Exhibit No.:	
Issues:	Plant Capacity, Customer Service and Operations
Witness:	James A. Merciel, Jr.
Sponsoring Party:	MO PSC Staff
Type of Exhibit:	Direct Testimony
Case No.:	WR-2006-0425
Date Testimony Prepared:	December 1, 2006

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY OPERATIONS DIVISION

DIRECT TESTIMONY

OF

JAMES A. MERCIEL, JR.

ALGONQUIN WATER RESOURCES OF MISSOURI, LLC

CASE NO. WR-2006-0425

Jefferson City, Missouri
December 2006

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the tariff filing of Algonquin Water Resources of Missouri, LLC to implement a general rate increase for water and sewer service provided to customers in its Missouri service areas.	)))))	Case No. WR-2006-0425

AFFIDAVIT OF James A. Merciel, Jr.

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

James A. Merciel, Jr., of lawful age, on his oath states: that he has participated in the preparation of the following Direct Testimony in question and answer form, consisting of 7 pages of Direct Testimony to be presented in the above case, that the answers in the following Direct Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true to the best of his knowledge and belief.

James A. Merciel, Jr.

Subscribed and sworn to before me this 27th day of November, 2006.

SUSAN L. SUNDERMEYER
My Commission Expires
September 21, 2010
Callaway County
Commission #06842086

Notary Public

My commission expires 9-21-10

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CASE NO. WR-2006-0425

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ALGONQUIN WATER RESOURCES OF MISSOURI, LLC

CASE NO. WR-2006-0425

Q. Please state your name and business address.

A. James A. Merciel, Jr., P. O. Box 360, Jefferson City, Missouri, 65102.

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

A. I am employed by the Missouri Public Service Commission ("Commission") as a Utility Regulatory Engineering Supervisor, in the Water and Sewer Department ("W/S Department").

Q. Please describe your education and work experience.

A. I graduated from the University of Missouri at Rolla in 1976 with a Bachelor of Science degree in Civil Engineering. I am a Registered Professional Engineer in the State of Missouri. I worked for a construction company in 1976 as an engineer and surveyor, and have worked for the Commission in the W/S Department since 1977.

EXECUTIVE SUMMARY

Q. What is the purpose of your testimony?

A. The purpose of this direct testimony is to discuss plant capacity, and excess capacity, both in general and specific to the utility systems in service areas served by Algonquin Water Resources, Inc. (Algonquin). In addition, I will comment on customer service and utility operations.

PLANT CAPACITY - GENERAL

Q. Have you presented testimony with regard to plant capacity related to these systems in the past?

A. Yes, I presented rebuttal testimony in Case No. WO-2005-0206, in which Silverleaf Resorts, Inc. (Silverleaf) proposed to sell and transfer its assets to Algonquin, which transfer was approved by the Commission, and did occur in the context of that case.

Q. Has your opinion on the plant capacity matter changed since that testimony was filed?

A. No, my opinion has not changed, and I am still recommending similar over-capacity plant adjustments. In fact, instead of re-stating the same testimony here, I am including a copy of that testimony as Schedule 1 to this testimony. However, rather than including the schedules from that previous testimony, I have created new, similar schedules that include updated water use and customer level information for each of Algonquin's service areas, which will be discussed herein. Although I have updated this information, there has not been much change from the information that was presented in the asset transfer case.

Q. Can you explain why you believe that over-capacity adjustments are important, and why you are recommending over-capacity adjustments?

A. Yes. For established utilities, over-capacity adjustments, sometimes called "plant held for future use" adjustments, can be a tool to encourage utilities to construct only a reasonable level of new plant for capacity expansions. New plant should be sized to provide service to current customers plus an additional amount of plant for additional new customers that will connect within a reasonable time frame before another capacity expansion will be undertaken.

However, for small systems, the plant for future customers could be a substantial portion of the total plant, or at the extreme in the case of a new utility system in a new development all of the plant might be for future use if there are no customers yet. It is not practical to include the over-capacity amount of investment when there are not enough customers to support the cost of plant, because rates would be higher than what customers should reasonably be paying. Quantifying this is largely a case-by-case judgment, based on the economics of component-sizing options that were available to the utility, choices the utility could have made with regard to timing of construction, accuracy of population forecasts, and perhaps other factors.

Q. How does the Staff normally deal with over-capacity for new systems?

A. The only realistic way to deal with over-capacity of new systems, which could involve a situation where rates are being set before any customers exist at all, is to require involved developers to provide the funding for the construction of utility plant. The developer could then recover that contribution if customers connect as reasonably expected, either through reimbursements from the utility, or as a "cost of development" expense as the developer realizes income from lot sales, or a combination of both. This is true whether the developer or an affiliate is also the utility, as is often the case for small water and sewer utilities, or the developer is constructing the system in partnership with an existing established utility. In either situation, the thought is that neither the utility company nor its customers should be supporting development risk.

Q. Does the Staff, and do you, believe that the utility should have some investment in the utility assets?

A. Yes, the utility absolutely should have some reasonable level of investment, or "rate base," in order to be a viable business with adequate cash flow as well as to have a vested interest in the business. Of course, too much rate base would mean extraordinarily high rates for customers. Generally, too much rate base could be the result of any of the following: 1) the utility has more expensive plant facilities than most utilities, because, for example, a higher level of water treatment is necessary for the particular location, 2) the utility has invested in utility plant beyond what utilities customarily do, such as water distribution mains or sewer collecting mains, which are normally contributed by developers or customers, 3) the utility has constructed and invested in more plant capacity than what is reasonably needed for its customers, or 4) for a new system, expected development has not yet taken place and thus the utility's customer base has not grown into the available capacity.

Q. Are any of these scenarios true of Algonquin's systems?

A. Yes. Over-capacity exists at all three of Algonquin's water systems. For two of the three water systems, Ozark Mountain Resort and Timber Creek Resort, number 4 would apply, because in both areas the customer base has not yet grown into the capacity that was constructed to serve the developments. For the Holiday Hills Resort area, number 3 applies. The water supply system at Holiday Hills originally utilized one well to provide water for domestic use, with a second well used only for irrigation at a golf course, but the development grew to the point that either an additional well or more storage was needed in order to meet the peak residential demand. While one or the other actions would have been adequate, Algonquin's predecessor, Silverleaf, did both, by placing the irrigation well on line to serve residential customers as well as irrigation, and by also constructing an additional storage tank, which resulted in more capacity that what is necessary in my opinion.

I do not believe that there is over-capacity with regard to Algonquin's sewer systems, and am making no recommendation for disallowance of any sewer plant.

Q. Is there a simple way to realistically determine an over-capacity adjustment?

A. No, not always. The reason it is not simple is because small utilities generally cannot construct plant capacity on an incremental, ongoing basis to match the customer connections that are being made to a system because there are not many plant components involved. An illustration is that the components of a water system serving a subdivision might include only one well, and one storage tank, and construction of a second such facility would vastly increase the capacity. This is as opposed to larger systems that might utilize many wells and a number of tanks throughout the service area. In this situation a new facility would be a relatively much smaller and more manageable way to increase capacity. From a practical standpoint, small utilities must initially construct plant facilities with the capacity necessary to serve some number of customers, and then the expectation is that the customer base will grow into that capacity over some time period, usually several years, or perhaps many years. This takes planning involving forecasting customer growth and consideration of the costs of various size projects in order to be most economical, but there is always excess capacity involved for some length of time.

PLANT CAPACITY – SPECIFIC ADJUSTMENTS

Q. How is excess capacity being handled for Algonquin in this case?

A. For each of the three water systems, I have made determinations of what plant levels, with regard to wells and storage, are required to provide reliable service on the respective "peak days," which are the days when customers use the most water. Peak day, and the importance of adequate capacity to provide service during peak day, is explained in

the attached Schedule 1, my testimony filed in the sale case. The peak day use levels are from Algonquin's pumping records, and appear on Schedule 2 for Holiday Hills Resort, Schedule 3 for Ozark Mountain Resort, and Schedule 4 for Timber Creek Resort. Those plant levels are then compared to actual capacity of existing plant facilities to arrive at a simple percentage of capacity used by current customers, which is also shown on these schedules. The recommended percentage of plant disallowance would be determined by subtracting the percentage capacity used as shown on the schedules from 100, and this percentage will be applied to dollar amounts in testimony and schedules with the PSC Auditing staff.

Q. Is it reasonable to use a simple percentage for such calculations?

A. Yes, in my opinion it is reasonable because these systems are simple systems with few components that were constructed by developers for the particular area. With regard to Ozark Mountain Resort and Timber Creek Resort, as is common among subdivision developments, there is considerable excess capacity because the systems have not grown into the capacity that the developer anticipated. Holiday Hills has grown beyond its initial capacity, but as stated the utility, while it was owned by the developer, constructed more capacity than what was necessary. This position was clearly presented by the Staff during the sale case when Algonquin proposed to acquire these systems.

Q. Would it be desirable for Algonquin or any other utility to be able to operate as a "stand-alone" entity, with financial support wholly available from its customers?

A. Yes, it is desirable, from a viability standpoint. And most utilities eventually become stand-alone entities if and when there is an adequate customer level to utilize plant capacity.

CUSTOMER SERVICE AND OPERATIONS

Q. Are there customer service issues involved with any of Algonquin's systems?

A. No, there are not. The Staff has received very few customer complaints over the years previous to Algonquin's acquisition, and none since the acquisition.

Q. Are there any plant operational issues?

A. Having reviewed the Staff's inspection records, and after contacting the Missouri Department of Natural Resources (DNR), I do not believe any operational problems exist. DNR reports that there were some water sampling issues addressed in 2005 at Holiday Hills and Ozark Mountain, however this does not appear to be an ongoing issue, and also was before Algonquin's acquisition of these systems. There have been no Notices of Violation issued by anyone from DNR.

Q. Does this conclude your Direct Testimony?

A. Yes.

REBUTTAL TESTIMONY

OF

JAMES A. MERCIEL, JR.

Case No. WO-2005-0206

INTRODUCTION

Q. Please state your name and business address.

A. James A. Merciel, Jr., P. O. Box 360, Jefferson City, Missouri, 65102.

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

A. I am employed by the Missouri Public Service Commission ("Commission") as a Utility Regulatory Engineering Supervisor, in the Water and Sewer Department ("W/S Department").

Q. Please describe your education and work experience.

A. I graduated from the University of Missouri at Rolla in 1976 with a Bachelor of Science degree in Civil Engineering. I am a Registered Professional Engineer in the State of Missouri. I worked for a construction company in 1976 as an engineer and surveyor, and have worked for the Commission in the W/S Department since 1977.

Q. What is the purpose of your testimony?

A. The purpose is to present testimony regarding plant capacity, and capacity used at the three service areas that are presently owned and operated by Silverleaf Resorts, Inc. (Silverleaf), and which are included in the water and sewer utility assets that Silverleaf is proposing to sell to Algonquin Water Resources of Missouri, LLC (Algonquin).

GENERAL DESCRIPTION OF FACILITIES

Q. Would you please describe, generally, the systems that are involved?

A. Yes. Silverleaf owns and operates water and sewer systems at two locations, the Ozark Mountain Resort development near Kimberling City in Stone County, and the Timber Creek Resort development near De Soto in Jefferson County. Silverleaf also owns and operates a third water system in the Holiday Hills Resort development near Branson in Taney County. The service areas for each of these developments are generally comprised of residential-type structures, mostly condominiums, and a few commercial customers that are, for the most part, subdivision amenities. The sewer systems each consist of a collection system with a wastewater treatment facility. The water systems consist of deep wells, storage tanks, pumps, distribution piping, and customer service lines with meters.

WATER SYSTEM CAPACITY EVALUATION – OVERVIEW

Q. Would you briefly describe how the capacity of a water system is evaluated?

A. Yes. In larger systems, particularly those in municipalities, there are considerations as to flow through the longer distances in the distribution system, and strategic locations for storage tanks due to distribution flow, even if very large pipes are in place. However, for purposes of this case I wish to focus on smaller, subdivision-size systems, where distribution flow is not as critical as there are not great distances. For most small water systems, the two major components that need to be studied are: (1) the source of supply, which might be one or more wells, or one or more water treatment facilities; and (2) storage tank volume.

Q. What must be studied regarding the source of supply?

Schedule 1-2

A. On all water systems, the source needs to be of sufficient capacity to produce enough water for the days where customers use the most water, referred to as "maximum day." "Average day" is the daily water usage that is determined by dividing the annual water production by 365 days, and maximum day usage is typically about 1.5 times average day. If the source consists of multiple facilities, such as two or more wells, then the system should still be able to produce an adequate volume of water for maximum day with the largest facility out of service.

Although larger municipal-size water treatment facilities usually run 24 hours per day with the operator regulating flow anticipating the daily demand, most small systems, and all single-well systems, only run while the water is being used by customers, and do not run continuously. So beyond the need to meet maximum day, the source of supply for most small systems also need to have sufficient capacity to meet the times of day when customers are using the most water, called "peak hour." In a community, these peaks occur at wake up time in the morning, then again at supper time and into the evening. However, on many systems, storage is also used to meet these peak hour times. Peak hour flow is typically approximately 2.5 times average day flow.

Q. Would you please discuss storage capacity?

A. Yes. Storage volume on a small system is needed for four purposes. First, it provides what is called "contact time" for chlorine to work as a disinfectant agent; second, it supplements the source production during the peak hour times; third, it provides a reserve for fire-fighting demand; and fourth, it is usable if the source is unavailable due to a failure or during

a repair. This last point is most important on a single-well system. On single-well systems, storage volume should be sufficient for the average day demand, because replacing a well pump usually takes all day. In such an emergency situation, customers could also be asked to conserve water by not doing things like laundry, washing cars, and sprinkling lawns, in order to leave enough water for drinking, cooking and bathing.

Q. Is this the methodology you used to evaluate the Silverleaf systems?

A. Yes, but with some modifications. Most water systems serve communities or residential subdivisions near communities where the customers live and work. But Silverleaf, as well as a few other water and sewer utilities, provide service in what could be classified as recreational developments. Some customers probably live in the areas full time, but many of the homes and condominiums are second homes and rental units for vacations. Thus, these types of subdivisions are the busiest during summer weekends and holidays, and not very busy during the winter. This means, among perhaps other qualities, that peak day is much greater than the 1.5 multiplier applied to average day, but more importantly in my opinion, the system needs to be able to meet peak day instead of average day during a source of supply failure. The reason for this is that as a recreational development, the customers come to the area expecting normal use of the utilities, but that normal use results in a peak day. Further, the peak day can easily occur over a holiday weekend, and further yet, water systems can and do fail during holiday weekends when emergency repair service availability is not as certain as during a normal work week or even a normal weekend.

EXCESS PLANT CAPACITY

Q. Do you have an opinion regarding excess plant capacity at any of the Silverleaf systems?

A. Yes, I believe all of the Silverleaf water systems have excess capacity, based on current customer levels. I do not consider the sewer systems at Ozark Mountain and Timber Creek to have excess capacity because they are operated at capacity and even over capacity for a few days out of the year.

Q. What are the levels of excess plant capacity?

A. My calculations are shown on Attachments 1 through 3 for, respectively, Holiday Hills, Timber Creek, and Ozark Mountain. The first page of each attachment shows maximum day water usages for selected time periods, with this data being taken from Silverleaf's operations records. The second page goes through an evaluation of well and storage capacity used, which is as described above in this testimony. The percentages at the bottom of page 2 of each attachment represent that portion of the existing water supply and storage plant components that the Staff believes should currently be considered excess capacity. For Silverleaf's two-well systems, the evaluations include studies of the systems as both single- and two-well systems, because of the difference in storage requirements.

Q. How do you believe the excess capacity portion of plant should be treated for ratemaking purposes?

A. Such excess capacity should be excluded from the calculation of the ratemaking rate base used in determining the utility's overall cost of providing service. It should be noted,

however, that if and when additional customers connect to these systems, then it would be appropriate to include proportionately more plant in the calculation of the ratemaking rate base used in determining the utility's overall cost of providing service.

Q. Why do you believe this proposed ratemaking treatment is appropriate?

A. Generally, Silverleaf, from an overall corporate viewpoint, constructed these water systems as a developer for the purpose of its resort business, and to a great extent the systems were sized for an anticipated level of development that has not yet occurred quite as planned. As a risk that Silverleaf took as a developer, the Staff does not believe it is appropriate for the ratepayers to pay for the excess capacity, even if Algonquin or any other utility assumes ownership of these systems. In the case of Holiday Hills, Silverleaf recently placed the second well into service. In my opinion, that system, when operated as a single well system, had inadequate storage because it did not have a one day supply plus a needed fire reserve. The choice would have been to construct additional storage, or place another well into service, as either project would result in an adequate water system; however, Silverleaf did both.

Q. Does this issue directly affect the determination of whether the proposed sale of Silverleaf's utility assets to Algonquin meets the applicable standard of not being detrimental to the public interest?

A. No, it does not. However, I do believe that Algonquin, and the Commission, should be fully aware of the excess capacity issue, and the position that the Staff would take on that issue in a rate case.

SUMMARY

Q. Would you please summarize your testimony?

A. Yes. It is my opinion that there is currently excess capacity associated with the involved water systems, the investment in which current customers should not bear the financial burden. The specific quantifications of this excess capacity, as is shown on the attachments to this testimony, are based on customer and investment levels at the time of review for this case, and in the next rate case the Staff would take a similar position using the appropriate investment and customer levels for that time. However, it is also my opinion that this issue does not directly affect the determination of whether the proposed sale of Silverleaf's utility assets to Algonquin meets the applicable standard of not being detrimental to the public interest.

Q. Does this conclude your prepared Rebuttal Testimony?

A. Yes.

Algonquin WR-2006-0425 Merciel Dec-06 gpm = gallons per minute
system capacity Holiday Hills - Water kgpd = thousand gallons per day

customers 466 potable
plus 1 irrigation customer

system :	gpm	kgpd, 20 hour runtime	storage x1000
Well #1	396	475	117 ground plus hydro
Well #2	705	846	117 ground plus hydro

recorded usage

enter>>	peak day	325 kgpd			697 gallons per customer per day	prev 324
peak factor 1.6	estimated peak hour	520 kgpd	=	361 gpm		
	peak day factor	7.7			kgal/year	15500
					ave day kgal	42

Irrigation use: irrigation use peak day **600** kgpd (based on ave day for high-use month)
average day **269** kgpd high-use month
869 kgpd total use to include irrigation

Source Capacity

325 kgpd needed for potable only 1101 gpm absolute available
869 kgpd needed for potable plus irrigation

Considered as a two well system:
Adequate capacity exists for potable use with the largest pump out of service.
Adequate capacity does not exist for potable plus irrigation if Well #2 is out of service

Well #1	475 kgpd available	**68.4% capacity used, potable only**
Well #2	846 kgpm available	**102.7% capacity used, potable plus irrigation**
		38.4% potable only

Considered as a single well system:
Irrigation not available

peak hour flow	361 gpm	Well #1	13.7 hrs runtime	91.2% capacity used
		Well #2		zero capacity used

From a reliability standpoint, a two-well system is better, and is necessary in order to include irrigation use.

Storage Capacity 234,000 gallons available

Chlorine contact	30 minutes =	11,880	gallons Well #1	8,125 allowed gallons
		21,150	gallons Well #2	8,125 allowed gallons
Fire flow	2 hours @ 250 gpm	30,000	gallons	

Considered as a two well system:
A tank is needed at each well site for chlorine contact.

for Well #2 out of service, and 68.4% capacity allowance for Well #1

271 gpm available from source
361 gpm needed for peak flow
90 gpm needed from storage

3 hours est for peak flow	16,250	gallons
chlorine contact	16,250	gallons
fire reserve	30,000	gallons
	62,500	gallons total, two sites

27% capacity used

Considered as a single well system:

Peak day usage volume	325,000	gallons	(includes chlorine contact)
fire reserve	30,000	gallons	
	355,000	gallons total	

Current storage is inadequate for single well operation 151.7% capacity required

Algonquin WR-2006-0425 Merciel Dec-06 gpm = gallons per minute
system capacity Ozark Mountain kgpd = thousand gallons per day

customers 249

system :	gpm	kgpd, 20 hour runtime	storage x1000
Well #1	398	478	100 ground plus hydro

recorded usage

enter>>	peak day	115 kgpd		462 gallons per customer per day	prev 114
peak factor 1.6	estimated peak hour	184 kgpd =	128 gpm		
				kgal/year	9500
	peak day factor	4.4		ave day kgal	26

Source Capacity 115 kgpd needed 398 gpm absolute available

Single well system:

peak hour flow 128 gpm Well #1 4.8 hrs runtime **32.1% capacity used**

Storage Capacity 100,000 gallons available

Chlorine contact 30 minutes = 11,940 gallons
3,833 gallons based on capacity actually used

Fire flow 2 hours @ 250 gpm 30,000 gallons

Single well system, peak day use:

Peak day usage volume	115,000 gallons	(includes chlorine contact)
fire reserve	30,000 gallons	
	145,000 gallons total	

Current storage is inadequate for single well operation considering peak day plus fire protection **145.0% capacity needed** use 100% capacity

Single well system, average day use during high-use month: 50 kgpd

Peak day usage volume	50,000 gallons	(includes chlorine contact)
fire reserve	30,000 gallons	
	80,000 gallons total	

It is adequate for average day during high-use month plus fire protection 80.0% capacity used

Algonquin WR-2006-0425 Merciel Dec-06 gpm = gallons per minute
system capacity Timber Creek kgpd = thousand gallons per day

customers 161

system : gpm kgpd, 20 hour runtime storage x1000
Well #1 270 324 213 ground plus hydro
Well #2 370 444

recorded usage
enter>> **peak day** **85 kgpd** 528 gallons per customer per day prev 81
peak factor 1.6 estimated peak hour 136 kgpd = 94 gpm
kgal/year 6100
peak day factor 5.1 ave day kgal 17

Source Capacity 85 kgpd needed 640 gpm absolute available

Considered as a two well system:
Adequate capacity with the largest pump out of service.
Well #1 324 kgpd available **26.2% capacity used**
Well #2 444 kgpm available **19.1% capacity used**

Considered as a single well system:

peak hour flow 94 gpm Well #1 5.2 hrs runtime 35.0% capacity used
Well #2 zero capacity used

From a reliability standpoint, a two-well system is better.

Storage Capacity 213,000 gallons available

Chlorine contact 30 minutes = 8,100 gallons Well #1 2,125 allowed gallons
11,100 gallons Well #2 2,125 allowed gallons

Fire flow 2 hours @ 250 gpm 30,000 gallons

Considered as a two well system:
A tank is needed at each well site for chlorine contact.

for Well #2 out of service, and 26.2% capacity allowance for Well #1

70.83333 gpm available from source
94 gpm needed for peak flow
24 gpm needed from storage

3 hours est for peak flow 4,250 gallons
chlorine contact 4,250 gallons
fire reserve 30,000 gallons
38,500 gallons total, two sites **18% capacity used**

Considered as a single well system:

Peak day usage volume 85,000 gallons (includes chlorine contact)
fire reserve 30,000 gallons
115,000 gallons total 54.0% capacity used