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September 24, 2008

Mr. R. Kevin Lindley, PE, MCE  
Engineering Specialist  
Orange County  
129 East King Street  
Hillsborough, North Carolina 27278

Dear Kevin:

Raftelis Financial Consultants, Inc. (“RFC”) is pleased to submit this letter report summarizing the results of our wastewater rate study (“rate study”) for Orange County, North Carolina (“County”). The purpose of the rate study was to determine the financial and customer impacts of recovering the annual revenue requirements of the Efland System which is owned and operated by the County. The financial and customer impacts are determined based on three alternative rate scenarios. In addition, this letter report recommends an alternative rate structure we believe is more equitable for low volume customers. Finally, this letter report concludes by identifying alternative strategies the County may want to consider in addressing rate affordability for low-income customers.

Since 1987, the County has owned and operated a wastewater collection system for a small utility serving approximately 200 customers in Efland, North Carolina (the “Efland System”). Wastewater collected in the Efland System is conveyed to the Town of Hillsborough, NC (“Town”) for treatment and disposal. The Efland System consists primarily of residential customers; however, service is provided to a select number of commercial and industrial accounts. The Efland System generates averages monthly wastewater flows of 1.5 million gallons, including inflow and infiltration (“I&I”). The County is in the regulatory review process of expanding the Efland System to provide the capacity to serve add between 75 to 100 customers over then next few years.

### **Current Rate Structure**

The Efland System’s wastewater rates have remained unchanged since they were first established in 1987. All customers pay a monthly minimum charge of \$15.20 which includes the first 3,000 gallons based on metered water usage. Customers using above 3,000 gallons per month are then assessed a volumetric rate of \$4.50 per 1,000 gallons of water usage. The table on the following page presents the monthly sewer bills for customers with water usage ranging from 0 to 8,000 gallons of water per month.

Monthly Bills Under Current Efland System Rates

<u>Monthly Metered Water Usage Interval</u>	<u>Monthly Sewer Bill</u>
0 to 3 kgal (minimum charge)	\$15.20
3 to 4 kgal	\$19.70
4 to 5 kgal	\$24.20
5 to 6 kgal	\$28.70
6 to 7 kgal	\$33.20
7 to 8 kgal	\$37.70

Based on the current wastewater rate structure and the typical water usage by the customers of the Efland System, the County collected approximately \$62,900 in sewer charge revenues for fiscal year (“FY”) 2007. Although the customers of the Efland System are assessed sewer charges based on billed water usage, the County is assessed a \$10.35 wholesale sewer charge for every 1,000 gallons of metered sewer discharged from the Efland System to Hillsborough for treatment. The Town meters the sewer discharge through a sonic flow meter located approximately half a mile from the point of discharge into the Town’s system.

Based on the wholesale sewer charge and the metered discharges, which include substantial amounts (30%) of I&I during wet weather periods, the annual wholesale wastewater charges exceed the annual revenues collected from the Efland System customer base. In FY 2007, the Hillsborough treatment costs were approximately \$140,000 compared to the \$62,900 in revenues collected from customers of the Efland System. Ultimately, the current wastewater rate structure has required the County to provide an annual financial subsidy ranging from \$80,000 in FY 2005, to \$106,800 in FY 2007.

**Revenue Requirements Forecast and Revenue Sufficiency**

Based on the estimated operating expenses and capital costs for the Efland System, the current wastewater rates would need to be adjusted on January 1 to provide \$142,000, or an additional 300% in sewer charge revenues to achieve full revenue sufficiency for FY 2009 and eliminate the current subsidy provided by the County. This estimated increase in sewer charge revenues was determined based on our forecast of annual revenue requirements and billed water usage for the Efland System. Due to substantial amounts of I&I during wet weather periods, the actual level of revenues required to achieve revenue sufficiency can be significantly influenced by weather conditions and is therefore uncertain.

As part of the rate study, RFC developed a fifteen-year forecast of annual revenue requirements for the Efland System. The forecast was based on a review and understanding of the historical revenue requirements, escalation of operating and maintenance (“O&M”) expenses budgeted for FY 2008, and projected wholesale sewer costs based on anticipated annual discharges to the Town of Hillsborough for treatment. The annual O&M expenses include equipment maintenance, telephone, utilities, operations, and an allocation of Orange-Alamance expenses. The FY 2008 budgeted costs for these line items are escalated annual by 3.0% to account for inflation and salary adjustments. The Hillsborough treatment costs are forecast based on anticipated increases in metered sewer discharges and the \$10.35 per 1,000 gallons rate.

Additionally, annual capital costs were estimated based on planned capital project information provided by Orange County which includes rehabilitations to three pump stations, a manhole seepage collar program, and the \$1.7 million expansion to the system to allow additional 75 to 100 customer connections. For the purposes of this rate study, it is assumed the \$1.7 million will be funded by a ten-year loan with a 3.0% annual rate of interest. However, the actual method of funding the system expansion and other capital costs may differ based on financing decisions of the County.

The table below presents the forecast of annual revenue requirements of the Efland System during the first five years (FY 2008 through FY 2012) of the fifteen year forecast period. In addition, the table demonstrates the annual revenue deficit or required subsidy from the County under the current wastewater rates for the Efland System.

Revenue Requirements and Revenue Sufficiency

<b>Revenue Sufficiency</b>	<i>Fiscal Year Ending June, 30</i>				
	2008	2009	2010	2011	2012
<i>Revenue Requirements</i>					
O&M Expenses <sup>1</sup>	\$60,831	\$62,656	\$77,905	\$80,243	\$82,650
Hillsborough Treatment Costs	144,031	144,031	154,608	189,867	196,918
Annual Capital Projects <sup>2</sup>	1,200	0	35,000	220,000	0
Annual Debt Service <sup>3</sup>	0	0	0	51,000	213,889
<b>Total</b>	<b>\$206,061</b>	<b>\$206,686</b>	<b>\$267,513</b>	<b>\$541,109</b>	<b>\$493,457</b>
<i>Revenues</i>					
User Charges	63,500	63,468	68,129	83,666	86,773
Other Revenues <sup>4</sup>	1,500	1,545	1,591	1,639	1,688
<b>Total</b>	<b>\$65,000</b>	<b>\$65,013</b>	<b>\$69,721</b>	<b>\$85,305</b>	<b>\$88,462</b>
<b>Surplus/Deficit</b>	<b>(141,061)</b>	<b>(141,673)</b>	<b>(197,793)</b>	<b>(455,804)</b>	<b>(404,995)</b>

<sup>1</sup> O&M includes all equipment, utilities, and other costs associated with the County's operating expenses.

<sup>2</sup> Annual capital projects include those capital projects not funded through debt financing.

<sup>3</sup> Represents debt service on the ten-year loan to finance the \$1.7 million for expanding the Efland System.

<sup>4</sup> Other revenues include all non user charge revenues, such as interest income etc.

Based on the forecast of revenue requirements and the anticipated annual revenue deficit, the County would need to increase the current wastewater rates by approximately 300% to generate an additional \$142,000 in wastewater charge revenues and achieve financial sufficiency in FY 2009. This level of rate increase represents a substantial impact on the customers of the Efland System and the anticipated future capital improvements would require subsequent, although less substantial rate increases.<sup>1</sup>

<sup>1</sup> Since the rate increases would on effect the final six months of the fiscal year, the rate increase is more significant than would be required if the rate increases would have occurred on July 1, 2008.

### Rate Recommendations

Due to the small customer base and the large segment of the customer base that would qualify as low income, the County should consider several alternatives to mitigate the substantial impact on customers of achieving full revenue sufficiency. These alternatives should include the following:

1. Rate structure modifications that will provide rate relief to low water use customers while providing greater consistency with customer equity and cost of service principles;
2. A phased program of rate adjustments designed to avoid rate shock by moving toward revenue sufficiency during the forecast period; and
3. Alternative strategies to address rate affordability for low income customers.

### Rate Structure Modifications

The current monthly minimum charge of \$15.20 requires customers with monthly water usage of 3,000 gallons or less to pay for a level of sewer flows they do not discharge into the Efland System. In general, such monthly minimum charges with minimum allowances were originally designed to ensure a certain level predictable or fixed revenues. Although these monthly minimum charges are still used by many utilities, the national trend is moving toward a more equitable and cost justified type of fixed charge set to recover a level of fixed costs that should be recovered regardless of the level of water usage or wastewater discharged.

Since the current monthly minimum charge of \$15.20 is greater than the volumetric rate of \$4.50 per 1,000 gallons of water usage applied to a customer using the minimum allowance of 3,000 gallons per month ( $3 \times \$4.50 = \$13.50$ ), the current rate structure includes an “implied base charge” of \$1.70. Any customer with no metered water usage during a month is essentially paying for 3,000 gallons, or \$13.50 for water usage the customer is not discharging back into the Efland System. As such, the current rate structure is inequitable to customers with less than 3,000 gallons of metered water use per month. These low use customers are often low or fixed income families focused on limiting their monthly utility expenses.

Based on water billing data from April 2007 through February 2008 provided by Orange and Alamance Counties, approximately 92 customers, or 45% of the Efland System fell within the 3,000 gallon minimum water usage interval. With an average monthly metered water use by those 92 customers of 1,273 gallons, a substantial portion of the Efland System customers are paying for services they do not receive. To improve customer equity, cost of service, and affordability for low income customers, we recommend implementing a base charge and eliminating the minimum usage allowance. Since a good portion of the current 97 customers with water usage under the 3,000 gallon minimum allowance use less than 3,000 gallons, using the implied \$1.70 base charge would result in loss of revenues for the County. As such, we recommend implementing a “revenue neutral” base charge of **\$5.20** be assessed to all customers regardless of water use. Based on water billing data, this revenue neutral base charge and the current \$4.50 volumetric charge per 1,000 gallons assessed for all water usage would provide the same estimated wastewater charge revenues in FY 2008 as the current rate structure.

### Alternative Rate Program Scenarios

Since the Efland System has a small customer base from which to recover costs and its wastewater rates have not increased since 1987, significant rate adjustments are required to fully eliminate the current and anticipated future revenue deficits. To demonstrate the magnitude of the potential

financial impacts of the customers of the Efland system, as well as the potential impact on the County, we developed three alternative rate scenarios. These rate scenarios include the following.

1. Maintaining the current rates would require the County to provide an FY 2009 subsidy of \$142,000 which represents the anticipated revenue deficit. Should the current rates continue to be maintained, the County would be faced with continued and increasing rate subsidies under the anticipated operating costs and capital improvement plan.
2. Adjusting the rates to make up the \$40,000 in operating costs eliminated from the Efland wastewater system operating budget would require a January 1 rate increase of 150%. Under this scenario, the County would still incur a FY 2009 rate subsidy of approximately \$100,000 with continued and increasing rate subsidies under the anticipated operating costs and capital improvement plan.
3. Adjusting the rate to achieve financial sufficiency in FY 2009 would require a January 1 rate increase of 300%. Under this scenario, the rates should be sufficient to address anticipated operating costs and capital improvements for FY 2010 as the rates would set higher than would be required had rate increases been implemented on July 1. Less substantial rate increases would be needed in later years to maintain revenue sufficiency thereafter.

As opposed to these scenarios, the County may prefer to incorporate a phased approach in implementing a program of annual rate adjustments to move closer to financial sufficiency. This type of phased approach will help to avoid customer “rate shock” that often results after a substantial rate adjustment occurs after years of minimal or no rate increases. Rate shock is a situation where the public is outraged when major rate increases are implemented seemingly out of nowhere.

To avoid this, RFC recommends the County implement a program of annual rate adjustments beginning with an initial 150% increase in FY 2009 followed by gradually more substantial increases in the following years. The County should develop bill inserts to notify customers of the planned rate program and educate them about the current deficits and future capital needs that are driving the need for the rate adjustments. This will help to avoid rate shock and reduce the potential for customers who feel utility bills are burdensome.

#### Alternative Strategies to Address Rate Affordability

Although eliminating the minimum usage charge will help to improve customer equity and affordability for low income customers, the County should also consider alternative strategies to further address rate affordability for the low income customers of the Efland System. Although developing effective affordability strategies and policies can be a challenging exercise, the benefits can be substantial. Not only will affordable utility service benefit the Efland System’s general economic and social health, but properly structured assistance programs can yield tangible returns in terms of cost management, revenue stability, and public opinion. If customers are faced with utility bills that they find burdensome, the result is likely to be excessive account delinquencies, customer complaints, and utility theft.

The County may want to consider a few alternative strategies for Efland System customers that qualify under some financial hardship criteria the County may wish to establish. These criteria will be discussed later and may be linked to qualification to other governmental low-income programs to minimize administrative costs to the County.

The affordability alternatives the County may wish to consider include:

- **Lifeline Rates:** Special rates often set below the utility's actual cost of service and therefore require offsetting contributions from other rate payers or through a subsidy provided by the County. The most beneficial lifeline rates for the Efland System may be to reduce or eliminate the base charge component of the modified rate structure. This strategy would give the lifeline customer the added benefit of more control over the amount of their bill by controlling water usage.
- **Discount Plans:** Plans that reduce the bills of low-income customers by either a fixed amount or a percentage. Again, these plans have the most impact when the discount is applied to base charges rather than the volumetric charge.
- **Leak Repair Programs:** Programs that provide utility vouchers to have plumbers visit qualified low-income housing customers to identify and repair leaks. Low-income housing generally has a disproportionately high incidence of water loss through leakage which results in higher levels of water usage. Since this type of program would benefit the low-income customers by reducing both their water and sewer bills, and have a positive impact on water conservation efforts, the County may want to fund this as a joint program with the water providers.

Since two of these alternatives focus on the eliminating or discounting a portion of the base charge, the amount of affordability assistance could be enhanced by increasing the base charge component of the rate structure to recover more from the higher income customers through this component of the bill.

To ensure these programs are effective in targeting the appropriate customers, the County will need to develop assistance qualification criteria. Criteria commonly used to determine assistance eligibility include the following:

- **Income:** This is determined as income commonly set between 1.25 and 2.0 times the poverty level, adjusted by the number of members in the household. Households exceeding an income level specified by the County would be ineligible for assistance.
- **EPA Income Indicator:** This is a residential indicator that measures the monthly average residential bill as a percentage of Median Household Income ("MHI") for the entire system. The resulting indicator percentage is used to yield an estimated residential burden of Low (< 1.0%), Mid-range (1% to 2%) and High (> 2%).
- **Employment:** Eligibility under this criterion is proven through the presentation of dismissal notices, pink slips, or proof of successful enrollment in government unemployment programs.
- **Eligibility for other aid programs:** Under this criterion, eligibility for utility billing assistance is based upon successful enrollment in assistance programs offered by other institutions. This criterion has the benefit of requiring minimal administrative costs because the utility may be able to simply check applicant's names against enrollment databases maintained by other programs. The disadvantage to this approach is that the utility has no control over enrollment criteria.
- **Geographic designation:** Using customer addresses as eligibility criteria may be appropriate if the utility can document specific poverty areas within the service area.

Before using this criterion, however, policymakers should clarify the basis of the decision for including one area while excluding others.

We have enjoyed the opportunity to provide this assistance to Orange County and wish to acknowledge the significant efforts contributed by you and your staff in providing timely and accurate input during the project.

If you have any questions, comments, or concerns, please do not hesitate to contact me at (704) 373-1199.

Sincerely yours,  
RAFTELIS FINANCIAL CONSULTANTS, INC.

A handwritten signature in black ink, appearing to read "Frank Davis". The signature is stylized with a large, looped "F" and a cursive "Davis".

Frank Davis  
Manager