Exhibit No.:
Issues: Site Selection
Witness: Chris R. Rogers
Sponsoring Party: Aquila Networks-MPS
Case No.: EA-

Before the Public Service Commission
of the State of Missouri

Direct Testimony

of

Chris R. Rogers

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BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI
DIRECT TESTIMONY OF CHRIS R. ROGERS
ON BEHALF OF AQUILA, INC.
D/B/A AQUILA NETWORKS-MPS
CASE NO. EA-_____

Q. Please state your name and business address.

A. Chris R. Rogers, 16041 Foster Street, Stilwell, Kansas 66085.

Q. By whom are you employed and in what capacity?

A. I am employed by Sega Inc. ("Sega") as a Vice President and Project Manager, and also have additional responsibilities. Sega Inc. is an engineering and technical services company specializing in generation and delivery of electric power and steam for utility, institutional and industrial clients. Sega has been serving electric utilities for over 30 years. In addition to the South Harper Peaking Project, Sega has performed engineering and technical services for more than 800 MWs of other simple cycle combustion turbine capacity during the past five years.

Q. Briefly describe your education and work experience.

A. In 1974, I received a Bachelor of Science degree in Mechanical Engineering from Kansas State University. In 1981 I received a Master of Science degree in Civil Engineering-with an emphasis in construction management from the University of Missouri-Columbia. I have worked for more than 30 years in the power industry and hold professional engineering registration in ten states. During my career I have been employed by several nationally recognized consulting engineering firms providing design and construction management services for numerous power plant projects. In addition, I have served on the Staff of the Missouri Public Service Commission ("Commission") as

the Electric Department's Manager of Generating Facilities from 1983 through 1986. In recent years I have performed engineering services for numerous combustion turbine projects. My qualifications and experience are provided in further detail in Schedule CR-3. I was Sega's project manager for the site selection, design, construction management and testing of the South Harper Peaking Project for Aquila.

Executive Summary

Q. What is the purpose of the testimony you now are submitting?

A. The purpose of my testimony is to address the site selection process and methodology for the South Harper Peaking Facility. My testimony describes the engineering services performed by Sega at the direction of Aquila for siting this plant. The need for the site and the selection of this site from the utility's perspective will be addressed by the testimony of Terry S. Hedrick, Aquila's Generation Services Manager.

Site Selection Process

Q. What site selection studies were performed by your firm for the South Harper project?

A. A preliminary study generally evaluated five different tracts of land in Cass County during January and February of 2004. This was an initial screening to determine if any of the five potential sites already identified by Aquila were fatally flawed. This initial effort identified one fatally flawed site and recommended a site north of Harrisonville that later came to be known as the "South 235th Street" or "Camp Branch" site for the location of the plant. This initial screening was expanded into a more comprehensive site evaluation study which examined three more sites and further examined the original five sites. This expanded study ranked each site and recommended the Camp Branch site over the others as the best location for the project. Please refer to Schedule CR-1, which is a table

summarizing the basis for evaluation and the relative ranking of the eight sites that were considered. After the Cass County Planning and Zoning Commission recommended denial of a special use permit for the Camp Branch site, our investigation was expanded further in July of 2004 to include four more sites for a total of twelve sites that were then evaluated and ranked according to specific criteria. The result of the final study during August of 2004 recommended the South Harper site on which the plant was constructed. Please refer to Schedule CR-2, which is summary tabulation of our evaluations of the twelve prospective sites that were considered for the project.

Site Evaluation Methodology

Q. What criteria were utilized in your evaluations?

A. Nine engineering criteria were applied to examine and rank each of the twelve candidate sites in Sega's analysis:

1. Area for Development
2. Access to electric transmission
3. Access to natural gas supply
4. Access to potable water supply
5. Access to sanitary sewer
6. Accessibility for construction, operations and maintenance
7. Permitability with respect to regulatory, environmental and land use issues
8. Cost of Acquisition
9. Impact to the summer 2005 completion schedule

Q. How were these criteria applied to the respective sites?

A. Each site was visited, photographed and observed by Sega staff along with one or more Aquila staff. Topographic maps and aerial photographs (where available) were used to identify particular features of each parcel. Preliminary plant layouts were developed to evaluate the adequacy of useable space within the property. The physical attributes of each site were cataloged and evaluated.

Q. Please explain how each site was evaluated against these criteria.

A. As summarized in Schedule CR-2, each of the sites was evaluated as follows.

Area for Development: Each prospective site was examined for adequacy of size and configuration for an overall plant layout template. A minimum of approximately 40 acres would be required overall, which would include about 20 acres for the actual plant area and substation and additional area for appropriate set backs. The actual area requirement would vary for the shape and features of each site considered, and additional buffer area or screening features were desirable. A total site area requirement for the project was estimated to be approximately 80 acres. Conceptual layouts were developed for the finalist sites. Obvious geographic and likely geologic features were considered in the layouts in addition to the orientation of electric and fuel gas interconnection facilities for each site. Acquisition costs were estimated based on generally available information. As noted on the second page of Schedule CR-2, estimated values of $120,000 per acre inside city limits, and $15,000 per acre outside city limits were used for comparison, absent specific knowledge of pricing for any particular site.

Access to Electric Transmission: In order for the plant to be cost effective and meet Aquila's schedule needs for commercial operation for the 2005 summer peaking season, we examined the location of each site relative to Aquila's existing electric transmission

grid. For sites where suitable electric transmission lines were not already present, the company's expansion plans were considered. Greenfield electric transmission line extensions were approximated at $1,000,000 per mile for the initial screening. As highlighted in the notes on the second page of Schedule CR-2, the differential costs for electric transmission line evaluations do not include the total actual costs. Specific values were developed with the company's transmission department to differentiate the finalist sites more clearly.

Access to Natural Gas Supply: Since the combustion turbine generator sets had been procured for natural gas fuel only, each prospective site was examined for proximity to adequate natural gas supply lines. The routing of the major gas transmission lines through Cass County is known and available on maps. The two gas transmission pipelines in Cass County are the Southern Star Gas Pipeline Company and the Panhandle Eastern Pipeline Company. The prospective sites were evaluated for their relative distance from the major routes of these two companies' existing large transmission pipelines. The costs to construct the plant and its interconnecting electric and fuel facilities increase with the distance from such intersections. Initial reviews assumed approximate differential costs of $1,000,000 per mile of gas pipeline with multipliers for population density through more populated areas or difficult geographic features. The ideal site would be at the intersection of these gas pipelines and Aquila's existing 161-kV or 345-kV electric transmission lines.

Access to Potable Water Supply: The combustion turbine generator sets utilize drinking-quality water on their inlet air evaporative coolers, in addition to the need for drinking

water and sanitary services for the plant. The location and adequacy of water supply lines was examined for each prospective site.

Access to Sanitary Sewer: The inlet air evaporative cooler on each combustion turbine recirculates water thereby concentrating minerals and chemicals already present in potable water. This will accumulate scale and eventually foul the inlet media and the gas turbines internal parts, if the concentrated water is not drained off. Although no chemicals are added or exchanged in this process of cycling evaporation, the evaporative cooler waste stream contains approximately twice the concentration of minerals in drinking water and must be properly disposed. In addition there are the typical sanitary sewer requirements for operations personnel. Each prospective site was examined for proximity to existing sanitary sewers service, the ability to extend service to that site or alternative arrangements for sanitary disposal.

Accessibility for Construction, Operation and Maintenance: The combustion turbines and generators and their step up transformers had been delivered and were stored at the Ralph Green Station in downtown Pleasant Hill, Missouri. The units' auxiliary components had been delivered and stored in two airplane hangars on the Richards Gebaur air base. All of these components would need to be transported by rail and/or over the road truck to the selected site. In addition, the construction traffic for craft labor and delivery of materials and other necessary components would need road access onto the site. Access for operations requires adequate roadways for daily access for a much lesser number and weight of vehicles. Major maintenance outages will employ teams of craft workers and equipment, but not to the level of original construction. Therefore, each prospective site was examined and evaluated for access. Early on in the siting

studies, Sega contacted one or more heavy hauler contractors for specific information given the size and number of components for the project.

Permitability with Respect to Regulatory, Environmental, and Land Use Issues: Each prospective site was examined for the ability to obtain permits in a timely fashion. All prospective sites were located within Aquila's certificated service territory. Aquila's environmental staff and their consultants reviewed prospective sites for ability and schedule to secure an air emissions permit to construct, an NPDES permit to construct, and overall permitability. The prospective sites were then compared and ranked for general ease of permitting.

Impact to the Summer 2005 Completion Schedule: Each prospective site was evaluated for the likely schedule required for acquisition, permitting, and construction of the plant. Sites with features that could make construction more difficult or require more time were ranked lower than those that did not. The ability to permit the plant on a given site was examined by Aquila staff and their environmental consultants. Based on Aquila's stated need to have the plant in commercial operation to meet its system peak demand during the summer of 2005, sites with willing sellers were evaluated above those that were thought to require condemnation proceedings or lengthy litigation.

Q. Please describe why the South Harper site near Peculiar was selected.

A. The results as they were known during the third quarter of 2005 recommending the South Harper site are summarized in Schedule CR-2.

Acquisition costs were considered reasonable, and a willing seller was ready to move forward immediately. The City of Peculiar was considering annexation and favorable zoning in addition to tax exempt financing for the project. Preliminary discussions by

Aquila with the local political subdivisions (City of Peculiar, West Peculiar Fire District, Public Water Supply District No. 7, and the Raymore Peculiar School District, etc.) had been favorable, so there appeared to be local support for the project. Air emissions permitting that had begun for the Camp Branch site with the Missouri Department of Natural Resources was nearly completed. Initial discussions with that agency by Aquila and its environmental consultants indicated relocating the plant to the South Harper site would not require a complete restart for this permit application.

The geographic and apparent geologic features of the site appeared appropriate for the project. The 74-acre parcel provided northern acreage for screening from the nearest residences and dense wooded screening along its western boundary. There were no streams or major drainage features that might require costly permitting and relocation. The southern half of the property on which the plant was proposed to be constructed was directly accessible from Harper Road. While Harper Road was an unimproved gravel surface, it was close enough to State Route C to facilitate delivery of major components and construction materials, as well as construction traffic. It was anticipated that some road maintenance would be required in cooperation with the City of Peculiar and the Cass County Road and Bridge Department. In addition, the entire site sloped generally to the south and west providing good drainage with the added advantage of allowing the benching of the installation into the southern slope to improve screening. From the earliest plans, additional screening with berms and trees was anticipated within a setback strip along the eastern boundary.

An existing Aquila 69-kV electric transmission line ran north and south along the west edge of the property. Upon further examination by Aquila's transmission department, the

easements and rights-of-way for the exiting transmission line extending from the South Harper site would permit upgrading the line to 161-kv as required for the existing generating equipment and transformers.

There were major natural gas pipeline lines located on the property and an existing compression station was located on a 6-acre plot adjacent to the proposed plant site. The compressor station had been in continuous operation since 1954. The pipelines and compressor station would provide the plant with fuel gas at sufficient pressure so Aquila could forgo the capital operation and maintenance cost of installing gas compression equipment for the power plant. The presence of an industrial gas compressor station and lack of dense residential development appeared to indicate a suitable location for siting a power plant. In addition, a competing gas transmission pipeline was located only about two miles to the south, and could be extended north to the plant site to provide multiple, competitive sources of fuel for the project.

There was an existing Public Water Supply district No. 7 ("PWSD No. 7") water supply line running down the east edge of the property along Harper Road. Preliminary discussions with the water district indicated capacity was adequate with minimal upgrades required to serve the proposed plant.

The nearest sanitary sewer service, was located some three miles north of the proposed plant site. Alternatives such as waste storage tanks for truck disposal, sewage lagoons and other means were considered and deemed acceptable for this site.

The South Harper site was deemed the best site for the project based upon our evaluations using the stated criteria against all of the other identified sites.

Q. Does this conclude your testimony?

A. Yes, it does.

COMPREHENSIVE SITE EVALUATION

	Site Name - County	Location in Missouri (City, Township, Range, Section, Elevation, Description)	Area for Development Δ Acquisition Cost (1)	Access to Electric (KCPL, MPS, V, etc.) Δ Improvement Cost (2)	Access to Natural Pressure)
1.	South 235th Street (near Aries gas connection), Cass County	South of Peculiar, T.45N-R.31W, Sect 25, EL-985 feet. One mile north of Harrisonville. Just northeast of intersection at Highway 7 and 235th Street.	40 acres @ $15,000/acres = $600,000	1) KCPL 161-kV intersection of Highway 7 and 235th Street. 2) Adjacent to MPS 161-kV line	1) 30-inch and 12- 2) Adjacent to Pan 400. $0.5 M 3) S. Star M&R 1 4) Adjacent to Pan 5) Cities gas servic
			0	**0**	**0**
2.	North Lake, Cass County	City of Harrisonville Property East of North Lake, T. 45N-R.31W, Sect 21, EL-985 feet. One mile north of Harrisonville and one mile east of State Route 291 directly west of 235th Street and east of North Lake.	30 acres @ $15,000/acres = $450,000	1) KCPL 161-kV intersection of Highway 7 and 235th Street. 2) MPS 161-kV 2.25 miles east, 2.25M+ Overbuild at 7 Hwy and 235th and 69kV line tap=$1.0M+Time for easements	1) 30-inch and 12-inch $1M – Questionable C 2) Panhandle Eastern li
			-$150,000	**+$2.75 million + time for easement acquisition**	**0**
3.	Greenwood PP, Jackson County	T.46N-R.32W, Sect 25 EL-1030 feet. West of James A. Reed Wilderness Area	22 Acres already owned	Adjacent to MPS 161-kV, Possible improvements needed to T&D lines	1) Gas main 5 miles w
			-$600,000	**0 + Possible Jackson Co. permit delay**	**+$4.0 million**
4.	Section 33, Cass County	South of Raymore, T.46N-R.32W, Sect 33 EL-1030 feet. Half-mile southeast of Raymore city limits, off 195th Street.	40 acres @ $15,000/acre = $600,000	345-kV MPS overhead power line located just west of proposed site. Would require 1 new GSU transformers in sub @ $2.5 M	1) Two Amoco lines 2 2) Cities gas service 2 road @ $50,000+pigst acquisition – Question
			0	**+$2.5 million**	**+$1.25 million + time**
5.	North 235th Street (near Aries gas connection), Cass County	South of Peculiar, T.45N-R.31W, Sect 24, EL- 940 feet. 1 mile north of Harrisonville. Just northeast of intersection at 7 hwy and 235th Street.	40 acres @ $15,000/acres = $600,000 within full view of Shafer Estates Road - possible wetland areas/water features	1) KCPL 161-kV intersection of Highway 7 and 235th Street. 2) Adjacent to MPS 161-kV lines	1) 30-inch and 12-inch 2) Adjacent to Panhan 3) Adjacent to S. Star 4) Adjacent to Panhan 5) Cities gas service 2
			0	**0**	**-$500,000**
6.	Turner Road, Cass County	Belton, T.46N-R.33W, Section 12 EL-1070 feet. Next to Turner Road Substation, Southwest of 71 Highway at intersection of State Highway Y and Turner Road.	20 acres @ $120,000/acre = $2,400,000	New MPS 161-kV substation being constructed right next to proposed site, so deduct cost of substation ($4 M) and add cost of reconductoring 5 miles of 69-kV, $4 M=0	1) Panhandle East 12 proximate to town, say 2) Close to Richards G Capacity 3) Cities gas service th
			+$1.8 million	**0**	**+$2 to $19 million + t**
7.	Ralph Green Power Plant, Cass County	Pleasant Hill, T.46N-R.30W, Section 19 EL-850 feet. Next to the Ralph Green Power Plant	Land already owned	161-kV substation 1 mile east- $1 M	1) Two Amoco gas lin 2) 8-inch Southern Sta 3) 20-inch Southern S 4) Panhandle Eastern for line through town,
			0	**+1 million**	**+4 to 12 million + tin**
8.	Richards Gebaur Sites including Ammo Magazine, Cass County	Belton, T.46N-R.33W, Section 10 EL-1100 feet. Use of old Ammo Magazine site just south of Markey Road at Richards Gebaur.	40 acres @ $25,000/acre = $1 M	Need to develop a line tap into the new 161-kV line running Martin City to Belton line.	1) 16-inch Southern S 2) Cities gas service f 3) Panhandle lines 12 through town, say 1.6
			+$400,000	**0**	**+3 to 19 million + tin**

(1) Acquisition Costs uses an estimated value for land inside "City Limits" to be $120K/acre and land outside "City Limits" to be $15K/acre for discussion purpose actual cost of land; actual costs for land will vary.
(2) Differential Improvement Costs for Access to Electric Column do not reflect total actual costs. Differential costs are meant to compare the items of a design tha
(3) Differential Improvement Costs for Access to Natural Gas do not reflect total actual costs. Differential costs are meant to compare the items of a design that dif account for added costs of extra wall thickness, road borings, creek crossings, and r.o.w. or easement acquisition.

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Rank	Site Name	Location in Missouri (City, Township, Range, Section, Elevation, Description)	Area for Development Δ Acquisition Cost [1]	Access to Electric Transmission Δ Improvement Cost [2]
1.	South Harper, Cass County	Southwest of Peculiar, T.45N-R.32W, Sec. 32, El. 981 Feet. Three miles south of Peculiar on the west of the intersection of 243rd St. and Harper Rd.	74 acres @ $13,000/acres = $1,000,000	1) MPS 69-kV line north-south along west of property. 2) Two miles north of KCPL dual 161-kV lines. 3) Five miles south of MPS 345 kV line. 4) New 345 kV transformer and substation addition for $2.5 million.
			+ $400k	+ $5 Million for extension, + $2.5 Million for 345 kV sub.
2.	Good Ranch, Raymore	In the City of Raymore, T.46N-R.32W, El. 970 Feet. Along east side of 71 Highway, south of 195th St.	150 acres @ $15,000/acre = $2,250,000	1) MPS 345-kV line east-west across property. 2) Seven miles north of KCPL dual 161-kV lines. 3) New 345 kV GSU transformer and substation addition for $2.5 million.
			+$1.9 Million	$2.5 Million
3.	Camp Branch, Cass County	T.45N-R.31W, Sect 25, EL-985 feet. One mile north of Harrisonville. Just northeast of intersection at Highway 7 and 235th Street, near the Aries Plant gas supply M&R station.	40 acres @ $15,000/acres = $600,000 Probable additional buffer area will be needed due to opposition.	1) KCPL 161-kV intersection of Highway 7 and 235th Street. 2) Adjacent to MPS 161-kV line
			$0	$0
4.	North Lake, Cass County	City of Harrisonville Property East of North Lake, T. 45N-R.31W, Sect 21, EL-985 feet. One mile north of Harrisonville and one mile east of State Route 291 directly west of 235th Street and east of North Lake.	30 acres @ $15,000/acres = $450,000	1) KCPL 161-kV intersection of Highway 7 and 235th Street. 2) MPS 161-kV 2.25 miles east, 2.25M+ Overbuild at 7 Hwy and 235th and 69kV line tap=$1.0M+Time for easements.
			-$150,000	+$2.75 Million + time for easement acquisition
5.	Greenwood Power Plant, Jackson County	T.46N-R.32W, Sect 25 EL-1030 feet. On Smart Rd., west of James A. Reed Wilderness Area	22 Acres already owned	Adjacent to MPS 161-kV, will need improvements to T&D lines and substation.
			-$600,000	+$3 to $4 Million + Possible Jackson Co. permit delay
6.	Section 33, Cass County	South of Raymore, T.46N-R.32W, Sect 33 EL-1030 feet. Half-mile southeast of Raymore city limits, off 195th Street.	40 acres @ $15,000/acre = $600,000	345-kV MPS overhead power line located just west of proposed site. Would require 1 new GSU transformers in sub @ $2.5 Million.
			$0	+$2.5 Million
7.	North 235th Street (near Aries gas connection), Cass County	One mile north of Harrisonville. T.45N-R.31W, Sect 24, EL- 940 feet. Just northeast of intersection at 7 hwy and 235th Street.	40 acres @ $15,000/acres = $600,000 within full view of Shafer Estates Road - possible wetland areas/water features	1) KCPL 161-kV intersection of Highway 7 and 235th Street. 2) Adjacent to MPS 161-kV lines
			-$0	$0

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COMPREHENSIV
SUMMA

Rank	Site Name	Location in Missouri (City, Township, Range, Section, Elevation, Description)	Area for Development	Access to Electric Transmission	
			Δ Acquisition Cost (1)	Δ Improvement Cost (2)	
8.	Turner Road, Cass County	Belton, T.46N-R.33W, Section 12 EL-1070 feet. Next to Turner Road Substation, Southwest of 71 Highway at intersection of State Highway Y and Turner Road.	20 acres @ $120,000/acre = $2,400,000 est.	New MPS 161-kV substation being constructed right next to proposed site, so deduct cost of substation ($4 M) and add cost of reconductoring 5 miles of 69-kV, $4 M = Net $0	1) Panhandl thickness fo schedule "ti Amoco line gas service
			+$1.8 Million	$0	+$20 Millior
9.	Ralph Green Power Plant, Cass County	Pleasant Hill, T.46N-R.30W, Section 19 EL-850 feet. Next to the Ralph Green Power Plant	Land already owned	161-kV substation 1 mile east- $1 Million	1) Two Amo Capacity 2) 8-inch So Capacity 3) 20-inch S Capacity 4) Panhandl wall thickne
			$0	+$1 Million	+$4 to $12
10.	Sparling Property, Cass County	West of Peculiar, T.45N-R.32W, Sec. 8, El. 986 Feet. Northwest corner of intersection of Highway YY and Harper Rd.	Privately owned, 160 acres @ $20,000/acre = $3,200,000 est.	1) MPS 69-kV line north-south through property. 2) Five miles north of KCPL dual 161-kV lines. 3) Two miles south of MPS 345 kV line. 4) New 345 kV GSU transformer and substation addition for $2.5 million	1) Three mil Three miles Panhandle
			+2.6 Million	+$4.5 Million line upgrade + 345 kV Substation	+$3 to 5 Mi
11.	Grand Oaks, Cass County	Northwest of Peculiar, T.45N-R.32W, Sec. 5, El. 990 Feet. Southeast corner of intersection of Knight Rd. and 203rd St.	Privately owned, 80 acres @ $20,000/acre = $1,600,000	1) MPS 69-kV line on property. 2) Seven miles north of KCPL dual 161-kV lines. 3) One half- mile south of MPS 345 kV line. 4) New 345 kV GSU transformer and substation addition for $2.5 million	1) Four mile miles north Eastern gas
			+$1 Million	+$ 3 Million	+$4 to $6 M
12.	Richards Gebaur Sites including Ammo Magazine, Cass County	Belton, T.46N-R.33W, Section 10 EL-1100 feet. Use of old Ammo Magazine site just south of Markey Road at Richards Gebaur.	40 acres @ $25,000/acre = $1 M	Need to develop a line tap into the new 161-kV line running Martin City to Belton line.	1) 16-inch Capacity 2) Cities ga 3) Panhanc thickness fo
			+$400,000	$0	+20 Million

(1) Acquisition Costs uses an estimated value for land inside "City Limits" to be $120K/acre and land outside "City Limi land are from the Economic Development Corporation of Kansas City, Missouri and do not reflect actual cost of lar

(2) Differential Improvement Costs for Access to Electric Column do not reflect total actual costs. Differential costs are assumes site requires substation and that new or reconductored line costs $1.0 Million/mile.

(3) Differential Improvement Costs for Access to Natural Gas do not reflect total actual costs. Differential costs are mea costs $1.0 Million/mile and for large pipe runs through town an arbitrary factor of 1.67 was used to account for add

Professional Qualifications SCHEDULE CR-3

Chris R. Rogers, P.E.

POSITION Vice President and Project Manager

EDUCATION B.S.M.E., 1974
Kansas State University
Manhattan, Kansas

M.S.C.E. Civil Engineering – Construction Management, 1981
University of Missouri-Columbia
Columbia, Missouri

REGISTRATION Registered Professional Engineer (NCEES Record Certification)

- California
- Colorado
- Idaho
- Illinois
- Kansas
- Michigan
- Minnesota
- Missouri
- Montana
- North Carolina

AFFILIATIONS American Society of Mechanical Engineers

CAREER EXPERIENCE

Mr. Rogers is a Vice President of Sega Inc. and a registered professional engineer with over 30 years of experience in the power industry. Among other things at Sega, he is responsible for the overall business development efforts of the firm. Mr. Rogers also performs project management and engineering services for Sega's electric power generating clients.

From the beginning of 2004 through the fall of 2005 Mr. Rogers was Sega's project manager for the South Harper Peaking Facility and related Aquila projects. Sega's overall scope of work included alternate site evaluations, detailed installation design, balance of plant procurement services, construction management, commissioning, and documentation services.

Mr. Rogers' other related experience includes management of several combustion turbine projects, a major refurbishment program for a fleet of combustion turbine generators, and condition assessments of combustion turbine, pulverized coal, hydropower, and diesel generating units. Mr. Rogers has performed technical independent engineering reviews for financing, construction monitoring, and performance testing of numerous generating facilities. He has provided engineering and management services for many types of projects, including simple and combined cycle combustion turbine projects, coal and waste coal-fired fluidized-bed boiler projects, pulverized coal units, biomass-fired projects, hydropower projects, and diesel generating sets.

Chris R. Rogers, P.E.

Mr. Rogers previously served as the Manager of Generating Facilities in the Electric Department of the Missouri Public Service Commission. His assignments involved various issues in conjunction with the construction management audits and rate cases for the Callaway Plant and Wolfcreek Nuclear Generating Station, limited participation in the Grand Gulf Nuclear Station rate case, and other regulatory assignments concerning regulated generating facilities throughout the State of Missouri.

Mr. Rogers also has more than 10 years' experience designing mechanical systems for large utility-owned coal-fired central generating facilities while he was employed by a nationally recognized consulting engineering firm. He served both on design teams and as chief mechanical resident engineer during construction.

SPECIFIC PROJECT EXPERIENCE

- Board of Public Utilities, Kansas City, Kansas – Nearman Creek CT4, 85-MW simple cycle peaking plant. Sega's Site manager for commissioning, including checkout, performance testing, emissions testing and management of construction completion closeout activities. (2005 – 2006)

- **Aquila Networks – MPS**, Kansas City, Missouri – South Harper Peaking Facility, 315-MW simple-cycle peaking plant. Project manager for alternate site evaluations, detailed installation design, balance of plant procurement, construction management services, commissioning, and documentation support. Sega's project manager. (2004 – 2005)

- **Kansas City Power & Light Company** – Two simple-cycle peaking projects: West Gardner and Osawatomie Generating Stations. Successful engineer-lead EPC proposal for 400-MW of GE 7E gas turbine generator sets. Sega's proposal manager. (2002)

- **Idaho Power Company,** Mountain Home, Idaho – 150-MW combined cycle conversion study for conversion of twin S-W 251B12 gas turbines from peaking to combined-cycle. Sega's project manager. (2002)

- **Trigen – Kansas City Energy Corporation,** Kansas City, Missouri – 80-MW nominal combustion turbine and heat recovery steam generator cogeneration project at district heating plant. Sega's project manager for feasibility study. (2001)

- **Conserve Energy System,** Centralia, Illinois – 215-MW nominal net, coal-fired atmospheric circulating fluidized bed boiler steam electric generating plant. Sega's project manager for technical feasibility study. (2001)

Chris R. Rogers, P.E.

- **Tulare County Power Projects**, Goshen and Tipton, California – four 24-MW net each, natural gas-fired multiple reciprocating engine generator set peaking plants located at utility substations. Sega's project manager for conceptual design and detailed design proposal. (2001)

- **High Plains Corp Cogeneration Project**, Wichita, Kansas – 6-MW net, landfill recovery gas-fired combustion turbine with heat recovery steam generator cogeneration project. Sega's project manager for conceptual design, feasibility study and detailed design-build proposal. (2000)

- **City Utilities,** Springfield, Missouri – 8-MW net, natural gas-fired combustion turbine with heat recovery steam generator cogeneration project at local university campus. Sega's project manager for feasibility study. (2000)

- **Cargill, Inc.**, Blair, Nebraska – 100-MW net combustion turbine with heat recovery steam generator cogeneration project. Sega's project manager for feasibility study. (2000)

- **Quantum Dynamics, Inc./Quebecor Printing, Inc**, Fernley, Nevada – 3-MW net, gas-fired combustion turbine (ASE40) and heat recovery project at printing plant. Sega's project manager for balance-of-plant design/build contract. (1999-2000)

- **Trigen – St. Louis Energy Corporation**, St. Louis, Missouri – 20-MW condensing steam turbine addition to the existing cogeneration plant on a fast-tracked basis. Sega's project manager for team providing detailed design, construction administration, and startup assistance to Trigen Energy. (1999-2000)

- **University of Missouri-Rolla/Rolla Municipal Utilities**, Rolla, Missouri – Sega's project manager for joint participation cogeneration project feasibility study. Investigating alternative power supply, generating options, and interconnection arrangements for the mutual benefit of the University and the City. (1999-2000)

- **LTV Hennepin**, Hennepin, Illinois – 9-MW net, gas-fired combustion turbine (3 x ASE 40) and heat recovery project at LTV Steel Company plant in Hennepin, Illinois. Sega's project manager of engineer – lead EPC team for balance of plant scope. (1999)

- **University of Missouri-Columbia**, Columbia, Missouri – 27-MW capacity addition. Combustion turbine consultant on Sega's project team for cogeneration feasibility study and subsequent detailed project design and equipment procurement. Twin Solar Titan combustion turbine generator sets with heat recovery steam generators. (1999)

Chris R. Rogers, P.E.

- **Witco Corporation**, Memphis, Tennessee – 7-MW net, gas-fired combustion turbine (2 x ASE 50) and heat recovery project at Witco Corporation plant in Memphis, Tennessee. Sega's project manager for balance of plant, engineer – lead EPC team. (1999)

- **Trigen - St. Louis Energy Corporation**, St. Louis, Missouri – 15-MW net, gas-fired combustion turbine (2 x Solar Taurus 60/STAC) and heat recovery project in St. Louis, Missouri. Sega's project manager for detailed installation design for Trigen Energy. (1998-1999)

- **Power & Light Department**, Independence, Missouri – Sega's project manager for major refurbishment program on six (6) GE Frame 5 and one (1) GE 7B-recuperative, oil and gas-fired gas turbines. Scope included condition assessments, specifications, and contracting for renewal and upgrade components, unit controls replacement, remote digital controls addition, and major overhaul of each unit. (1994-1999)

- **Somerset Generating Station**, Somerset, Massachusetts – 40-MW net, oil-fired combustion turbine (2 x FT4) black start peaking unit, 100-MW coal-fired power plant, 16-MW of diesel generators (8 x 2-MW GM-EMD) and a 2-MW hydrostation. Black & Veatch's project manager on independent engineering review, performing condition assessments for divestiture by Montaup Electric Company. (1997)

- **Cherokee County Cogeneration Project**, Gaffney, South Carolina – 80-MW net, gas-fired combined-cycle (GE 106FA) cogeneration project near Gaffney, South Carolina. Sega's project manager for Prudential Power Financing; provided complete technical review of project during design, permitting, contracting, and financing. Conducted construction monitoring for lender. Also served as interim president of project development entity during lender's takeover of project and equity sale to FP&L. (1995-1997)

- **Constellation Energy**, Freehold, New Jersey – 110-MW net, gas-fired combined cycle cogeneration project. Sega's project manager for review of project proforma and preparation of testimony for the New Jersey Board of Public Utilities concerning net present value of project. (1996)

- **Department of Power and Light**, Independence, Missouri – 100-MW net, coal-fired steam electric plant. Sega's project manager for estimating study including conceptual design of project for comparison to client's participation in Iatan II Project. Compiled and compared capital and operation and maintenance cost of alternative 100-MW plants including pulverized coal, CFB, combined cycle and simple cycle. (1996)

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- **University of New Mexico**, Albuquerque, New Mexico – 30-MW net, gas-fired combustion turbine and campus heating plant. Sega's project manager on cogeneration feasibility evaluation for replacement of campus central heating plant for the University. (1996)

- **Florida State Correction Facility**, Starke, Florida – 23-MW net, wood gasification and natural gas-fired, combined-cycle cogeneration project proposed near Starke, Florida. Bibb and Associates' project manager on independent review for potential equity investor, KLT Power, Inc. (1995)

- **Indeck-Oswego Energy Center**, Oswego, New York – 51-MW net, gas-fired combined-cycle (GE6B) cogeneration project in Oswego, New York. Bibb ands Associates' project manager on independent engineering review for BA Securities, Inc. regarding the power sales agreement during term of financing. (1994)

- **Honeywell FM&T (Formerly AlliedSignal Inc.)**, Kansas City, Missouri – 40-MW nominal, gas-fired, multiple combustion turbine cogeneration project providing steam and electric service to a federal government complex in Kansas City, Missouri. Bibb and Associates' project manager on AlliedSignal's engineering team for feasibility studies, conceptual design, permitting support, bidding, and evaluation of developer qualifications. (1993-1994)

- **North Carolina EMC**, Raleigh, North Carolina – 330-MW net, gas-fired combined-cycle and 100-MW nominal, gas-fired simple-cycle project in North Carolina. Bibb and Associates' project manager on engineer team writing specifications and evaluating bids for EPC contracting of the project. (1993-1994)

- **Indeck-Olean Energy Center**, Olean, New York – 79-MW net, gas-fired combined-cycle (GE 6B) cogeneration project in Olean, New York. Bibb and Associates' project manager on independent engineering review for bank group consisting of Canadian Imperial Bank of Commerce, BOT Financial, Inc., Westpac Banking Corporation, and Toronto Dominion Bank. (1992-1994)

- **Orlando CoGen Limited**, L.P., Orlando, Florida – 120-MW net, gas-fired, single-shaft combined-cycle (ABB11N1/VAX) cogeneration project in Orlando, Florida developed by Air Products and Chemicals, Inc. and partly owned by Utilicorp United. Bibb and Associates' project manager on independent engineering review for senior lender, the Sumitomo Bank, Limited. (1992-1994)

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- **Empire Cogen,** Tampa, Florida – 10-MW net, gas-fired multiple gas turbine (Allison/US Turbine) cogeneration project located on MacDill Air Force Base near Tampa, Florida. Bibb and Associates' project manager on independent engineering review for senior lender, National Westminster Bank PLC. (1991-1994)

- **ACE Cogeneration Project**, Trona, California – 96-MW net, coal-fired CFB steam electric plant. Bibb and Associates' project manager on independent engineering review for equity investor, US West Capital, Inc., including design, permit status, operations and maintenance. (1992-1993)

- **Arroyo Cogeneration**, Escondido, California – 49.9-MW net, gas-fired, combined-cycle (GE LM6000) cogeneration project located in Southern California. Bibb and Associates' project manager on engineering review for development financing for Heller Financial, Inc, including alternate site selection program. (1992-1993)

- **Nestles Freehold Cogeneration Project,** Freehold, New Jersey – 110-MW net, gas-fired, single-shaft combined-cycle (ABB11N1/VAX) cogeneration project in Freehold, New Jersey by Constellation Energy. Bibb and Associates' project manager on independent engineering review for development financing by Heller Financial, Inc. (1992)

- **Northeast Cogen**, Solvay, New York – 49-MW net, gas-fired combined-cycle (GE6B/LM6000) cogeneration project proposed near Solvay, New York. Bibb and Associates' independent review engineer for development financing by Heller Financial, Inc. (1992)

- **Newbay Cogeneration Project**, East Providence, Rhode Island – 72.2 MW net, coal-fired circulating fluidized bed boiler generating plant. Bibb and Associates' project manager on independent engineering review for development-bridge financing by Heller Financial, Inc. Reviewed design, permit applications, and status. (1991-1992)

- **Redding Power Project**, Redding, California – 23-MW net, two biomas-fired stoker boiler generating units. Bibb and Associates' project manager on independent engineering review for National Westminster Bank PLC during lay-up, preservation, foreclosure, receivership, and resale. (1991-1992)

- **San Joaquin Valley Energy Partners I**, Fresno, California – 43-MW net, three biomass-fired fluidized bed boiler generating units. Bibb and Associates' project manager on independent engineering review for take-over lender, evaluation, and equity re-sale, Canadian Imperial Bank of Commerce. (1991-1992)

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- **Redding Peaking**, Redding, California – 49.9-MW net, gas-fired simple-cycle combustion turbine (GE 6) electric peaking plant proposed in Redding, California. Bibb and Associates' project manager on engineering review for bridge financing for Heller Financial, Inc. (1991)

- **Intercontinental Energy**, Bellingham, Massachusetts and Sayreville, New Jersey – Twin 300-MW net, gas-fired combined-cycle (2 x W501D) cogeneration projects. Bibb and Associates' project manager on independent engineering review for potential equity investor, American Energy Division of Potomac Capital Investment Corporation. (1990-1991)

- **Gifford-Hill Cement Cogeneration Project**, Oro Grande, California – 20-MW net, heat recovery steam electric cogeneration plant. Bibb and Associates' project manager on independent engineering review for US West Capital, Inc., for sale/lease back of existing plant. (1990)

- **Sunnyside Cogeneration Project**, Carbon County, Utah – 50-MW net, waste coal-fired circulating fluidized bed boiler generating plant. RW Beck and Associates' project manager on independent engineering review for senior lender, Swiss Bank Corporation for design and permitting review. (1990)

- **North Branch Power Project**, Bayard, West Virginia – 80-MW net, waste coal-fired, circulating fluidized bed boiler project. RW Beck and Associates' project manager on independent engineering review on financing and construction monitoring for senior lender, Security Pacific Bank. (1988-1990)

- **Unocal Geothermal**, Monterey, California – Twin 750-MW super-critical, gas and oil-fired steam electric generating units. RW Beck and Associates' engineer, retained by Unocal to provide independent third-party oversight and monitoring of biennial performance tests by Pacific Gas and Electric Company at the Moss Landing Power Station, related to geothermal steam pricing at Unocal's Geysers Geothermal projects. (1988-1990)

- **Viking Power Projects**, Lincoln, Michigan, McBain, Michigan, and Northumberland, Pennsylvania – Three 16-MW net, biomass fueled stoker-generating plants. RW Beck and Associates' project manager on independent engineering review for financing, construction monitoring and performance testing for senior lender, CIGNA. (1988-1990)

- **St. Nicholas Power Project,** Mahonoy Township, Pennsylvania – 80-MW net, waste coal-fired steam electric plant. RW Beck and Associates' project manager on independent engineering review for financing, construction monitoring and performance test monitoring for senior lender, Bank of New England. (1987-1990)

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- **USG X-line Manufacturing Plant**, Aubange, Belgium – Ceiling tile manufacturing plant. RW Beck and Associate's project manager on independent engineering review for lender, National Westminster Bank PLC. Reviewed for financing, construction monitoring, and completion. (1989)

- **Chinese Station**, Inyokern, California – 25-MW net, biomass-fired generating plant. RW Beck and Associates' project manager on engineering review for take-over and resale; reviewed design, plant betterment program, and projected operation and maintenance program. (1988-1989)

- **Koma Kulshan Hydro Project**, Whatcom County, Washington – 12-MW hydroelectric station. RW Beck and Associates' project manager on independent engineering review of design and construction monitoring for senior lender National Westminster Bank PLC. (1988-1989)

- **Scrubgrass Power Project**, Venango County, Pennsylvania – 80-MW net, waste coal-fired, circulating fluidized-bed boiler project. RW Beck and Associates' project manager on independent engineering review of design, permits, and contracts for financing and construction monitoring for senior lender, National Westminster Bank, PLC. (1988-1989)

- **Anshutz East Ranch Pipeline**, Salt Lake City, Utah – 50 mile crude oil transmission pipeline. RW Beck and Associates' project manager on independent engineering review of design and construction progress for limited recourse lender, First Bank of Minneapolis. (1987-1988)

- **Callaway Nuclear Generating Station**, Fulton, Missouri – 1150-MW net, PWR nuclear generating station. Manager of Generating Facilities for the Missouri PSC staff. Investigated and/or provided testimony concerning project construction management, in-service criteria, net electric capability, decommissioning funding, and in-service completion for rate case. (1983-1986)

- **Wolfcreek Nuclear Generating Station**, Burlington, Kansas – 1120-MW net, PWR nuclear generating station. Manager of Generating Facilities for the Missouri PSC staff. Investigated and/or provided testimony concerning project construction management, in-service criteria and startup, related fossil-fuel plant retirements, related plant accreditations, depreciation, and net electric capability for rate case. (1983–1986)

- **Grand Gulf Generating Station I**, Grand Gulf, Mississippi – 1350-MW net, BWR nuclear generating station. Manager of Generating Facilities for the Missouri PSC staff. Investigated and provided testimony concerning in-service criteria, in-service status, and overall project NRC inspection and licensing status. (1985)

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- **Plains-Escalante Generating Station, Unit 1**, Prewitt, New Mexico – 210-MW net, pulverized coal power plant for Plains Electric Generation and Transmission Cooperative. Burns & McDonnell's senior mechanical design engineer for mechanical equipment and systems, equipment procurement, construction contracting and coordination. Also, served as chief resident mechanical engineer during construction. (1978-1982)

- **EPRI-DOE Fuel Cell Demonstration Project**, San Jose, California – 5-MW fuel cell cogeneration demonstration project. Burns & McDonnell's mechanical engineer on cogeneration feasibility project for demonstration of commercial fuel cells in cogeneration applications. (1977-1978)

- **Laramie River Station, Units 1, 2, and 3**, Wheatland, Wyoming – three, 550-MW net, pulverized coal-generating units for the Missouri Basin Joint Power Project Agency, lead by the Basin Electric Power Cooperative, Inc. Burns & McDonnell's mechanical design engineer on equipment and systems, equipment procurement, and construction contracting. CPM scheduler for coordination of construction completion of systems with sequenced system start-up program. (1974-1977)

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TESTIMONY BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION

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AMERENUE (formerly UNION ELECTRIC COMPANY) CASE NOS. EO-85-17 & ER-84-168				
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	Rebuttal	A-12		
	Surrebuttal	A-14	7	492-83
Phase II – Net Electric Capability	Direct	C-76		
	Surrebuttal	C-77	30	2852-2868
Phase III – Funding Decommissioning	Surrebuttal	C-38	28	2434-2440
Phase III – Inservice Review	Supplemental (1-28-85)	NA	NA	NA
AMERENUE (ARKANSAS POWER & LIGHT COMPANY) CASE NO. ER-85-20				
Status of Grand Gulf 1 and Waterford 3	Supplemental	12	4	118-181
KANSAS CITY POWER & LIGHT COMPANY CASE NO. ER-85-128 & EO-85-185				
Phase I – Inservice Criteria Startup	Affidavits Direct (filed 1/10/85)		NA	NA
Phase IV – Fossil Plant Retirement Dates	Direct	262		
	Surrebuttal	266	23	1798-1817
Phase IV – Depreciation – Wolf Creek	Rebuttal	259		
Phase IV – AWS Structural Steel Welding	Direct	301		
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	Surrebuttal	400	33	3682-3699
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	Appendices (9/10/82)	263		
AMERENUE (ARKANSAS POWER & LIGHT COMPANY) CASE NO. ER-85-265				
Functionalization and Classification of Costs (Jurisdictional Allocations)	Surrebuttal	89	6	844-848

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TESTIMONY BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

Issue Description	Exhibit No.	Transcript Vol. No.	Page Nos.
HAWAII ELECTRIC LIGHT COMPANY, INC.			
DOCKET NO. 99-207			
Keahole Projects or Facilities:	Direct Pre-filed CA-T-12		288 – 301
1. Shop/Warehouse Building	Direct Examination	II	301 – 309
2. Fire Protection System	Commissioners' Exam	II	309 - 313
3. Water Treatment System			
4. Inclusion in Rate Base Amounts			

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of the Application of Aquila, Inc. for Permission and Approval and a Certificate of Public Convenience and Necessity authorizing it to acquire, construct. Install. own. operate. maintain, and otherwise Control and manage electrical production and Related facilities in unincorporated areas of Cass County, Missouri near the town of Peculiar.	)	Case No. EA-_____

County of Jackson)
) ss
State of Missouri)

AFFIDAVIT OF CHRIS R. ROGERS

Chris R. Rogers, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled "Direct Testimony of Chris R. Rogers:" that said testimony was prepared by him and under his direction and supervision; that if inquiries were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge, information, and belief.

Chris R. Rogers

Subscribed and sworn to before me this 25th day of January, 2006.

Notary Public

My Commission expires:

8-20-2008

Notary Public Notary Seal State of Missouri

TERRY D. LUTES
Jackson County
My Commission Expires
August 20, 2008