a natural gas combined cycle unit, and to make a determination if development of integrated gasification with combined cycle (IGCC) had reached commercial status.

Seminole did not recommend that circulating fluidized bed (CFB) boiler technology be included in the Burns & McDonnell alternatives assessment. At the time of the assessment, the largest operating CFB unit was approximately 300 MW, so multiple units would have been necessary to obtain the needed output. In addition, Seminole determined that its fuel delivery system would not allow it to take advantage of burning multiple lower ranked fuels; that emissions from a CFB were essentially comparable to a state of the art pulverized coal unit utilizing Best Available Control Technology; that wallboard grade gypsum could not be produced from a CFB unit; and that the Seminole site could not accommodate the on-site disposal of the significant amounts of combustion by-products generated.

Burns & McDonnell completed its initial feasibility study in August 2004. It identified a pulverized coal unit as the best base load alternative for Seminole, with a substantially lower overall cost than a gas-fired combined cycle unit. The study also concluded that integrated gasification with combined cycle (IGCC) technology was not yet ready for unsubsidized commercial operation and probably would remain in that status for a few more years, until the technology has been more extensively demonstrated through several projects that are proposed or underway.

As discussed by Mr. Mahaffey, at the time of the initial feasibility study, Seminole envisioned a need for at least 600 MW of base load capacity in the 2009 – 2012 time frame. Subsequent to that feasibility study and during the evaluation of proposals submitted in response to Seminole's RFP, Seminole determined that its base load capacity need would be on the order of 750 MW by 2012. Seminole requested that Burns & McDonnell update its feasibility study to determine the economics of a 750 MW unit and whether such a unit could be constructed and permitted in a timely fashion. The updated study concluded that a 750 MW self-build unit was feasible and, due to economies of scale, the overall cost of the up-sized unit was lower (on a $ per MWh basis) than either the 600 MW coal-fired unit or a gas-fired combined cycle unit

The Burns & McDonnell studies are discussed in greater detail in the testimony of Seminole witness Richard Klover.

Q. How did Seminole use Burns & McDonnell's input in making its technical evaluation of the self-build alternative?

A. Seminole benefited greatly from Burns & McDonnell's technical expertise, but ultimately the decision on what would be the self-build alternative properly rested with Seminole and its staff. For example, Seminole relied heavily on Burns &

McDonnell to identify the relative economics of a pulverized coal-fired unit versus a gas-fired combined cycle unit and to evaluate the maturity of IGCC technology. Using that information and its own analyses, Seminole made the ultimate decision that a pulverized coal-fired unit was the most cost-effective, technologically mature self-build alternative.

Similarly, Seminole looked to Burns & McDonnell to identify the relative merits of using subcritical or supercritical design for the boiler of its pulverized coal self-build alternative. As Mr. Klover describes in his testimony, Burns & McDonnell advised that supercritical design is inherently more efficient and, therefore, has lower air emissions for a given level of electric output than a subcritical design. There were operational and reliability concerns with the early generations of supercritical design, but Burns & McDonnell reported that those concerns have been addressed in current supercritical designs. Burns & McDonnell found that most of the more recent coal-fired units in Japan and Europe use supercritical design. Burns & McDonnell expressed a concern over potential reliability issues resulting from burning high-sulfur coal and pet coke in supercritical boilers, but noted that it has been advised by the boiler manufacturer for one of its projects that this reliability issue can be effectively addressed with the selection of proper boiler tube material and enhanced preventive maintenance practices and inspections. Using this information, Seminole ultimately selected the more efficient, lower emission option of supercritical design. Burns & McDonnell has endorsed this decision.

II. THE SEMINOLE GENERATING STATION

Q. Please describe the Seminole Generating Station.

A. The SGS is a 1,966 acre site located in northeast Putnam County, approximately five miles north of the City of Palatka. My Exhibit MPO-1 is a map showing the location of the SGS.

The SGS currently accommodates two 650 MW class pulverized coal units (SGS Units 1 and 2). SGS Unit 1 began commercial operation in February 1984, and SGS Unit 2 began commercial operation in December 2004. The existing site contains all the facilities necessary for the operation of the existing units, including coal unloading and storage facilities, pollution control equipment and solid waste disposal areas for flyash and other solid waste materials. Both units are equipped with electrostatic precipitators and wet flue gas desulfurization systems for particulate and sulfur dioxide removal. Flue gas desulfurization waste is processed into wall board grade synthetic gypsum and conveyed to a wall board facility located on a parcel of land adjacent to the SGS.

Q. Please address Seminole's plans for the location of SGS Unit 3.

A. My Exhibit MPO-2 is a Site Map showing the preliminary site arrangement of SGS Unit 3. The design of SGS Unit 3 will use existing site facilities to the maximum extent possible. As a project at an existing site, SGS Unit 3 avoids not only the cost of developing a new site, but also the costs of numerous facilities already at the SGS that will be co-used by SGS Unit 3. Additionally, the use of the existing site avoids the need to add new transmission lines and associated electric substations for SGS Unit 3.

Q. What are the existing facilities at the SGS that SGS Unit 3 will be designed to share?

A. Preliminary evaluations have identified the following existing site facilities that can be utilized either as currently designed or with minimal modification:

Coal delivery, unloading and storage - The existing facility has a coal handling system consisting of a spur railroad line off the CSXT rail system, a rotary car dumper, stock-out system and 52 acre lined coal storage area. The existing units currently receive approximately one unit train (8,000 -11,000 tons of coal per train) per day. The addition of SGS Unit 3 will require Seminole to increase the number of unit trains to an average of 1.6 per day. The existing rotary car dumper has adequate capacity to accommodate this increase. The existing coal handling system at SGS, while adequate for addition of the third unit, will be expanded by adding an additional stacker-reclaimer and related conveyor systems to facilitate material handling, fuel blending and reliability.

Potable water supply - The existing potable water system has sufficient capacity to provide water for drinking fountains and washroom facilities at SGS Unit 3.

Cooling and Service Water Supply - Makeup water to the existing unit cooling tower and service water systems is supplied from the St. Johns River. The addition of SGS Unit 3 will increase intake flow by approximately 30%. No changes to the river intake structure, which is already equipped with fine mesh screen technology, will be required. An additional pipe from the river intake structure to SGS Unit 3 will be required.

Cooling Water Discharge - The existing permitted wastewater discharge line has sufficient capacity to accommodate the increased discharge of cooling tower blowdown from SGS Unit 3.

Limestone Handling - The current limestone unloading facility has sufficient capacity to accommodate the increase in limestone required for SGS Unit 3 flue gas desulfurization system.

Plant Egress/Ingress - The existing plant entrance off of U.S. Highway 17 will be utilized for all existing facility traffic, as well as SGS Unit 3 construction and operations. Improvements to traffic control systems, such as merging lanes and a traffic light, will be evaluated during the detailed design process.

III. OVERVIEW OF SGS UNIT 3

Q. Please briefly describe the design of SGS Unit 3.

A. SGS Unit 3 will be a pulverized coal, balanced draft unit employing supercritical steam pressure and temperature with a mechanical draft cooling tower for condenser cooling water. The primary advantages of supercritical steam cycles over subcritical steam cycles are improved plant efficiency due to elevated operating pressure and temperature, lower emissions and lower fuel consumption. Although the unit will be designed to operate as a base load unit, one of the design advantages of the planned sliding pressure supercritical boiler is that it simplifies cycling the unit to accommodate load flow fluctuations required by the electrical system demand. Mr. Klover's testimony describes the design of SGS Unit 3 in greater detail.

Q. What fuels will SGS Unit 3 be designed to burn?

A. SGS Unit 3 will be designed to burn 100% bituminous coal as a well as a blend of bituminous coal and up to 30% petroleum coke. That is the same fuel mix capability as SGS Units 1 and 2.

Q What will be the water sources for SGS Unit 3?

A. As I previously stated, SGS Unit 3 will be able to rely on the existing SGS water sources. The potable water system will rely on existing plant wells. The water supply for steam cycle makeup will also be from the existing plant wells and will be treated in a demineralizer. The water supply for cooling tower makeup will be from the St. Johns River, and cooling tower blowdown will be discharged to the St. John's River.

The addition of SGS Unit 3 will increase intake flow from the river by approximately 30%. However, cooling water discharge levels from SGS Unit 3 will be offset by reductions in process waste water discharge. No changes to the river intake structure, which is already equipped with fine mesh screen technology, will be required. However, an additional pipe from the river intake structure to SGS Unit 3 will be needed.

IV. SGS UNIT 3 ENVIRONMENTAL COMPLIANCE

Q. What pollution control measures will be employed in the design and operation of SGS Unit 3?

A. As I have noted previously, the supercritical design at SGS Unit 3 is more efficient and has lower emissions rates than a subcritical design. In addition, SGS Unit 3 will employ state-of-the-art emission control equipment to further reduce emissions, including:

- Low NO_x Burners and Staged Combustion / Overfire Air (OFA) for NO_x control.
- Selective Catalytic Reduction (SCR) for NO_x control.
- Electrostatic Precipitator (ESP) for particulate (PM) control.
- Wet Flue Gas Desulfurization (WFGD) for SO_2 control.
- Wet ESP for sulfuric acid mist (H_2SO_4) control.
- Mercury removal through application of the above technologies.

As a result of the emission control equipment that will be installed at SGS Unit 3 and emission-reduction measures that are planned for SGS Units 1 and 2 independent of

Unit 3's construction, the combined NO_x, SO2 and mercury emissions from all three units will be less than the current emissions from Units 1 and 2.

Most process wastewater streams will be treated and recycled as make-up water to the wet scrubber. Blowdown from the wet scrubber will be treated in a new zero liquid discharge system consisting of brine concentrators and a spray dryer system. Site runoff will be integrated into the existing site drainage systems. Sanitary discharge will be to a sanitary treatment system.

Coal combustion by-products not sold for reuse will be disposed of in the permitted on-site landfill or an offsite permitted landfill. A monitoring well system is currently in place to monitor ground water quality adjacent to the landfill area and around the SGS property. The ground water monitoring system will be modified as necessary to evaluate the impact of SGS Unit 3.

Q. Does Seminole plan to reuse by-products from SGS Unit 3 as it does for SGS Units 1 and 2?

A. Yes. Coal combustion by-products produced as a result of the addition of Unit 3 will be sold for reuse to the maximum extent possible. The waste products from the flue gas desulfurization unit (wet scrubber) will be treated to produce commercial-grade gypsum for use in the manufacture of wallboard. As noted earlier, there is a wallboard facility located on a parcel of land adjacent to the SGS. Bottom ash and flyash can be used to produce concrete block, high quality concrete and cement.

Q. Should Seminole be able to acquire the necessary environmental approvals for SGS Unit 3?

A. Yes. SGS Unit 3 has been designed to comply with all applicable environmental requirements, and Seminole expects to receive all necessary approvals well in advance of the planned in-service date for SGS Unit 3.

V. SGS UNIT 3 TRANSMISSION REQUIREMENTS

Q. How does Seminole transmit electric service to its Members?

A. Seminole serves the vast majority of its Member load through the transmission systems of Florida Power & Light Company (FPL) and Progress Energy Florida (PEF). Seminole receives firm transmission service from FPL under FPL's Open Access Transmission Tariff and from PEF under a "1983 Agreement" between Seminole and PEF. The transmission service agreements give Seminole the contractual right to serve Member load in the FPL and PEF transmission control areas from Seminole's designated generating resources. In addition to its arrangements with FPL and PEF, Seminole serves approximately 10% of its Member load through its own transmission facilities.

Q. What transmission system improvements will be necessitated by the addition of SGS Unit 3?

A. When transmission service for a new capacity resource is requested under Seminole's network arrangements, the new designated resource must receive approval from FPL and PEF to become a Seminole Network Resource. As a condition of this approval, Seminole performed a Transmission System Impact Study for the SGS Unit 3 project.

The Transmission System Impact Study included a short circuit, steady-state load flow and stability analysis. The short circuit analysis indicated that all seventeen (17) 230 kV circuit breakers at the SGS Switchyard needed to be upgraded to a Fault Interrupting Capability of 63 kA. The steady-state load flow analysis indicated that four (4) 230 kV circuit breakers at the Silver Springs North Switchyard and four (4) 230 kV circuit breakers at the SGS Switchyard needed to be upgraded to a continuous rating of 3000 amps. Also, four (4) FPL controlled 230 kV circuit breakers, two located at FPL's Rice Substation and two located at Seminole's SGS Switchyard, that are operated normally open need to be operated normally closed. The stability analysis indicated that all seventeen (17) 230 kV circuit breakers at the SGS Switchyard need to be upgraded to two cycle operation. The stability analysis also indicated that the four (4) FPL controlled 230 kV circuit breakers, two located at FPL's Rice substation and two located at Seminole's SGS Switchyard, that are operated normally open need to be operated normally closed.

On May 25, 2005, Seminole received written notification from FPL confirming the results of Seminole's SGS Unit 3 transmission study, agreeing to change the four (4) 230 kV FPL circuit breakers (two at SGS and two at FPL Rice) from normally open operation to normally closed operation, and confirming that SGS Unit 3 will be designated as a Seminole Network Resource to serve Seminole Member load integrated within the FPL transmission system.

On September 6, 2005, Seminole received written notification from PEF confirming the results of Seminole's SGS Unit 3 transmission study, and accepting Seminole's SGS Unit 3 as a Seminole Network Resource to serve Seminole Member load integrated within the PEF transmission system.

No new transmission lines will be needed to integrate the output from SGS 3 into the Florida Grid. The estimated costs to replace the seventeen 230 kV breakers at the SGS switchyard is $4,250,000, and the cost to replace the four (4) 230 kV breakers at the Silver Springs North Switchyard is $600,000.

VI. CAPITAL COST, SCHEDULE AND IMPACT ON THE ECONOMY

Q. What is the estimated total capital cost for the SGS Unit 3 project?

A. The estimated total capital cost for the SGS Unit 3 project is approximately $1.4 billion in 2012 dollars. In its February 2005 feasibility study for a 750 MW coal-fired unit, Burns & McDonnell projected the direct plant construction costs to be approximately $1.1 billion. The remainder of the $1.4 billion total is comprised of the 230 kV transmission breaker upgrades discussed above, spare parts, testing, interest during construction, risk insurance, and Seminole labor and overhead. My Exhibit MPO-3 provides additional detail as to the components of this cost estimate.

Q. What is the estimated in-service date for SGS Unit 3?

A. The projected commercial operation date for SGS Unit 3 is May 2012. That date assumes a construction duration of 42 months, with construction beginning in October 2008. The estimated construction duration is based on the range of construction times for other similarly sized coal units at existing facilities. More detailed construction milestones are addressed in Mr. Klover's testimony.

Q. What economic benefits are anticipated in Putnam County due to the construction and operation of SGS Unit 3?

A. The construction of SGS Unit 3 will require up to a maximum of 1,500 positions during construction and 50 additional permanent positions to the existing SGS operating staff in Putnam County, Florida. There will be secondary and tertiary economic benefits in and around Putnam County with the addition of these positions. The additional personnel will spend portions of their income with local businesses, which will grow as a result of this increased business. That, in turn, will improve the local tax base. Also significant will be SGS Unit 3's contribution to the property tax base for Putnam County and local governments.

VII. SEMINOLE'S EXPERIENCE WITH PERMITTING, CONSTRUCTING AND OPERATING POWER PLANTS

Q. Please address Seminole's prior experience with the construction of power plants.

A. Seminole has extensive experience with power plant construction. Seminole has previously overseen the construction of the coal fired SGS Units 1 and 2 as well as the Payne Creek Generating Station combined cycle unit, and it is currently overseeing construction of the Payne Creek Peaking Project. SGS Units 1 and 2 were designed and constructed under a multiple-contract approach, with the engineering firm of Burns & Roe retained to complete the engineering and perform construction management. Seminole was responsible for the procurement of equipment and construction contracts for SGS Units 1 and 2. This project was completed within the prescribed schedule and budget.

The Payne Creek combined cycle unit was constructed under a turnkey arrangement, where Seminole selected a consortium consisting of Siemens Westinghouse and Overland Constructors, a construction subsidiary of Black and Veatch Engineering Company, to be responsible for all aspects of construction. This project was also completed within the prescribed schedule and within 2% of the budget.

The Payne Creek Peaking Project is currently being constructed under the same multiple-contract approach used with SGS Units 1 and 2, with Engineering Services, Inc. providing engineering and construction management support. This project is currently on schedule and within budget.

Seminole plans to use the multiple-contract approach for SGS Unit 3, because of its proven success for SGS Units 1 and 2 and the Payne Creek Peaking Project. Burns & McDonnell has been retained to provide engineering and construction management support for SGS Unit 3. Mr. Klover's testimony describes Burns & McDonnell's extensive experience in these roles.

Q. How does the operating performance of Seminole's coal-fired generation compare to that of other utilities?

A. The operating performance of Seminole's coal-fired generating units compares quite favorably to the performance of other units of comparable size, fuel and equipment as to availability, heat rate, starting capability and most importantly, electrical energy cost. Seminole participates in a benchmarking program that compares the operation of Seminole's coal fired and combined cycle units with comparable units in a national study group. For SGS Units 1 and 2, the operating and maintenance costs, overall availability, heat rate, and forced outage rate compare favorably with the benchmarking group.

Q. What experience does Seminole have in permitting power plants?

A. Seminole has considerable experience permitting power plants. We have successfully permitted SGS Units 1 and 2, both coal-fired, as well as the Payne Creek Generating

Station combined cycle unit and the Payne Creek Peaking Project, a 310 MW facility utilizing aero-derivative combustion turbine technology.

Q. Should the Commission feel confident in Seminole's ability to timely and effectively permit, construct and operate SGS Unit 3?

A. Yes. As I have just explained, Seminole has extensive prior experience with permitting, building and operating power plants, including coal-fired units. In addition, Seminole has brought a wealth of outside expertise to bear on the selection, permitting and construction of SGS Unit 3. As I have described earlier, Seminole engaged Burns & McDonnell to assist in both the evaluation of its self-build alternative and then, once that alternative was chosen, to provide detailed design, procurement, construction management and startup services to Seminole for SGS Unit 3. As part of the evaluation process, Seminole engaged R. W. Beck to perform a risk assessment of the economic comparison between self-build coal-fired and gas-fired units, which confirmed that Seminole's conclusion about the favorable economics of the coal-fired unit is robust under a wide range of scenarios. Finally, Seminole has engaged Hopping Green & Sams LLP and Golder and Associates, two firms with well-recognized Florida and national environmental expertise, to assist in securing site certification and the necessary environmental permits.

Q. Does this conclude your testimony?

A. Yes.

Site Location Map – Putnam County

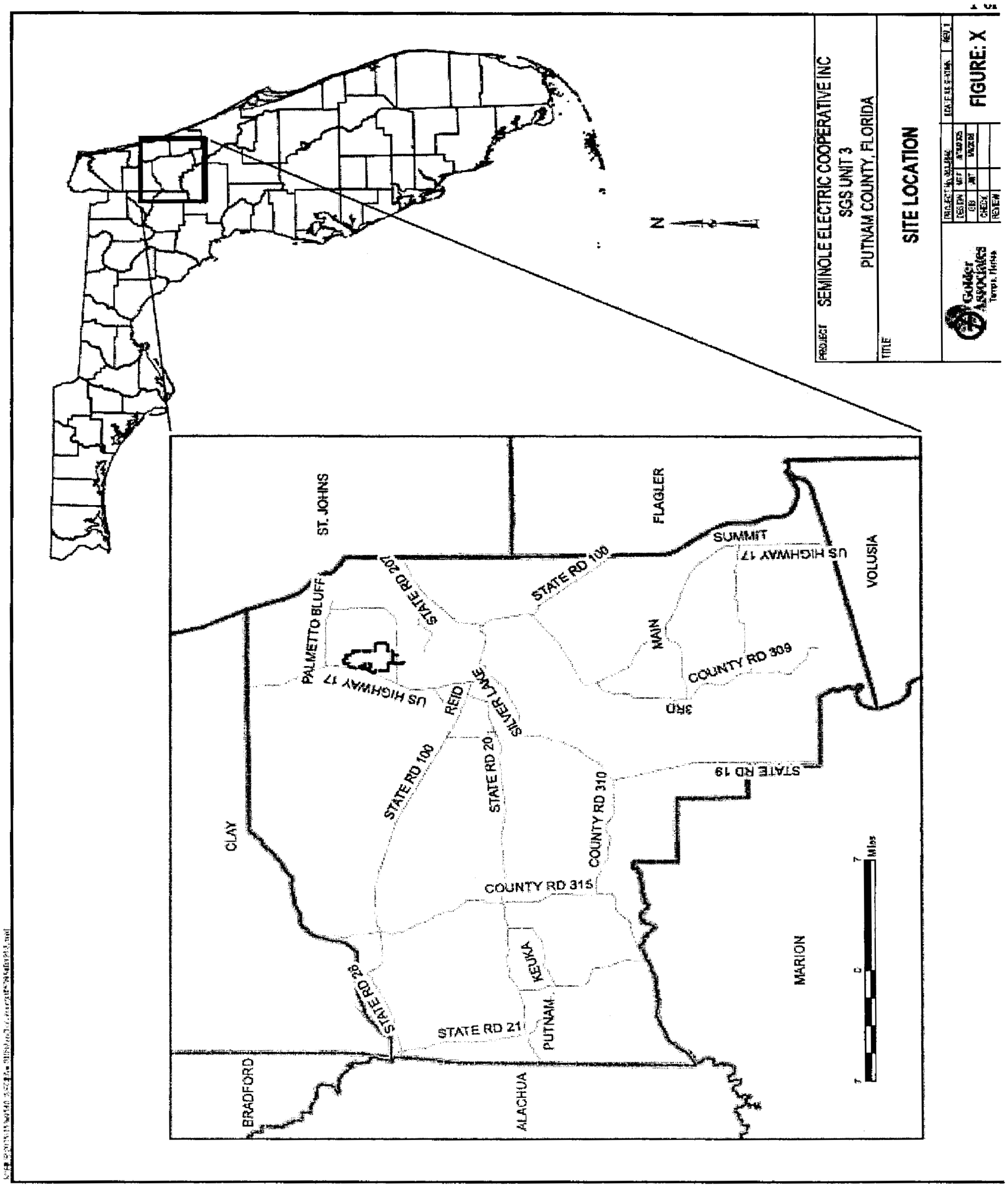

Exhibit MPO-2
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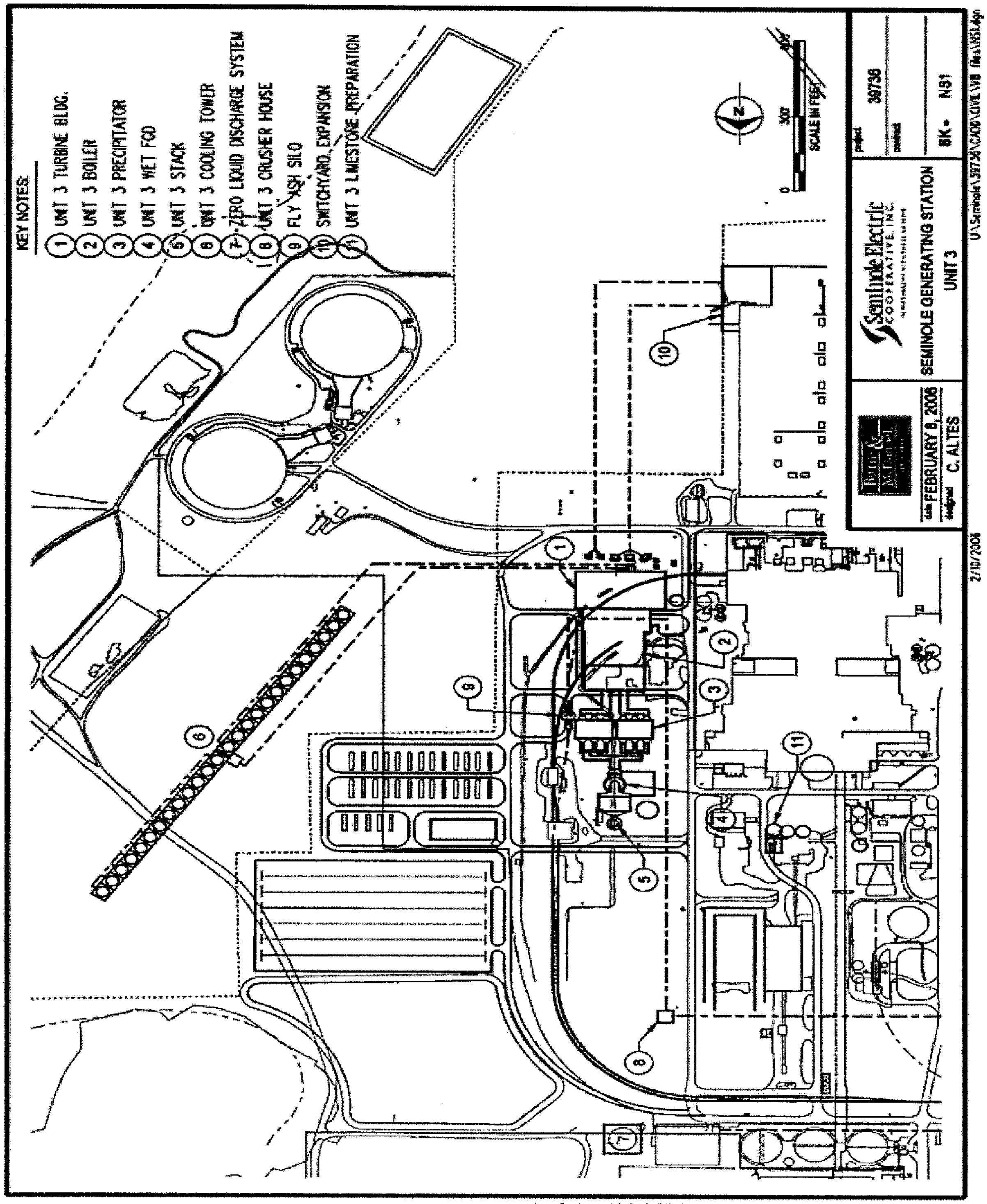
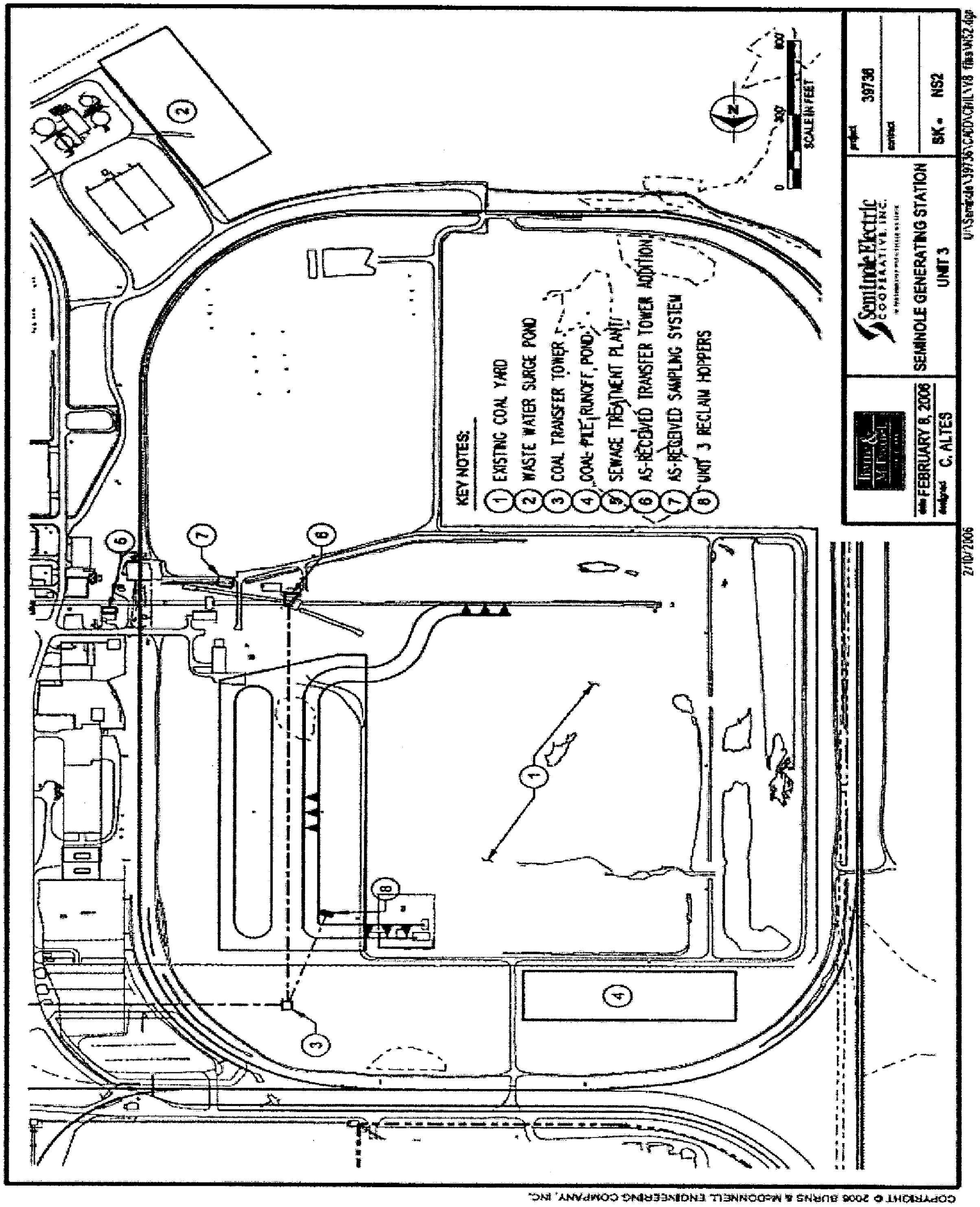
Site Arrangement With SGS Unit 3



Site Arrangement With SGS Unit 3



SGS UNIT 3 PROJECT
CAPITAL COST COMPONENTS

Cost Description	Cost Estimates ($)
Permitting and Licensing	1,724,860
Engineering	37,001,193
Operator Training	500,000
Preoperational Testing, Start-up & Calibration	12,056,800
Legal	1,425,000
Site Surveys/Studies	535,000
Performance Testing	2,103,200
Civil	49,426,836
Structural	87,411,231
Electrical & Construction Procurement	93,993,081
Control Procurement	8,737,946
Mechanical Procurement	647,319,207
Spare Parts	10,500,000
Initial Fills	480,000
Construction Testing	1,968,282
Power Breakers	4,850,000
Interest During Construction	182,373,299
Plant Equipment, Furnishings & Furniture	430,000
Site Security	1,728,000
Sales Tax	1,400,000
Building Risk Insurance	5,640,000
Temporary Utilities	1,349,461
Seminole Labor, Overhead & Travel	15,589,746
Escalation	233,434,974
Project Bonds	5,000,000
Startup Testing	33,134,544
Value of Test Energy	(33,134,544)
Financing Costs	5,350,000
Initial Coal Inventory	17,442,850
Estimated Total Cost	1,429,770,966