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MEMORANDUM

To: Andrew Thomas

From: Nelson\Nygaard

Date: September 15, 2014

Subject: Del Monte Warehouse Project – Estimated Average Daily Trips

INTRODUCTION

This memorandum provides data and analysis to aid City staff and officials, and other stakeholders in understanding estimated vehicle trip impacts at the proposed Del Monte Warehouse project at 1501 Buena Vista Avenue. The Del Monte Warehouse project is the first development project in the Northern Waterfront area. Therefore, the analysis assumes that the proposed TDM program for Del Monte constitutes "day one" implementation of the area's larger TDM program, which will evolve and grow as additional development occurs. In short, Del Monte's TDM efforts are the first of many steps by the City to achieve required trip reductions for the Northern Waterfront area.

The primary analysis tool for this study was URBEMIS, an industry standard air emissions calculator for CEQA documents that is also used in calculating trip generation rates. This analysis compares traditional modeling of vehicle trips for the Del Monte Warehouse project using ITE rates with a model that more comprehensively accounts for site characteristics, land uses, transportation infrastructure, and transportation demand management (TDM) measures.

It is important to emphasize that *URBEMIS is a model that assesses not just impacts from TDM programs, but rather evaluates the larger land use and transportation context within which a project site is located*. Therefore, the estimated trip reductions described below should not be attributed to the Del Monte TDM program *alone*, but as a result of the project's overall characteristics profile. By examining the broader land use mix, walkability, transit accessibility, and parking in concert with TDM, a more accurate measure of vehicle demand is possible. Ultimately, the required monitoring program will be the best way to accurately assess the success of the project's TDM efforts.

Based upon the proposed TDM strategies, parking policies, and other project design characteristics introduced by the Design Team and City, **the project will result in approximately 34% fewer trips than standard ITE rates**, which are based upon a typical project in a suburban location.

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PROJECT DESCRIPTION

The Del Monte Warehouse project is a mixed-use development on the former Del Monte Warehouse site located at 1501 Buena Vista Avenue. As a historic resource, the project involves adaptive reuse of the warehouse building. The project is located within the Northern Waterfront General Plan area and is zoned MU (Mixed Use) for residential and commercial mixed use, with a multi-family (MF) overlay zoning designation on the property. The project includes the following elements:

- **Land Uses**
  - 414 multifamily residential units, with 308 units in the first phase (Del Monte Warehouse project) and 106 in subsequent phases
  - 55 of the 414 units would be restricted to lower income households
  - 30,000 square feet of commercial space, primary neighborhood-scale retail uses
- **Parking**
  - 460 total parking spaces on site for the Del Monte project, plus up to an additional 159 required spaces for the remaining 106 units in subsequent phases[1]
    - 326 garage parking spaces, for sale or lease (as described in the Del Monte Project TDM Program)
    - 134 on-site spaces, comprised of
      - 3 spaces will be allocated for car share spaces
      - 45 spaces will be allocated for commercial usage
        - ◊ Up to 10 spaces may be leased by the commercial tenants for their employees
        - ◊ The remaining 35 spaces will be for visitors of the commercial spaces
      - 86 remaining spaces available for optional lease
  - An additional 120 on-street spaces immediately adjacent to the project site
  - All residential parking is unbundled
  - Residential and commercial parking is available for sale and/or annual lease (as described in the Del Monte Project TDM Program)
  - Commercial spaces for customer use and adjacent on-street parking are assumed to free of charge
- **TDM Measures**
  - Annual fee to fund transportation programs
  - Non-profit TMA to manage transportation programs
  - Dedicated manager for transportation programs
  - Unbundled residential parking
  - Transit passes provided to residents and employees
  - Designated “day one” shuttle service to BART (7 hours of daily weekday service at 30 minute frequency)[2]

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[1] Per the Del Monte Warehouse Master Plan, residential units in subsequent phases will be parked at a maximum of 1.25 spaces per unit.

- On-site carsharing (minimum of 3 spaces)
- 185 bicycle parking spaces (92 on-site and 93 in building) for Del Monte Warehouse project
- Targeted marketing for regional programs, such as Alameda County's Guaranteed Ride Home Program and the regional 511 ridematching services
- Annual monitoring and evaluation

BASELINE VEHICLE TRIPS

In April 2014 the City released the Subsequent Mitigated Negative Declaration (SMND), which supplements the 2008 Environmental Impact Report that evaluated the environmental impacts of redevelopment of the site. The SMND provided a detailed transportation impact analysis, including an estimate of trip generation. Figure 1 summarizes the estimated project trip generation based on rates in *ITE Trip Generation 9th Edition*. It is important to note that the SMND trip estimates include standard reductions from ITE base rates for commercial pass-by trips[3] (34%) and internally captured trips[4] (5%). The net new trip generation was estimated at 3,419 average daily trips[5].

Figure 1 SMND Estimated Project Trip Generation

Land Use	Size	Rate	Average Daily Trips
Residential Apartments (ITE Code 220)	414 units	6.65	2,753
Commercial (ITE Code 820)	30,000 SF[6]	42.7	1,281
Commercial Pass-By/Non-auto Trip Reduction (34%)			-436
Commercial sub-total			*845*
Project sub-total			*3,599*
Captured Trips Reduction (5%)			-180
Net New Trip Generation			**3,419**

Source: Del Monte Warehouse Project - Initial Study/Subsequent Mitigated Negative Declaration, April 2014

[2] As demand for shuttle service grows with additional development in the Northern Waterfront area, the "day one" shuttle service is expected to increase its frequency and span of service.

[3] A trip that is on the adjacent roadway already and making an intermediate stop at the site. These trips are assumed to not have been a new trip generated by the new use.

[4] A trip that is made strictly within the project site and does not use adjacent main roadways, due to the presence of mixed uses.

[5] SMND estimates were based upon 25,000 square feet of commercial space, which has since been increased to 30,000 square feet.

[6] Increased from 25,000 square feet.

SUMMARY OF ANALYSIS

Figure 2 summarizes the results of the URBEMIS analysis and compares the estimated trip reductions. The land use, parking, and TDM inputs as summarized above were utilized as inputs. In addition, an analysis of land use mix, housing and employment density, and the transit, bicycle, and pedestrian infrastructure was also performed and inputted into the model.

Figure 2 Estimated Average Daily Vehicle Trips and Reductions

ITE Land Use Category	Size	Estimated ADT				
		ITE Baseline	SMND Adjusted	% Less than Baseline	URBEMIS	% Less than Baseline
Residential Apartments (ITE Code 220)	414 Units	2,753	2,753	0%	1,576	-43%
Commercial (ITE Code 820)	30,000 SF	1,281	845	-34%	1,073	-16%
Total		**4,034**	**3,419**	**-15%**	**2,649**	**-34%**

A number of key findings are worth highlighting, as summarized below.

- The URBEMIS analysis found that the project would generate a daily average of 2,649 net new vehicle trips. This number represents 34% fewer trips than projections based upon standard ITE trip rates and also estimates fewer trips than what was projected in the SMND.
  - It was estimated that the Del Monte residential uses would generate 43% fewer trips than standard ITE rates. The SMND assumed no trip reductions for the residential component of the project.
  - It was estimated that the Del Monte commercial uses would have 16% fewer trips generated than standard ITE rates. By contrast, the SMND applied a standard 34% reduction for pass-by and non-auto trips to the commercial uses.
- Therefore, based upon the proposed TDM strategies, parking policies, and other project design characteristics introduced by the Design Team and City, the project will result in approximately one-third fewer trips than standard ITE rates, which are based upon a typical project in a suburban location.
- It is worth noting that certain factors in the model were more influential than others in reducing vehicle trips. These include:
  - The higher residential density and mix of uses within the project site
  - The presence of proximate and diverse transit service, including the proposed “day one” shuttle service to/from the site
  - The presence of an increasingly complete and well-connected bicycle and pedestrian network
  - The decision to unbundle and price the residential parking
  - The provision of free transit passes to residents and employees upon occupancy or employment

- As the Del Monte project and additional development in the Northern Waterfront moves forward, and is monitored to assess its trip generation, additional or more substantial trip reduction impacts can likely be achieved by:
  - Increasing the amount of direct and express transit service to the project site beyond proposed "day one" service, such as higher-frequency and all day shuttle service (i.e. 6 a.m. – 8 p.m.)
  - Continuing to develop and prioritize higher-density, mixed-use projects with a strong affordability component
  - Continuing to adjust parking management strategies, including:
    - Requiring residential unbundling for all projects
    - Annually adjusting the cost of unbundled spaces for new owners/renters to accurately reflect demand for parking and the cost of building and operating the parking supply
    - Evaluating whether to use demand-based pricing and/or time restrictions to manage parking demand for commercial and adjacent on-street spaces
    - If needed, working with residents to develop appropriate permit systems, including a parking benefit district
    - Evaluating additional reductions in parking minimums for future projects in the Northern Waterfront area. *By lowering or eliminating parking minimums, the City is NOT prohibiting on-site parking, only guaranteeing development flexibility to ensure that parking supply meets actual demand.* MTC provides guidance for minimum parking requirements that can serve as a framework for future planning efforts[7].

      It is important to emphasize that there are tangible impacts from providing excess parking supply. Excessive parking minimums and the associated costs of building the required parking often prevent projects from being financially feasible and result in other negative impacts to the community.

      - Parking adds high costs to development projects, at a minimum cost per space of $25,000.[8]
      - Parking worsens housing affordability by increasing rents 15-30% for each parking space required for a unit.[9]
      - Lowering residential parking requirements by 50% in TODs can result in increased residential densities of 20-33% and savings on residential parking costs from 5-36%.[10]
      - Parking consumes land: a building with a requirement of more than three spaces per 1,000 square feet will have more parking space than building space.

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[7] http://www.mtc.ca.gov/planning/smart_growth/stations/Planning_Elements.pdf

[8] Victoria Transport Policy Institute, Transportation Cost and Benefit Analysis II—Parking Costs, p. 5.4-2, 2012. Accessed at http://www.vtpi.org/tca/tca0504.pdf

[9] Center for Neighborhood Technology

[10] Arrington, G., & Cervero, R. (2008). *TCRP Report 128: Effects of TOD on Housing, Parking, and Travel.* Washington D.C.: Transportation Research Board.

OVERVIEW OF URBEMIS

The most commonly used tool for estimating trips is the ITE manual *Trip Generation, 8th Edition*. This conventional process simply uses the type of land use (residential, commercial, office, retail, etc.) and the amount of the proposed land uses (typically number of units and square feet) to generate a trip "rate" (i.e. "xx" vehicles trips per 1,000 square feet). The rates are based on previously conducted surveys and studies of similar land uses. A similar methodology is utilized to develop parking rates by land use.

However, the ITE methodology presents a number of significant issues. First, the rates are often based on a small number of studies, with limited statistical significance. Second, the studies that inform the rates are almost exclusively from suburban, auto-oriented locations and do not account for more urban locations with higher densities, mix of land uses, and high-quality transit, bike, and pedestrian infrastructure. Finally, ITE rates often represent a worst-case scenario for peak traffic or parking demand.

URBEMIS is a program specifically developed for the California Air Resources Board to calculate emissions resulting from new developments. It is also a more suitable model for estimating vehicle trips and parking demand in many areas. In short, URBEMIS accounts for more of the factors that determine travel and parking behavior. The model itself incorporates several variables of travel demand, including:

- **Mix of Uses.** Research points to the impact of "diversity" or mix of uses on travel and parking behavior. In URBEMIS, the mix of uses is measured by calculating the jobs-housing balance in the area to gauge the potential for residents and employees to take alternative modes of transportation to work. The jobs-housing balance is derived from employment and housing data from the U.S. Census and measured within a half-mile radius of the project.
- **Local Retail.** The presence of local serving retail (including restaurants and personal/household services) can be expected to further encourage alternative modes.
- **Transit Service.** In examining local transit service, it is important to consider both the amount of service (i.e., frequency and service span), and quality of service (particularly speed), which have a strong relationship with ridership.[11] The index used by URBEMIS places an emphasis on frequency, but gives greater weight to "express" or "rapid" service. It considers the quantity of bus service within one-quarter mile, rail/express service within one-half mile, and direct shuttle service.[12]
- **Pedestrian/Bicycle Environment.** Research has shown that there are numerous statistically significant factors that can assess the quality of the bicycle and pedestrian environment. URBEMIS uses three of the most important variables that are identified in the literature[13] to calculate the quality of the bicycle and pedestrian environment - intersection density (a measure of network connectivity), sidewalk completeness, and bike network completeness.

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[11] See, for example Kittselson & Associates et. al, (2003); Holtzclaw et. al. (2002) Pratt et. al. (2003); Nelson\Nygaard (2002).

[12] See Lund et. al. (2004) for a discussion of walking distances to transit.

[13] See, for example, Dill (2003); Parsons Brinkerhoff (1993); Kuzmyak et. al, (2003); Ewing & Cervero (2001); and Ewing (1999). Note that network density is inversely related to block size, which is sometimes considered in the research.

- **Affordable Housing.** Data from the U.S. Census, as well as other sources, reveal that residents with lower incomes (and those living in rental units) own fewer vehicles.[14] URBEMIS uses the percentage of below-market-rate (BMR) housing as a way to incorporate this effect.
- **Parking Supply.** There is a significant correlation between the quantity and price of parking provided and resident vehicle ownership and mode split.[15] Generally speaking, ITE *Parking Generation* rates represent completely unconstrained parking demands (i.e. demands that assume an over-supply of free parking). URBEMIS accounts for reduction in parking supply and the presence of parking charges.
- **TDM Measures.** TDM measures, such as transit passes, car-sharing, bicycle parking, and transportation coordinators have been very successful at reducing travel and parking demand. URBEMIS accounts for the presence of such measures and incorporates reductions in trips and parking demand.

[14] See Russo, Ryan (2001), Planning for Residential Parking: A Guide For Housing Developers and Planners. Non-Profit Housing Association of Northern California. Holtzclaw, John; Clear, Robert; Dittmar, Hank; Goldstein, David; and Haas, Peter (2002), "Location Efficiency: Neighborhood and Socio-Economic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles and San Francisco", Transportation Planning and Technology, 25 (1): 1-27.

[15] See, for example, Morrall & Bolger, 1996, cited in Kuzmyak et. al., 2003b; Lund et. al., (2004).