OLVER INCORPORATED

Consulting Engineers and Applied Scientists

Memorandum

TO: **Gayle Wilson** DATE: **June 2, 2009**

FROM: **Bob Sallach** OLVER PROJECT NUMBER: **20151**

RE: **Transfer Station Haul Cost Analyses – Revised**

Including New Information from the Town of Chapel Hill

Orange County, North Carolina

At the Board of County Commissioners' (BOCC) Transfer Station Work Session on Thursday, May 14, 2009, officials from the Town of Chapel Hill raised issues with some of the assumptions and results presented in the Transfer, Haul and Disposal Evaluation Reports dated April 16, 2009 and May 2009. The purpose of this memorandum is to explain and clarify the issues raised regarding the May 14 report by the Town, note revisions made to the Chapel Hill portion of the analysis subsequent to May 14, and to present revised summary tables using the revised Town data. It should be noted that Olver Incorporated (Olver) has worked closely with staff from each Town and the County to utilize waste hauling and cost data that are endorsed by the respective jurisdictions so that the analyses are as thorough and accurate as possible. As new assumptions have been requested by the jurisdictions, we have incorporated them into the analyses and then re-confirmed their accuracy by obtaining renewed endorsements. This assures the BOCC that they will have the most up-to-date information to use in its transfer station site decision making.

At the work session, Town officials presented a memorandum from Lance Norris, Chapel Hill Public Works Director to Roger Stancil, Chapel Hill Town Manager, dated May 6, 2008 (attached), that identified additional costs to the Town in the event that the Town would be required to haul waste to the Durham Transfer Station. Town officials questioned the cost assumptions in the Olver analysis due to the differences between the costs indicated in the May 2008 report and the April 2009 Olver analysis. The May 2008 memorandum identified the following three costs:

1. The need for an additional crew (personnel and vehicle) because of additional off-route hauling time;
2. Additional fuel costs for the additional travel distances and fuel price per gallon; and
3. The need for the Town to purchase dual-axle waste collection vehicles.

On Tuesday, May 19, 2009, County and Olver staff met with Chapel Hill Public Works Director Lance Norris and Harv Howard, Solid Waste Services Superintendent for the Town, to discuss the issues as requested by the BOCC. It was agreed that the analysis of Town hauling costs presented at the May 14 BOCC meeting was the analysis previously coordinated with and endorsed by Town staff. A May 15, 2009 memorandum from the Town's Public Works Director to the Town Manager (attached) explains and clarifies the discrepancies raised on May 14. The May 2008 Town analysis

had been prepared using a different methodology, operational assumptions specific to May 2008 that had changed by 2009, and different equipment acquisition/upgrade assumptions.

On May 21, 2009, Chapel Hill requested that the number of residential collection routes be changed from 14 to 16. This change was incorporated into the analysis and the results were confirmed with the Town. Tables 1A and 2A, below, present the final vehicle emissions and additional off-route hauling costs incorporting the Town's requested changes.

TABLE 1A[1]

Revised Total Estimated Additional Emissions from Additional Off-Route Miles[2]

	Total Additional Emissions in Pounds		
	HWY 54 TS	DURHAM TS	WI/WM TS
NOX	46,228 (44,746)	115,886 (112,728)	129,037 (125,195)
Particulates	2,287 (2,214)	5,734 (5,578)	6,385 (6,195)
Non-Methane HC	16,922 (16,380)	42,422 (41,266)	44,859 (43,576)
CO2	4,020,641 (3,891,743)	10,079,176 (9,804,524)	11,222,991 (10,888,847)

Sources:
1. *Greening Garbage Trucks, INFORM, 2003*
2. *EPA Office of Transportation and Air Quality. Emission requirements for vehicle models older than 2007 are assumed through 2015. Emission requirements for 2007 vehicles and newer are assumed in 2016 and later.*
3. *Dieselnet.com*

[1]Revised to incorporate additional residential collection routes in Chapel Hill per May 21, 2009 requests. Emissions previously reported are in parentheses.

[2]Emissions based on total additional off-route miles by all local governments to each respective transfer station instead of to Eubanks Road Landfill.

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TABLE 2A[1]
Revised Additional Average Annual Off-Route Costs to each Transfer Station Option[2]

	Operating Years 1-10		
	HWY 54 TS	WI/WM TS	DURHAM TS
Town of Chapel Hill	$113,000	$328,000	$266,000
Town of Carrboro	$10,000	$84,000	$89,000
Town of Hillsborough	$22,000	$21,000	$16,000
Orange County SWM Dept.	$63,000	$232,000	$212,000
Other Haulers (private, inst. Etc.)	$42,000	$135,000	$118,000
Total Off-Route Hauling	$250,000	$800,000	$701,000
	Operating Years 1-20		
	HWY 54 TS	**WI/WM TS**	**DURHAM TS**
Town of Chapel Hill	$141,000	$446,000	$364,000
Town of Carrboro	$12,000	$114,000	$121,000
Town of Hillsborough	$27,000	$31,000	$24,000
Orange County SWM Dept.	$78,000	$322,000	$295,000
Other Haulers (private, inst. Etc.)	$52,000	$185,000	$163,000
Total Off-Route Hauling	$310,000	$1,099,000	$968,000

[1]Revised to incorporate additional residential collection routes in Chapel Hill per May 21, 2009 request.

[2]Increase in costs of hauling MSW from the end of collection routes to the respective transfer stations instead of to Eubanks Road Landfill.

In addition to the Chapel Hill request at the work session, the BOCC requested that Olver again review the assumptions for mileage and speed of truck travel in the analyses. Olver staff conducted additional drive tests and confirmed that the mileage and speed data provided by the Towns and the County used to estimate off-route hauling costs are in-fact accurate. No changes have been made to the distance and speed assumptions between collection routes and transfer station options. Speed and distance assumptions from the proposed County transfer station locations to the out of county landfills were also revaluated. In order to standardize the long haul routing approach Olver has selected Interstate routes even if there are shorter routes to the destination landfill. This approach has resulted in changes to mileage assumptions and cost estimates for long-hauling MSW that have had more impact on routing to Wake County Landfill than to Sampson County Landfill.

Table 3A presents the data that incorporates the new mileage assumptions. The costs to haul MSW to the Sampson County Landfill from the Eubanks Reference facility and the Highway 54 site were virtually unchanged and increased 2.7% respectively. Hauling to the Wake County Landfill from the Eubanks Reference facility and from the Highway 54 site increased 4.3% and 5.8% respectively. Table 3A also presents revised data as a result of the additional residential collection routes requested by Chapel Hill. However, these revisions do not impact the overall findings or the

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conclusions of the earlier Olver reports – an in-county transfer station remains the least cost options for the County.

TABLE 3A[1]
Revised Comparison of Transfer Station Options[2]

	EUBANKS REFERENCE		HWY 54 TS		WI/WM TS	DURHAM TS
	WI-Sampson	Wake	WI-Sampson	Wake	WI-Sampson	Brunswick, VA
Miles to Landfill – 1 way	103 (104)	38 (31)	109 (104)	43 (31)	NA	NA
TS Site Acres/$ per Ac.	18.5/$0	18.5/$0	25/$15K	25/$15K	NA	NA
Capital - $Million	$4,093,000	$4,093,000	$4,771,000	$4,771,000	NA	NA
Facility Operations – First Yr.[3]	$816,500	$816,500	$887,200	$887,200	NA	NA
Haul to Landfill – First Yr.	$930,800 ($927,500)	$429,200 ($411,500)	$952,600 ($927,500)	$435,300 ($411,500)	Included	Included
Landfill Tip Fee – First Yr.	$1,221,000	$1,710,000	$1,221,000	$1,710,000	Included	Included
Off-Route Cost – First Yr.	$467,200 ($451,300)	$467,200 ($451,300)	$674,900 ($648,500)	$674,900 ($648,500)	$1,080,100 ($1,036,100)	$1,001,200 ($962,700)
Additional Off-Route Cost – First Yr[4]	NA	NA	$207,600	$207,600	$612,900	$534,000
Total Cost – First Yr. $/Ton	$60	$60 ($59)	$66 ($65)	$65 ($64)	$65 ($64)	$63 ($62)
20-Yr Net Present Value	$53,205,000 ($52,905,000)	$46,108,000 ($45,484,000)	$57,883,000 ($57,029,000)	$50,523,000 ($49,607,000)	$66,633,000 ($65,831,000)	$64,084,000 ($63,382,000)
Break Even Point[5]	Yr 8	Yr 7 (6)	Yr 12 (11)	Yr 9 (8)	NA	NA

[1]Revised to incorporate additional residential collection routes in Chapel Hill and updated landfill mileage estimates per May 21, 2009 requests. Mileage estimates maximize use of Interstate routes. Data previously reported are in parentheses.

[2]For handling the equivalent amount of MSW reported by County as landfilled at Eubanks Road Landfill in FY2008, escalated for growth.

[3]Includes full operating costs. i.e. land, engineering permitting, construction, equipment, labor, operations, etc.

[4]Increase in the total off-route costs of hauling MSW from the end of routes to the respective transfer stations instead of to the Eubanks Road Landfill.

[5]The number of years it would take to recoup the costs of building the County transfer station.

RCS/det

Attachments

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MEMORANDUM

TO: Roger Stancil, Town Manager

FROM: Lance Norris, Public Works Director

SUBJECT: Clarification on Differing Transfer Station Cost Analyses

DATE: May 15, 2009

On May 6, 2008, I provided you a memorandum regarding Orange County's transfer station siting process. Specifically the memorandum detailed the anticipated financial impacts to the Town's Solid Waste Services Division for upgrading collection equipment and increased ongoing operations costs associated with hauling Town refuse to a transfer station in Durham that was under consideration at that time.

Subsequent to that financial impact analysis, the Orange County Board of Commissioners undertook a search for additional transfer station sites. On February 12, 2009, Orange County Solid Waste Director Gayle Wilson requested assistance from the Town in developing an updated financial analysis associated with these additional siting options. Beginning in March 2009, Town Solid Waste Superintendent Harv Howard worked with Olver Inc., Orange County's siting consultants, to develop this updated analysis.

This updated analysis reflects a number of changes that have occurred since the original analysis described in the May 6, 2008 memorandum was submitted. Most notably are the costs attributed to equipment upgrades as the Town's has recently acquired 3 of the 5 dual rear axle vehicles needed by the Town to utilize a remote site. Accordingly, the anticipated net impact to the Town is less in the current analysis than previously estimated. The difference in equipment costs impacts between the two financial analyses also reflects different cost modeling methods, with the May 6, 2008 analysis based on total one-time costs for new equipment versus the updated analysis which amortized costs.

Changes in the updated analysis also reflect slight increases in anticipated personnel costs, adjustments related to changing fuel cost estimates and modest reductions in ongoing fleet maintenance costs due to the acquisition of new equipment. We recognize that this is a point in time analysis of the Town's Solid Waste Services Division's costs associated with possible transfer station locations and may change depending on actual fuel costs and the final transfer station location selected.

MEMORANDUM

TO: Roger Stancil, Town Manager

FROM: Lance Norris, Public Works Director

SUBJECT: Orange County Transfer Siting Process

DATE: May 6, 2008

Background and Discussion

The Town of Chapel Hill currently collects and hauls its municipal solid waste (MSW) to the Orange County Regional Landfill. That landfill is scheduled for closure in 2011. Currently, the Orange County Board of Commissioners is conducting a site search to construct a Transfer Station. The selected location could impact the Town of Chapel Hill negatively and/or financially.

The Town of Chapel Hill's interest is, "*To support the environmental sustainability of our community by actively pursuing the goal of 61% waste reduction and by reducing our carbon footprint by 50% by 2020.*

Criteria that could impact our operation are:

- An increase in non-productive route time, driving to and from the route to the disposal site is a major consideration. We have conducted time and distance studies from the geographic center of Chapel Hill to distances of 10, 12, 15 and 20 miles away. These study included Highway 54 West, I-40 West and Highway 86 North. Beyond the 12 mile point, which adds 38 to 40 minutes round trip drive time depending on location, we would need to add another crew with equipment to continue the same level of service we currently provide.
- An equipment change to a dual axle residential fleet. Currently, only two trucks are dual axle. Three more will be delivered to the Town due to the normal fleet replacement cycle this fall. That will leave five rear loaders to be changed out at cost of approximately $700,000.
- Fuel cost will increase if the site is other than the current site. The amount of increase would vary depending on the distance and time of travel.

As an example of the impact of changing to a more remote hauling site, a time and distance study was conducted from various Chapel Hill locations to the Durham Transfer Station (DTS).

Southern Village center to DTS.	Miles: 20.3	Time: 28 minutes
Meadowmont center to DTS.	Miles: 17.6	Time: 26 minutes
Parkside Neighborhood to DTS.	Miles: 17.4	Time: 22 minutes
Downtown ChapelHill to DTS.	Miles: 17.1	Time: 27 minutes
DTS to Town Operations Center.	Miles: 20.6	Time: 27 minutes

This would increase our travel time during the day to 1 hour. Transfer station wait time could approach 15 minutes. The additional time per route would compromise our ability to complete routes within a work day with additional resources.

We would need to add 1 crew, with equipment to sustain our current task system.

1 Equipment Operator II Salary and Benefits.	**$43,800**
2 Collectors Salary and Benefits.	**$74,000**
Total personnel costs.	**$117,800**
Additional rear-loader, fuel and maintenance.	**$200,000**
Total.	**$317,800**

Fuel Projections.

Estimated data on increased annual fuel cost **from the DTS to the TOC for residential trucks only** would increase **$28,900 dollars**(Rounded).

14,996 miles(14 routes x 52 weeks x 20.6 miles) divided by 1.6 miles per gallon average rear loader multiplied by $3.08 which was the average 3rd quarter fuel cost for this FY.

Estimated data on increased annual fuel cost only **by all routes to DTS** would increase **$76,100 dollars**(Rounded).

14 routes x 52 weeks x 1.5 trips per day x 36.2 miles round trip average all routes divided by 1.6 miles per gallon x $3.08 which was the average 3rd quarter fuel cost for this FY.

Commercial fuel cost estimated at **$48,000**(Rounded).

Total fuel estimate: **$153,000.**

The residential fleet is currently being converted to rear dual axles to bring us into compliance with DOT weight guidelines. We currently have two rear loaders that are dual axle. Three more are being order this year. That will leave five rear loaders to be converted.

Conversion of equipment. **$700,000**.

The actual impact of other sites would vary depending on their location. For example, sites north of Hillsborough would require travel through the town, so even relatively short hauling distances would result in longer hauling times. Likewise, sites adjacent to Interstate 40 could require shorter hauling time for longer distances.