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Project No. 1123.003

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**Summary Rail-Haul Analysis**  
Regional Solid Waste Management Plan  
Santa Barbara County, California

Dear Mr. Zhao:

On Thursday, 28April2005, the topic of rail-haul disposal was discussed by the Multi-Jurisdictional Solid Waste Task Group (Task Group). During the meeting the Task Group identified a need for general information on rail-haul relative to Santa Barbara County. As requested following the meeting, Avocet Environmental has assembled this brief analysis. It provides a conceptual overview of the typical rail-haul system, an assessment of available rail-haul landfills, and a discussion of the potential costs.

Rail-haul of solid waste is typically an option considered when existing landfill space has been exhausted and the entity responsible for solid waste management is confronted by the cost and permitting hurdles of siting and constructing new disposal capacity. Accessing remote landfills becomes viable due to the lower transport cost of shipping by rail. Rail-haul does, however, require more infrastructure than a traditional waste management system and typically results in a higher disposal cost than local disposal despite the more efficient method of transportation.

A typical local landfill system generally consists of a landfill and possibly a transfer station or materials recovery facility (MRF). A rail-haul system, on the other hand, will usually include:

- **MRF/Transfer Station.** This facility accumulates and loads residual waste (the quantity depending upon the degree of diversion and market for recyclables) into intermodal containers. Typically this facility is located at an existing landfill site;
- **Local Rail Yard.** Key to rail haul is access to the rail line. It is generally more cost-effective to purchase property and build facilities adjacent to an existing rail line;
- **Rail Transport.** Hauling the solid waste over commercial rail lines;
- **Remote Rail Yard.** Facility where the train is unloaded. Typically this facility is located at the landfill; and
- **Landfill.** The disposal site for the solid waste residuals.

## Summary Rail-Haul Analysis

The nominal per ton disposal fee of a waste management system includes the amortized capital and operating expenses of the system components equally distributed over the system waste tonnage. For the purposes of this analysis it is assumed that the cost of curb-side pickup and delivery is equivalent for either local landfill disposal or rail-haul, and can be ignored.

A recent analysis by the County Sanitation Districts of Los Angeles County (LACSD) estimates that the disposal fee at the new Puente Hills transfer station, which will deliver waste to either the Mesquite Regional Landfill or Eagle Mountain Landfill, will be approximately \$60 per ton<sup>1</sup>. This is predicated, however, on servicing at least 4,000 tons per day. The entire Santa Barbara County waste shed is estimated to be between 1,200 and 1,500 tons per day<sup>2</sup>. Consequently, a rail-haul unit cost for Santa Barbara County is likely to be greater.

A comparable unit cost for Santa Barbara County would include rail shipping costs (currently about \$18 per ton on Union Pacific for solid waste between Santa Barbara and San Diego), landfill tipping fees (assume about \$40 per ton<sup>3</sup>), and the cost for constructing and operating a system of MRFs and a local rail yard to provide access to the rail system. This latter component is difficult to quantify without detailed analysis, but for the purposes of this letter can be estimated to be approximately \$15 per ton. This back-of-the-envelope unit cost estimate is therefore \$73 per ton.

Not included in the above disposal fee is the expense for closure and long-term monitoring of landfills. Many municipalities generate revenue for these activities through the disposal fees charged to waste haulers. If the municipalities are no longer collecting these fees an alternative method of funding these projects is needed.

An important factor affecting this cost is the availability of landfill space with rail access. Implementation of rail-haul typically transfers ownership of the landfill system to a private party. There are, however, several landfills either permitted or operating that could provide rail-haul destinations for waste from the Task Group's service area. These are shown on Figure 1. Given the number of destinations, diversity of ownership, and long-term capacity, it is reasonable to assume that competitive tipping fees will be maintained for the foreseeable future. Nevertheless, this cedes local control of the waste shed to other entities

Another key factor is the local solid waste handling and actual rail shipment. An advantage of rail-haul is the ability to move large amounts of waste long distances cost-effectively. Rail shipping is estimated to be between 3-4 times as cost-effective as trucking on a ton-mile per

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<sup>1</sup> LACSD, *Puente Hills Landfill Annual Report*, November 2004.

<sup>2</sup> The California Integrated Waste Management Board (CIWMB) reports that in 2003 Santa Barbara County disposed of 414,870 tons of waste. Assuming annual operating days between 250 and 365 results in a daily waste flow of 1,136 and 1,565 tons per day, respectively. <http://www.ciwmb.ca.gov/Landfills/tonnage/2003/County.htm>

<sup>3</sup> National Solid Waste Management Association, *NSWMA's 2005 Tip Fee Survey*, NSWMA Research Bulletin 05-3, March 2005. The average tip fee for the western region of the United States was \$37.74 in 2003, which includes many older local landfills with a sunk capital cost built into the fee.

## Summary Rail-Haul Analysis

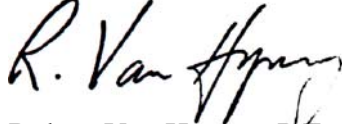
gallon basis<sup>4</sup>. It requires, however, that the trains run full, and that sufficient volume is available to ensure economical operation. Irregardless of whether the municipalities of the Task Group construct and operate these facilities, or the system is privatized, a rail-haul approach would require the construction of new transfer and processing facilities to provide access to the rail lines.

A final consideration is the cost of fuel. Rising energy prices will affect transportation and the operation of facilities. This has the potential to drastically alter the economics of local landfill versus regional facilities.

If you have any questions regarding this report or require additional information, please do not hesitate to call.

Respectfully submitted,

AVOCET ENVIRONMENTAL, INC.



Robert Van Hynning, P.E.  
Principal

RVH:sh  
Attachments  
cc:

*Document4*

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<sup>4</sup> United States Federal Railroad agency, *Rail vs. Truck Fuel Efficiency: The Relative Fuel Efficiency of Truck Competitive Rail Freight and Truck Operations Compared in a Range of Corridors*, DOT/FRA/RRP-91/2, April 1991.

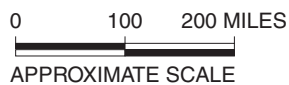


FIGURE 1

**EXISTING AND PROPOSED  
RAIL ACCESSIBLE LANDFILLS**

SANTA BARBARA COUNTY  
RAIL-HAUL ANALYSIS  
SANTA BARBARA, CALIFORNIA

